



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 16 September 2010

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: SNOTEL 7-day average temperature departure from normal map shows temperatures within $\pm 5^{\circ}\text{F}$ of normal with the warmest temperatures over the Central Rockies and the coolest generally west of the Continental Divide (Fig. 1). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts northeast New Mexico ($>+10^{\circ}\text{F}$) and the greatest negative departures occurred over the south coast of California ($<-8^{\circ}\text{F}$) (Fig. 1a).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 15 September shows the bulk of the heaviest precipitation confined to the Bitterroot Range in Montana (Fig. 2). In terms of percent of normal, unusually heavy precipitation fell from the Great Basin in Nevada to Montana with isolated pockets over southwest New Mexico and the western High Plains (Fig. 2a). This is a particularly dry time of year so any precipitation that occurs is guaranteed to be considered well above the long-term average. For the 2010 Water-Year that began on 1 October 2009, Arizona, southern New Mexico, central Montana, the Olympics (WA), and eastern Wyoming have the largest surpluses while much of northern Idaho, Upper Snake River, Northern Wasatch (UT), central Nevada, and southern Oregon have the greatest deficits. By this late period in the Water Year, significant changes to the overall percentages on week to week bases become very unusual (Fig. 2b).

WESTERN DROUGHT STATUS

Colorado, Northern Great Plains: Continued wet weather across the northern tier of the CONUS prompted some relief of dry conditions across South Dakota. The removal of small areas of D1 and D0 were related to rains of 0.5 inch to 2.6 inches across northeastern South Dakota. Additional improvements were indicated across eastern Montana where precipitation amounts of 150 - 200 percent of normal for the month to date have erased a short-lived dry spell.

Farther south and west, a developing area of dry conditions was present across northwestern Nebraska. Damage to agriculture from grasshopper swarms and abnormally dry conditions have made attribution more difficult but soil moisture values here were consistent with the stress levels in the crops. Across northern Colorado and southern Wyoming, short duration dry conditions were reflected in the short-term objective drought blends and SPI3. Additionally, NLDAS 1-meter soil moisture values were lower than total column soil moisture, further indicated the short-lived nature of the dryness in this region. D0 conditions were expanded slightly across this region. Author: Matthew Rosencrans, NOAA/NWS/NCEP/CPC.

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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.

RANGELAND CONDITIONS

The maps in Figure 6 show the general (inferred) soil conditions by state over the past one and four weeks.

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/> and <http://drought.gov>.

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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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SNOTEL (solid) 7-Day Average Temperature Anomaly (Degrees F) Sep 16, 2010

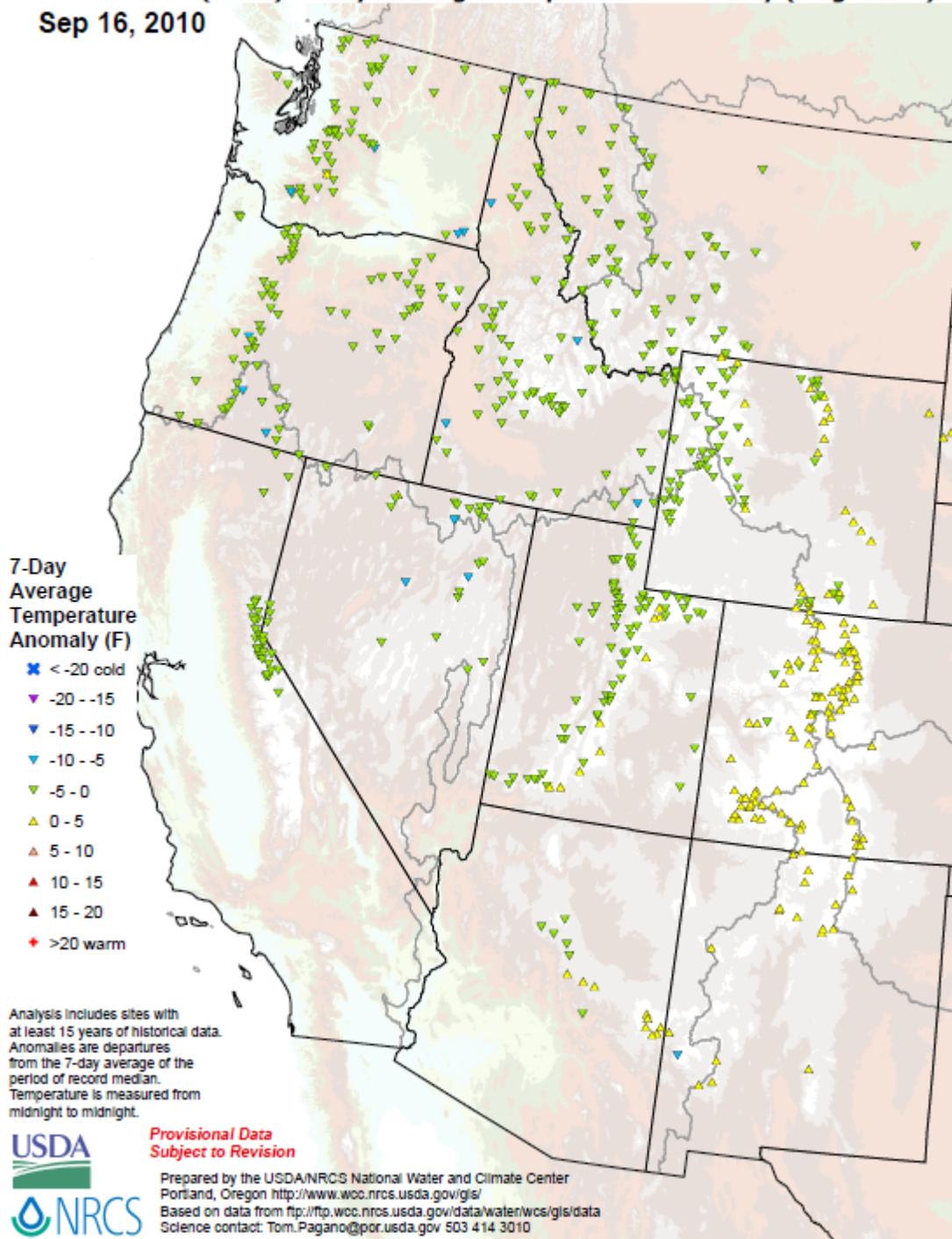
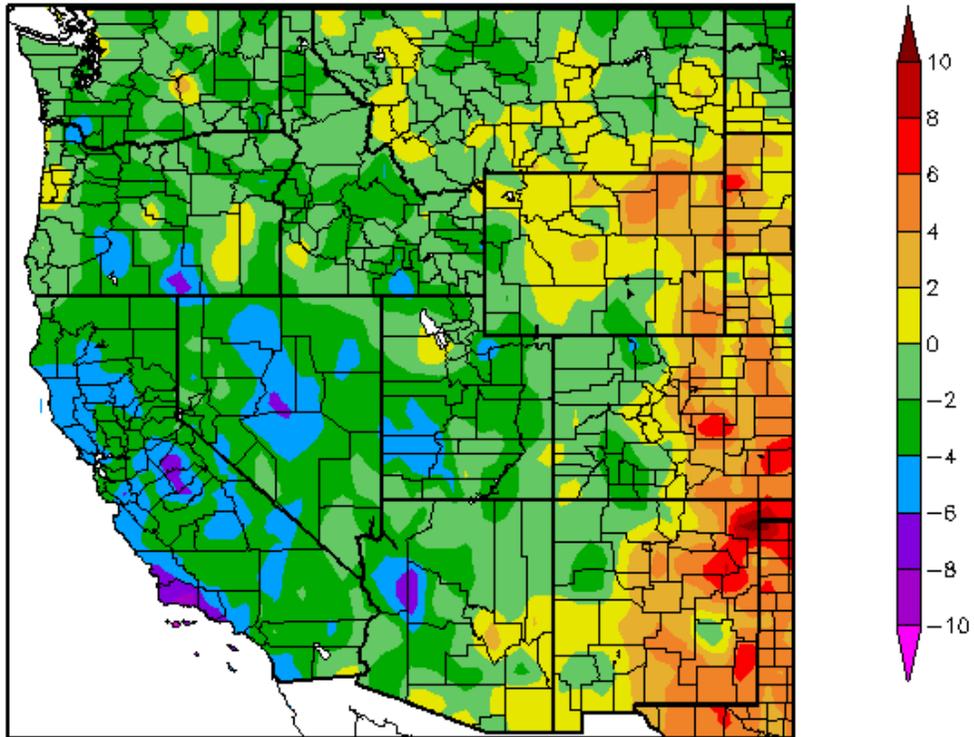


Fig. 1: SNOTEL 7-day average temperature departure from normal map shows temperatures within $\pm 5^\circ\text{F}$ of normal with the warmest temperatures over the Central Rockies and the coolest generally west of the Continental Divide.

Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

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Departure from Normal Temperature (F)
9/9/2010 – 9/15/2010



Generated 9/16/2010 at HPRCC using provisional data.

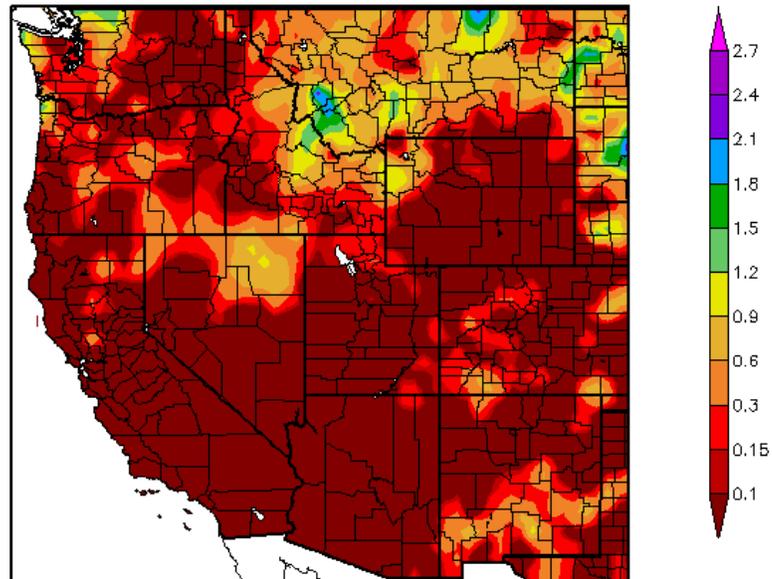
Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts northeast New Mexico (>+10°F) and the greatest negative departures occurred over the south coast of California (<-8°F).

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

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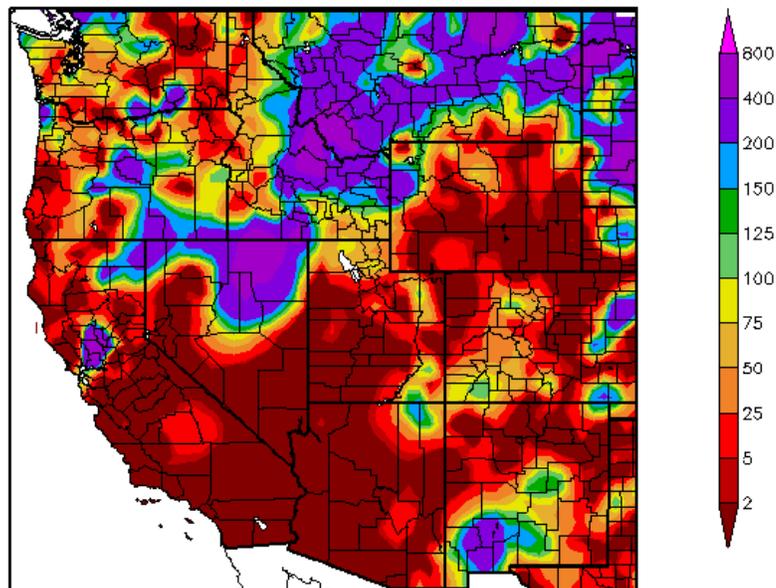
Precipitation (in)
9/9/2010 - 9/15/2010



Generated 9/16/2010 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
9/9/2010 - 9/15/2010



Generated 9/16/2010 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2 and 2a: ACIS 7-day average precipitation amounts for the period ending 15 September shows the bulk of the heaviest precipitation confined to the Bitterroot Range in Montana (Fig. 2). In terms of percent of normal, unusually heavy precipitation fell from the Great Basin in Nevada to Montana with isolated pockets over southwest New Mexico and the western High Plains (Fig. 2a). This is a particularly dry time of year so any precipitation that occurs is guaranteed to be considered well above the long-term average. Ref: <http://www.hprcc.unl.edu/maps/current/>

U.S. Drought Monitor

September 14, 2010
Valid 8 a.m. EDT

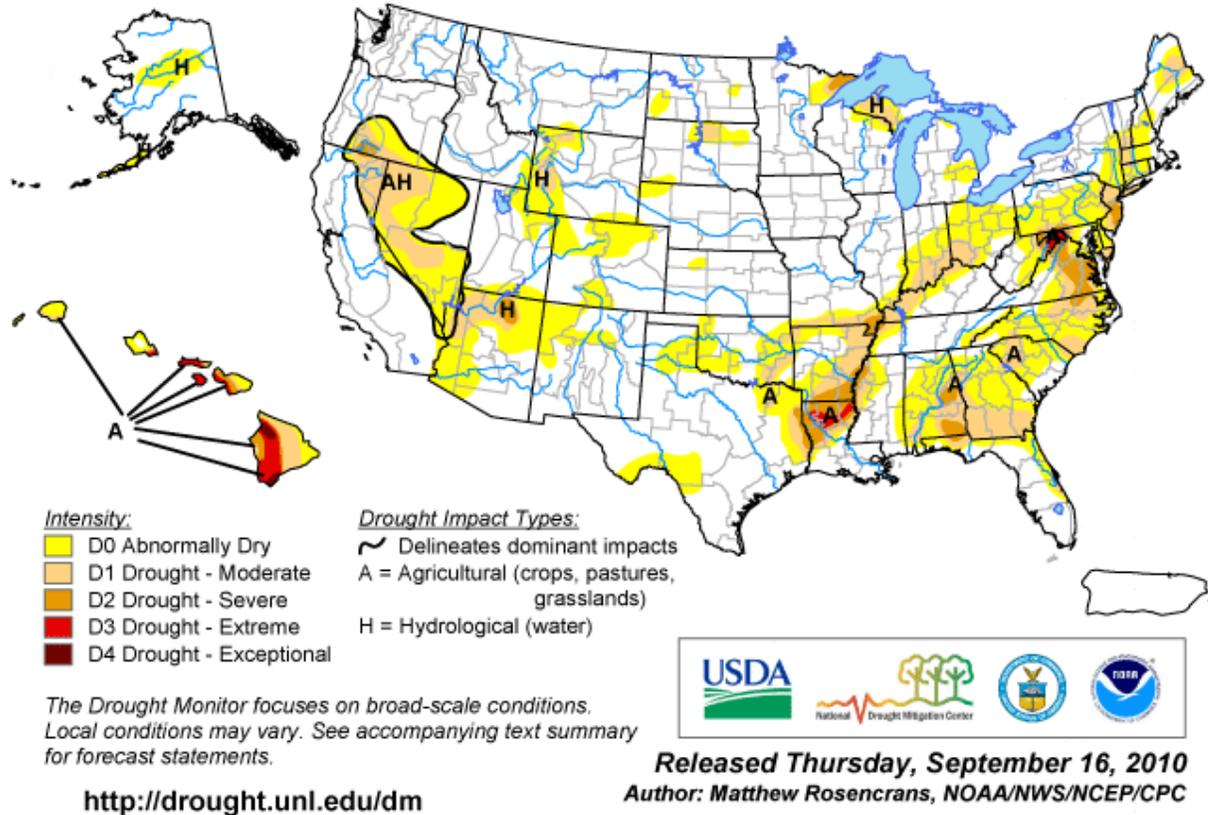


Fig. 3: Current Drought Monitor weekly summary. Hawaii is only state that has a D4 drought level. D3 levels dominate northern Louisiana. Ref: <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor

West

September 14, 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	6.9	0.6	0.0	0.0
Last Week (09/07/2010 map)	73.5	26.5	6.3	0.6	0.0	0.0
3 Months Ago (06/22/2010 map)	66.5	33.5	11.9	1.0	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 (09/15/2009 map)	49.4	50.6	23.7	7.7	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>



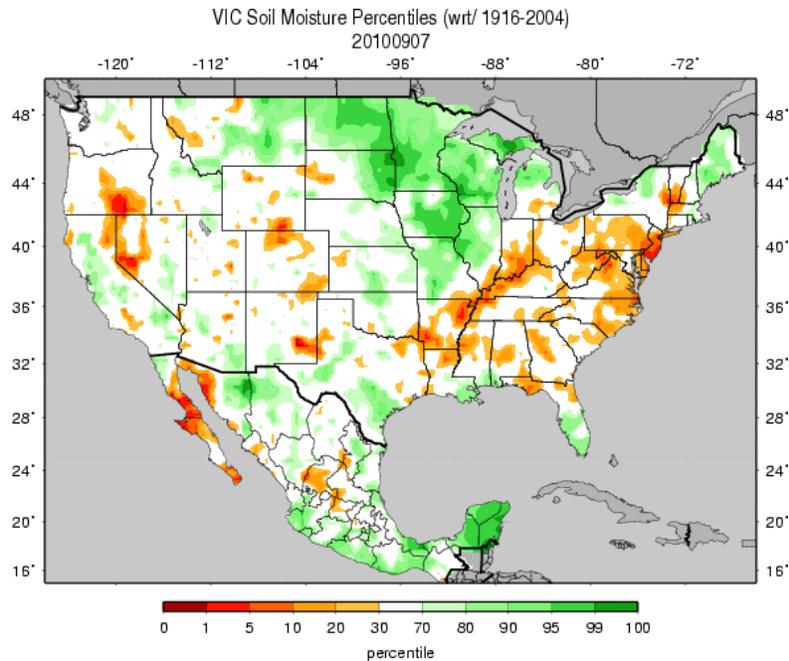
Released Thursday, September 16, 2010

Author: M. Rosencrans, CPC/NOAA

Fig. 3a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was little change this week.

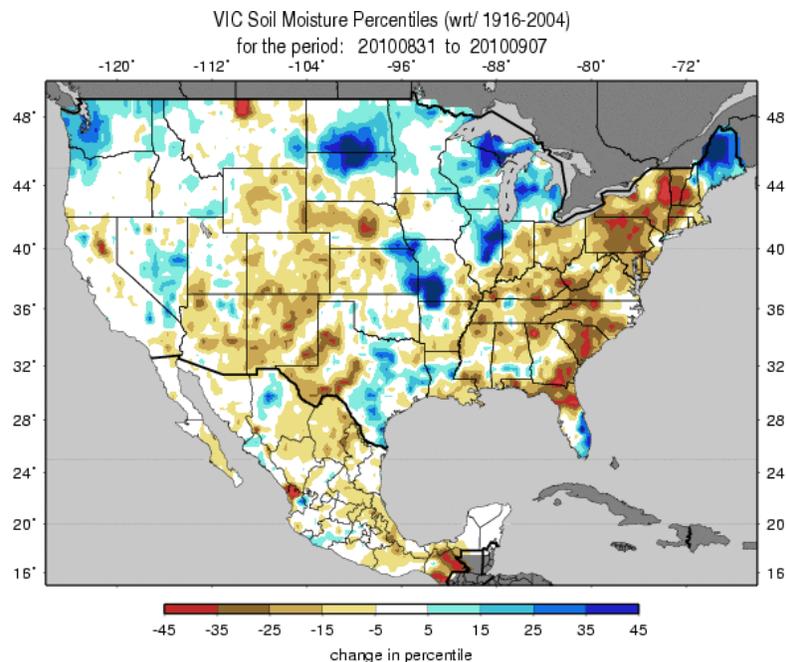
Ref: http://www.drought.unl.edu/dm/DM_west.htm

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Figs. 4a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 7 September. Excessive moisture dominates over the western Great Lakes. Dry soils are scattered across the Upper Great Basin and much of the eastern third of the nation.

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

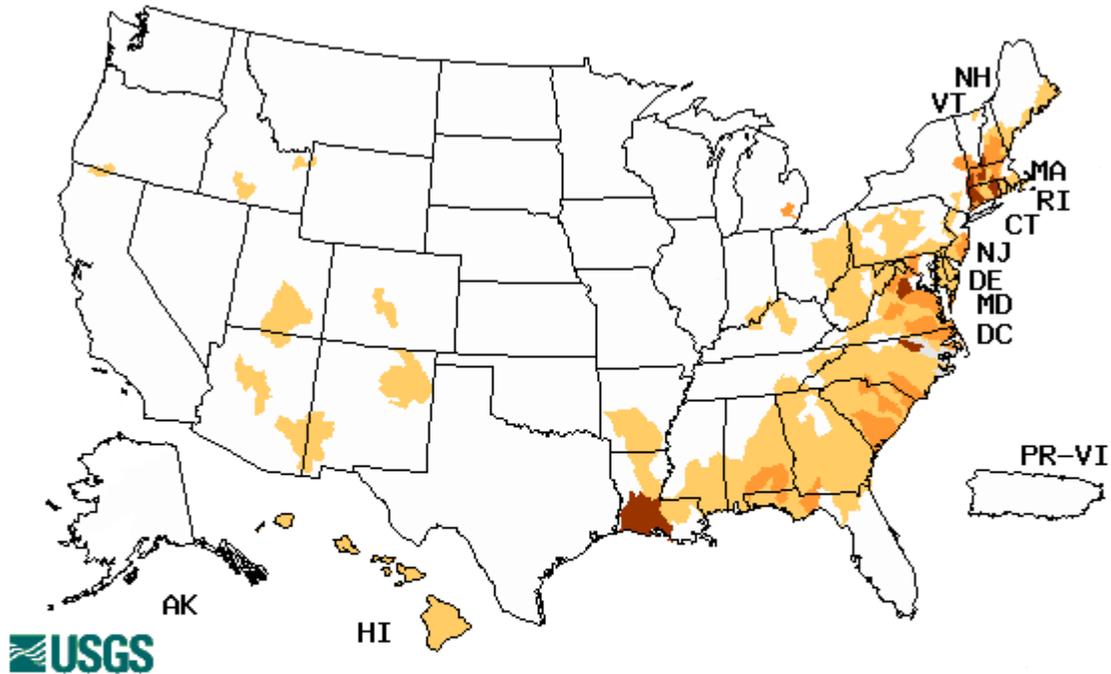


Figs. 4b: Soil Moisture change in percentile based on 1916-2004 climatology for last week shows significant moisture over Maine, Upper Mid-West, the Northern High Plains, and Arkansas. Some excessive drying is noted over the much of the eastern third of the nation.

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, September 15, 2010



Choose a data retrieval option and select a state on the map

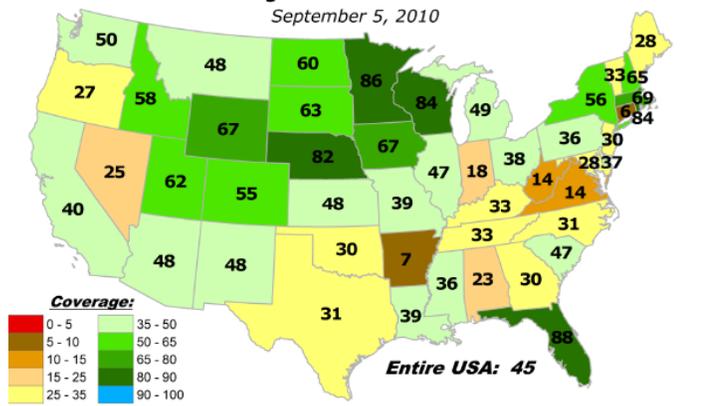
State DroughtWatch, State map

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	

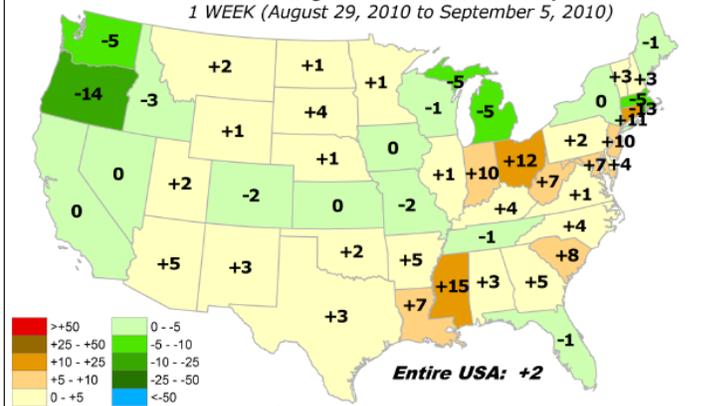
Fig. 5: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Dryness is increasing over the East Coast States. Southern Louisiana and parts of New England have the largest stream deficits flow in the U.S. this week. Ref: <http://waterwatch.usgs.gov/?m=dryw&r>

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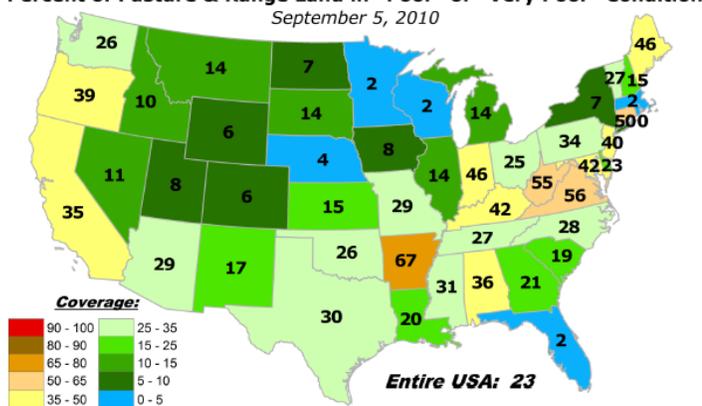
Percent of Pasture & Range Land in "Good" or "Excellent" Condition
September 5, 2010



CHANGE in % of Pasture and Range Lands in "Poor" or "Very Poor" Condition
1 WEEK (August 29, 2010 to September 5, 2010)



Percent of Pasture & Range Land in "Poor" or "Very Poor" Condition
September 5, 2010



CHANGE in % of Pasture and Range Lands in "Poor" or "Very Poor" Condition
4 WEEKS (August 8, 2010 to September 5, 2010)

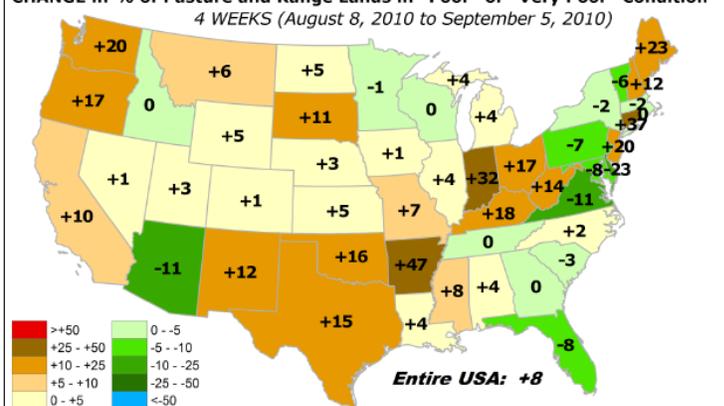


Fig. 6: These maps show the overall pasture and rangeland conditions by state. Note that Nevada has the least amount of good or excellent condition (upper left panel) in the West and during the previous week (upper right panel); conditions improved the most in Oregon.

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/pasture-range-statewide-conditions.pdf>

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National Drought Summary -- September 14, 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/>.

During the previous 7 days, rainfall production was dominated by Tropical Storm Hermine and cold fronts moving across the northern tier of the contiguous U.S. The southeast U.S. continued to be bypassed by most of the significant rains from Tropical Storm Hermine, which initially spread northward from central Texas before being picked up by a cold front and spread across from southeast Missouri to the southern Appalachians. The areas from the Northern Great Plains to New England received some beneficial rainfall with more vigorous frontal activity, as expected during the transition to autumn. Late season monsoon activity was shifted eastward, favoring eastern Arizona and New Mexico, contributing to another dry period across western Arizona and southern Nevada.

Ohio Valley, Mid-Atlantic and Northeast: Rainfall in the drought affected regions across this area was light, less than 1.0 inch reported in the Multi-sensor Precipitation Estimate graphic provided by the USDA. Some states have instituted burn bans in areas renowned for great outdoor recreation. Given the lack of rainfall over the past week and the ongoing precipitation deficits, the area of severe drought across New Jersey remained unchanged with precipitation amounts up to 1.0 inch minimizing the need to expand this area northward. The area of moderate drought (D1) was expanded northward to reflect the deteriorating conditions across eastern Pennsylvania and Northern New Jersey. Standardized Precipitation Index values over the past 3 months (SPI3) indicate conditions on par with extreme drought (D2) across southern Vermont, eastern New York, and Northern Connecticut, while streamflow values are not quite as dire across the same region, so an additional expansion of severe drought was included as reflection of the continued dry warm season.

Abnormally dry conditions (D0) expanded across central Pennsylvania as well. Streamflows are ranging in the 10-30th percentile across most of Pennsylvania combined with SPI3 and SPI6 measurements to prompt this expansion. Some spotty relief was noted among the most recent 9-, 6- and 3-month historical periods, so no further intensification was warranted, but this area should be monitored for future water storage issues.

Continued dry conditions along the Ohio River Valley also motivated the expansion of D1 conditions from the middle Mississippi valley to southwestern Ohio. Streamflows indicated extreme drought while NLDAS (North American Land Data Assimilation System) soil moisture values showed a more patchwork nature to the dry conditions.

Southeast: With the exception of some areas across the southern Appalachians, most of the drought areas from Virginia to Florida and along the gulf Coast received little rainfall. Across the southern Appalachians, precipitation amounts ranging from 0.5 to 2.0 inches prompted the reduction in coverage of D0 and D1 conditions across eastern Tennessee and extreme western

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North Carolina. Abnormally dry conditions (D0) were introduced across the central portions the Carolinas.

Conditions across Alabama and Georgia continued to deteriorate as rainfall this week was limited to less than 1.5 inches along the I-16 and I-75 corridors in GA. Severe drought conditions were introduced into southeastern Alabama and extreme northern Florida, based on NLDAS soil moisture values, low stream flows (5-10 percentile), and numerous agricultural impacts. Reports from agricultural extension personnel, relayed through the National Weather Service indicated that the peanut crops in this region are in danger of being left in the ground, despite being nearly full grown, due to the dry soil damaging the harvesting equipment. Additionally, oak trees (20 to 30 years old) are beginning to die, from the lack of water while parallels are being made to the 1980 dry spell.

Farther south and east, moderate drought is also indicated as far south as St. Lucie County in Florida. Vero Beach reported its fourth driest May-September period on record while 90-day precipitation deficits across eastern Florida were near 12 inches in many places.

Southern Great Plains and Lower Mississippi River Valley: Tropical Storm Hermine brought copious amounts of rainfall to many portions of central Texas, Oklahoma, northwestern Arkansas and southern Missouri. Reported precipitation amounts across northern Texas and southern Oklahoma ranged from 1.0 inch to over 12.0 inches. These rains prompted a large improvement of the drought conditions across this region with the area of severe drought in northeastern Texas being removed. Additional improvements were made in southwestern Texas, which was on the western fringes of Tropical Storm Hermine. A bit further north and west abnormally dry conditions expanded across the Texas panhandle and western Oklahoma.

Most of the rains from Hermine moved around the core of the extreme drought area across northern Louisiana and southern Arkansas. Severe drought expanded northward as the result of another relatively warm, dry week across southern Arkansas. Streamflows across this region are indicative of severe drought.

Colorado, Northern Great Plains: Continued wet weather across the northern tier of the CONUS prompted some relief of dry conditions across South Dakota. The removal of small areas of D1 and D0 were related to rains of 0.5 inch to 2.6 inches across northeastern South Dakota. Additional improvements were indicated across eastern Montana where precipitation amounts of 150 - 200 percent of normal for the month to date have erased a short-lived dry spell.

Farther south and west, a developing area of dry conditions was present across northwestern Nebraska. Damage to agriculture from grasshopper swarms and abnormally dry conditions have made attribution more difficult but soil moisture values here were consistent with the stress levels in the crops. Across northern Colorado and southern Wyoming, short duration dry conditions were reflected in the short-term objective drought blends and SPI3. Additionally, NLDAS 1-meter soil moisture values were lower than total column soil moisture, further indicated the short-lived nature of the dryness in this region. D0 conditions were expanded slightly across this region.

Hawaii and Alaska: No changes were made to the drought depiction in Hawaii. Reports from the field are reflective of conditions on the drought monitor. Light rainfall fell mostly outside of

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the abnormally dry area across the interior basin, so no change was made to the depiction of drought across Alaska.

Looking Ahead: Predictions from the Hydrometeorological Prediction Center call for rain across the Pacific Northwest and from the central Great Plains to the Great Lakes to the Northeast. Additional rains are expected across extreme southern Texas and Florida. Into next week, dry conditions are expected across the four corners region and from the lower Mississippi River Valley to the Mid-Atlantic under the influence of an upper-level ridge. Wetter than normal conditions are expected along the U.S.-Canadian border from the Pacific Northwest to the Great Lakes as moisture is expected to flow northward from the Gulf of Mexico, around the upper-level ridge and contribute to rainfall as it interacts with multiple frontal boundaries.

Author: [Matthew Rosencrans, 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 September 15, 2010