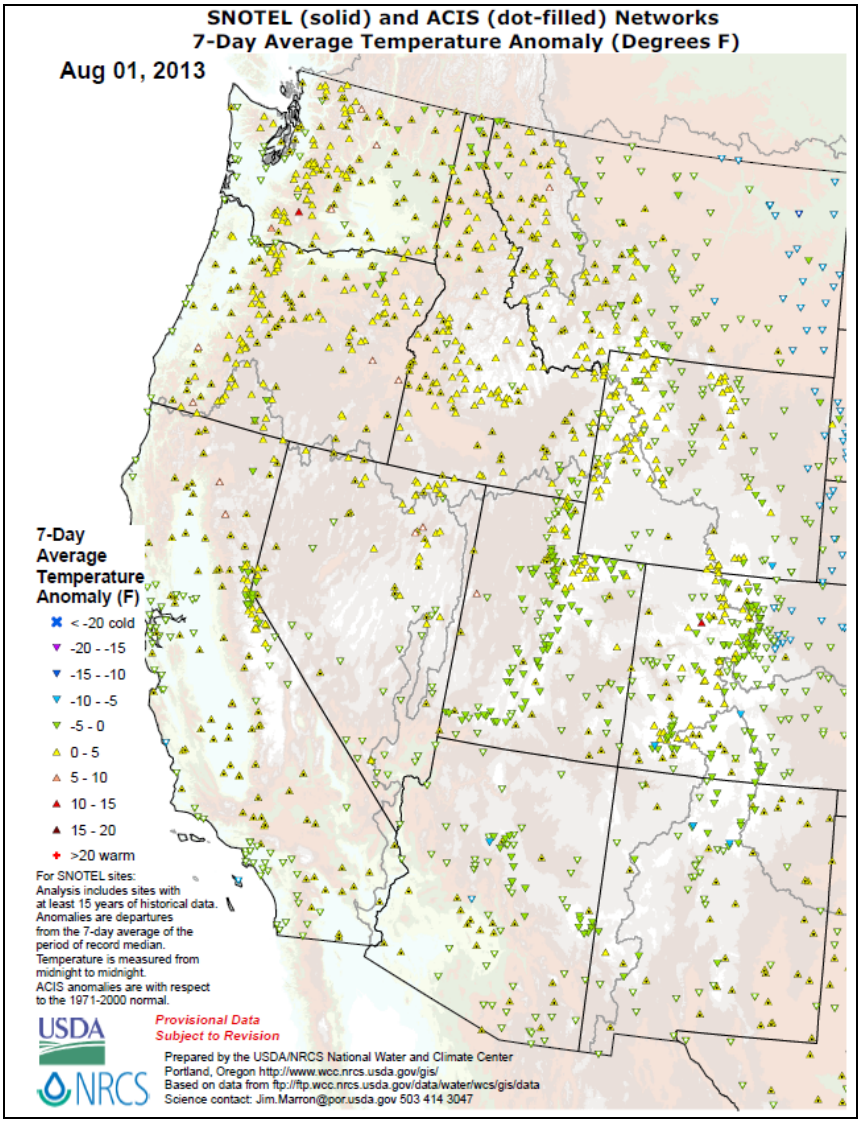
United States Department of Agriculture

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

Weekly Snowpack / Drought Monitor Update

August 1, 2013

Temperature

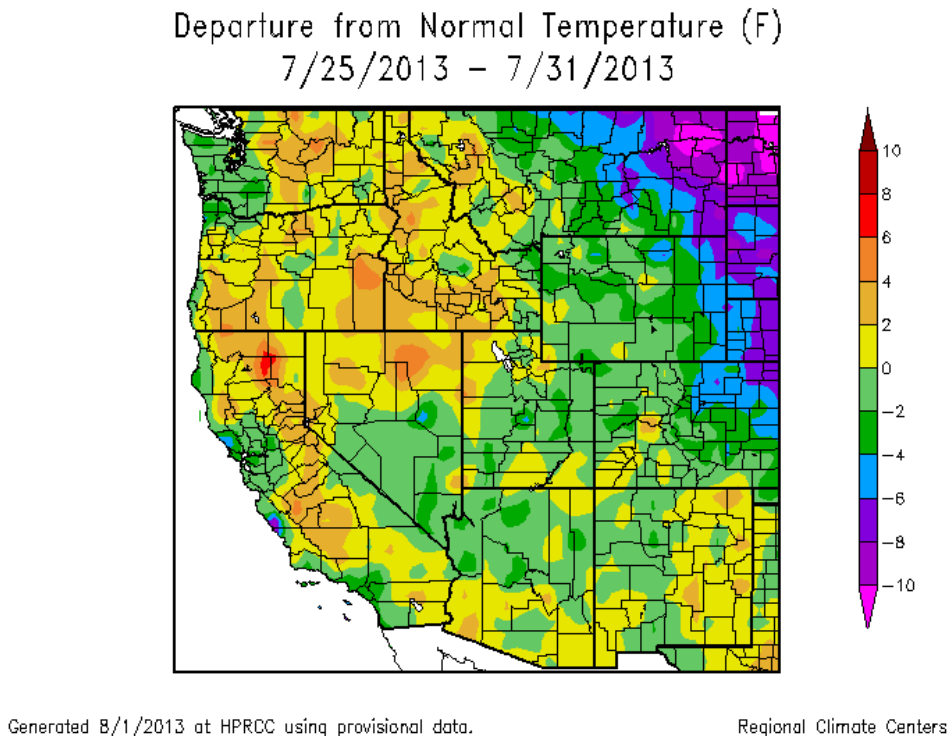


SNOTEL and ACIS 7-day temperature anomaly ending August 1 reveals temperatures within ±5°F across much of the western states. Cooler temperature departures (up to 10°F) dominated the western high plains.

ACIS 7-day average temperature anomalies, ending July 31, show the greatest positive temperature departures concentrated over the Interior West with the highest values over northeast California (>+8°F). The coolest departures occurred over northeastern Montana. (<-10°F).

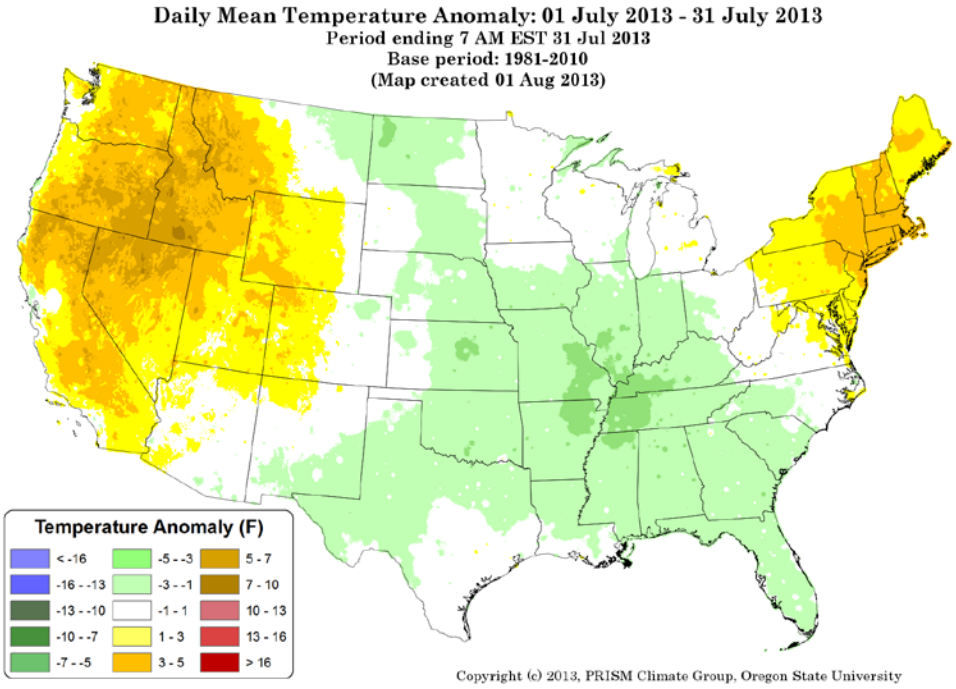
This map currently does not use SNOTEL data, but is expected to later this summer.

For more figures, see the Western Water Assessment's Intermountain West Climate Dashboard. See the Westwide Drought Tracker for more maps.



This preliminary PRISM temperature map, updated daily, will be available to the public by **September 30**. →

The map contains all available network data, including SNOTEL data, and will be updated periodically as additional data become available and are quality controlled.



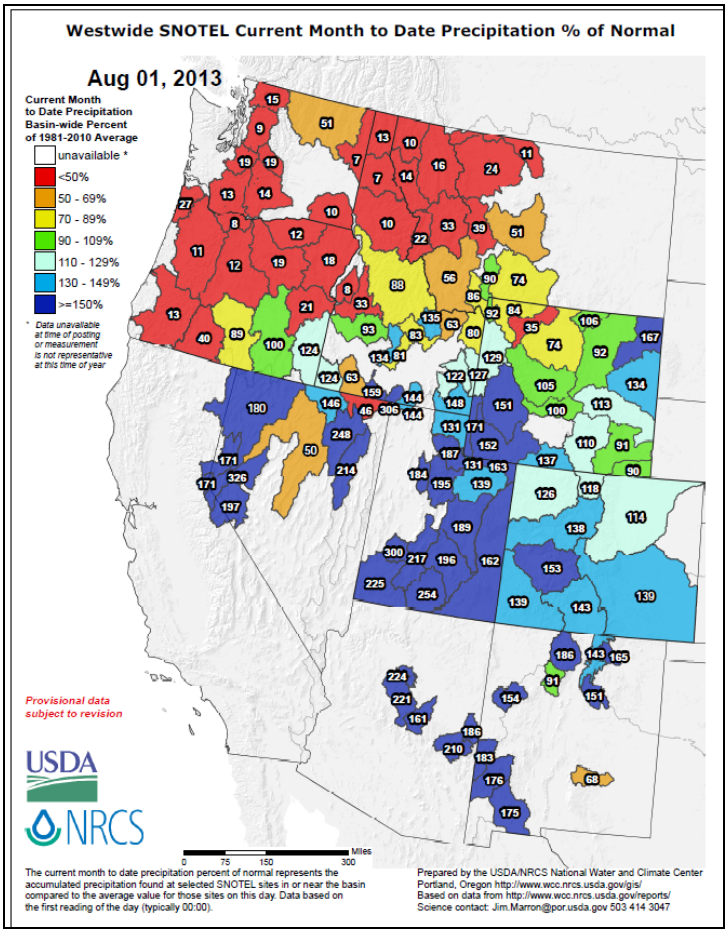
Average temperatures for July have been considerably warmer than normal across the western third of the U.S. and New England. The southern plains, mid-Mississippi River Valley, and Southeast have been somewhat cooler than normal. This pattern remains unchanged from the previous weekly report.

Precipitation

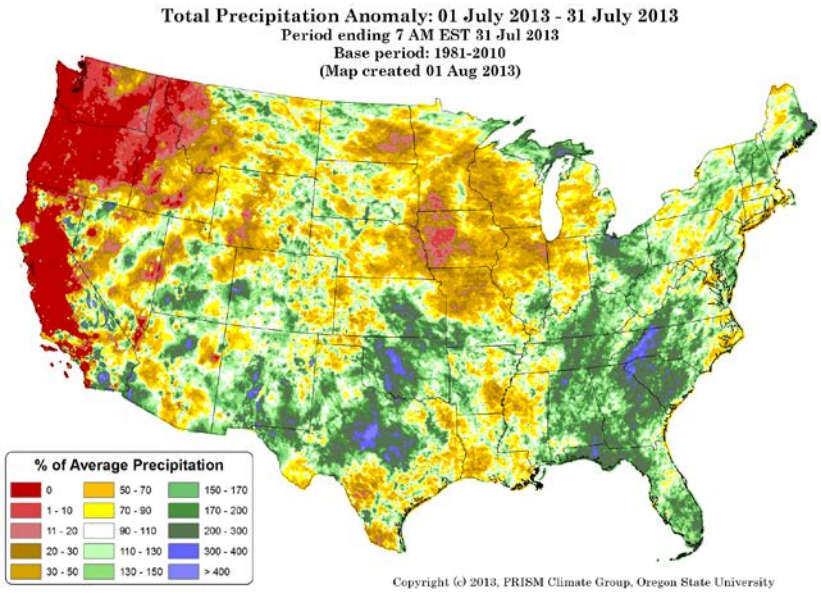
SNOTEL month to date precipitation percent of normal pattern shows that July was considerably wetter over the southern tier of the West. Wyoming also had its fair share of moisture. The Pacific NW, typically dry during the summer, lived up to its climatological average. Thus far, the Southwest Monsoon has provided needed rains over parts of the Four Corner States.

Seattle closes out July as driest since 1960

Note: On August 2, this map will reflect August percentages.



Click images for enlarged version



Total precipitation for July shows a rainfall pattern that has favored the Southwest (due to the seasonal monsoon), the southern-central plains, and especially the southeastern states. Drier conditions dominate the northeastern plains with extreme lack of moisture over much of the west coast states.

*<--- This preliminary PRISM precipitation map will be available to the public by **September 30**. It contains all available network data, including SNOTEL data, and will be updated periodically as additional data become available and are quality controlled.*

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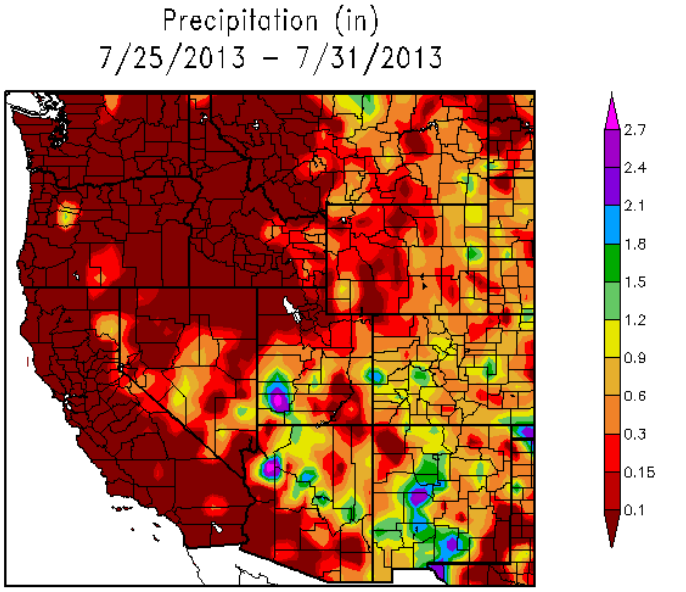
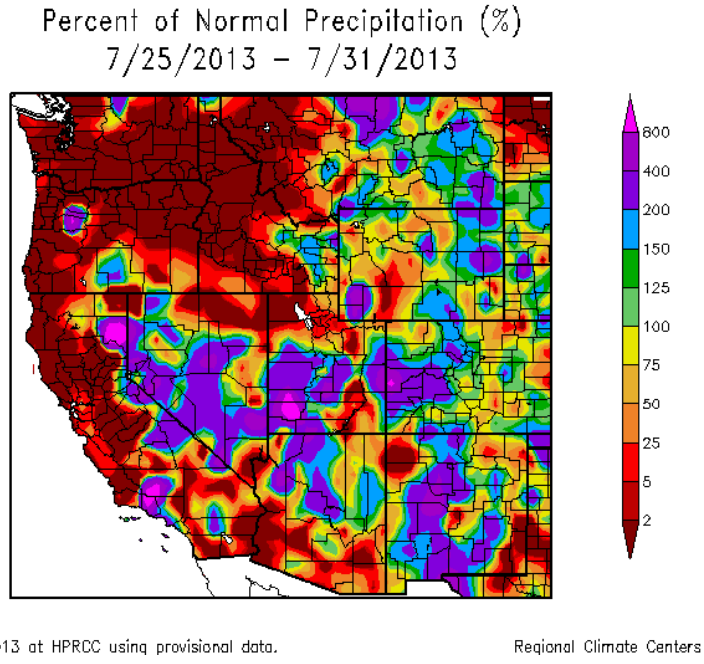
ACIS 7-day average precipitation amounts for the period ending July 31 show an active monsoon over parts of Arizona, New Mexico, southern Utah, and Colorado. Other than isolated thunderstorms, typical dry conditions prevailed this week across the interior West and Northwest. An isolated thunderstorm occurred yesterday afternoon south of Mt. Hood, OR.

This map currently does not use SNOTEL data, but is expected to later this summer.



In this map, the impact of the Southwest Monsoon is apparent over much of the southern tier states of the West. Isolated thunderstorms that occur in usually dry locales reflect hot spots (i.e., very high percent of normal) as noted over the Pacific Northwest.

This map currently does not use SNOTEL data, but is expected to later this summer.

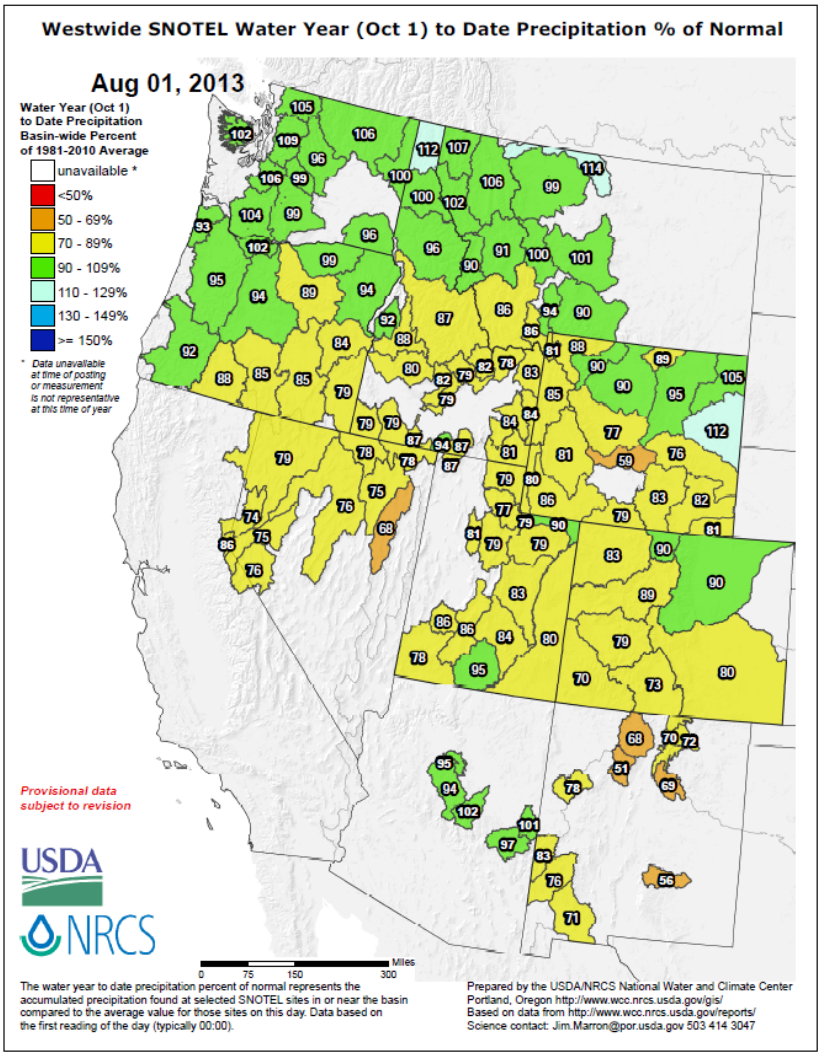


For the 2013 Water Year that began on October 1, 2012, the pattern continues to resemble La Niña (i.e., wetter northern tier).

The impact of the Southwest Monsoon is apparent over Arizona, with near normal values. Despite good July rains over New Mexico, the precipitation deficit from earlier this year has still not improved very much.

For the remainder of this water year, values should not change significantly from this depiction.

For additional information, daily reports by SNOTEL site are available here.



Click image for larger version

Weather and Drought Summary

Western Drought Summary – July 30, 2013

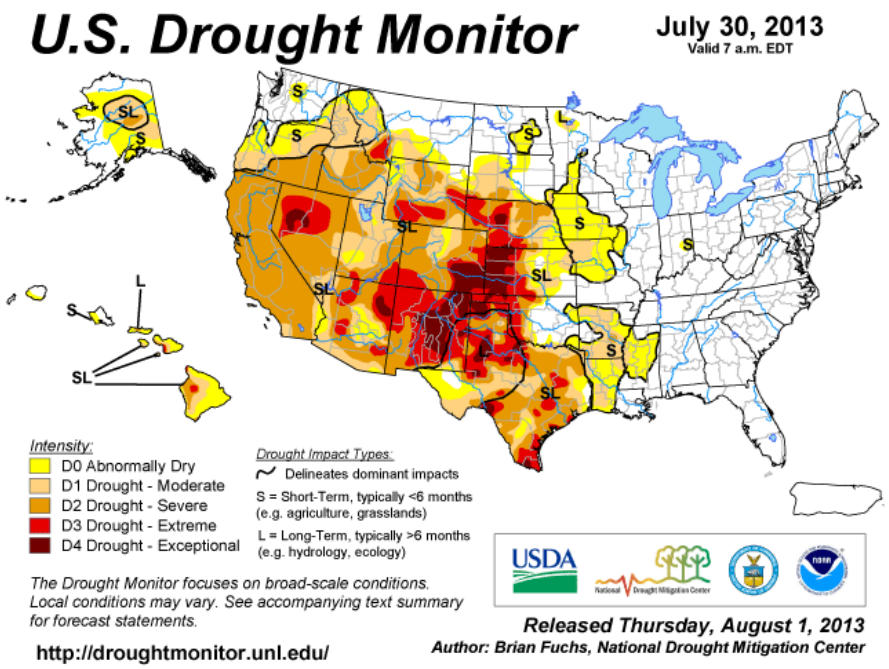
The following **Weather and Drought Summary** is provided by this week's NDMC Author: Brian Fuchs, National Drought Mitigation Center.

Weather Summary: **"**Cooler than normal conditions along with a wet week allowed for improvements in the drought status over several central Plains states. The seasonal monsoon continues to be active in the southwest, but many of the rain events have been spotty. Rain continues to fall over most of the eastern United States, with only a few areas of drought east of the Missouri River.**"**

The West: "The active monsoon season brought beneficial moisture to many areas of Utah, Colorado, Arizona, and New Mexico. Improvements were made this week to the D2 region of southwest Arizona and to the D1 regions in central Arizona. In southern New Mexico, the D3 and D4 conditions were improved in the southern portions of the state, and some D4 improvement also took place in southeast New Mexico. In Colorado, D4 was improved in the southeast portion of the state, D3 was improved in the south central, D2 was improved in the northeast and D1 improved in the north central. In the east central, D3 expanded this week to the west as local impacts of the dryness worsened. Some

degradation occurred in Wyoming this week as the short-term dryness has set in over the last few months. In central Wyoming, D2 was expanded to the south and in southwest portions of the state; D3 was expanded to the west. In extreme northeast Utah, D1 was degraded to D2 this week. Dryness in Oregon allowed for several areas to show expansion this week. In the northeast portion of the state, D1 was expanded to the south and west while in eastern portions of the state, D0 was expanded to the north."

A comprehensive narrative describing drought conditions for the nation can be found toward the end of this document. For drought impacts definitions for the figures below, click here.



Current Drought Monitor weekly summary. The exceptional D4 levels of drought are scattered across the western Corn Belt of the Plains into southeastern Colorado, eastern New Mexico, and north-central Texas. A small D4 area has formed over northwestern Nevada. For more drought news, see Drought Impact Reporter.

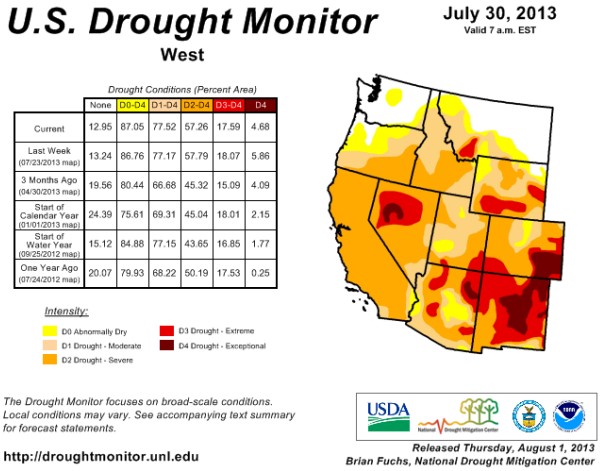
The latest drought indicator blend and component percentiles spreadsheet is a great resource for climate division drought statistics. This link is for the latest Drought Outlook (forecast). See climatological rankings.

National Drought Related News (•):

- Pork trending up, beef trending down on their corn market impact - July 25, **U.S**
- Record wheat price reached in 2012-13 season - July 21, **U.S**.
- Dry area expands in western U.S. Corn Belt -Drought Monitor - July 25, **U.S**.

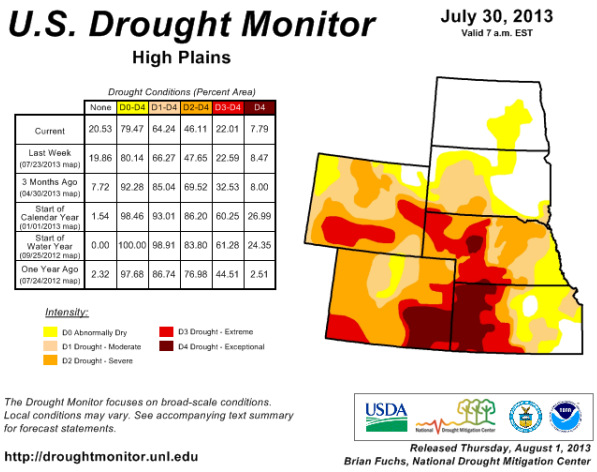
- ✓ **Drought Management Resources:**
- ✓ Drought Monitor for the Western States
- ✓ Drought Impact Reporter for New Mexico
- ✓ California Data Exchange Center & Flood Management
- ✓ NIDIS Upper Colorado River Regional Drought Earlier Warning System

- **News Stories:**
- Arizona monsoon storms ease wildfire risk - July 21, **Arizona**
- Burn ban put in place in parched Anchorage - July 23, **Anchorage, Alaska**
- Intense Mountain Fire fueled by drought, thick forests - July 20, **Riverside County in Southern California**
- BLM to remove 1,300 mustangs in West this summer - July 21, **Western U.S**.
- Fish kill at reservoir tied to drought - July 21, **Southeast of Salt Lake City, Utah**
- Government hauls water to horses in drought-ravaged West - July 20, **Lincoln County, Nevada**
- Wyoming prepares for final winter of cloud seeding - July 21, **Wyoming**



Note that there was a slight improvement in D4 conditions this past week due to the SW Monsoon.

- Areas of Central, Southwestern Idaho Are under Severe Drought Designation - July 21, **Idaho**
- Tempers flaring in Colorado over diminished irrigation water - July 21, **Colorado**



Only a slight improvement all categories this past week.

Region with D-4 Exceptional Drought

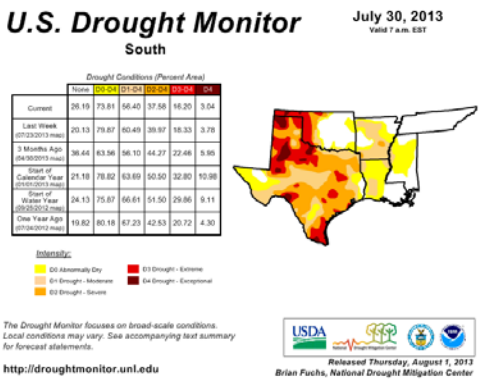
- ✓ Kansas Drought Update.

- Failed corn, sorghum crops reported in Kansas - July 23, **Western Kansas**
- Yearling Cattle in Demand - July 21, **Midwest**
- Study: Irrigation means $11 billion to state economy - July 24, **Nebraska**
- Drought's toll on groundwater is steepest on record - May 9, **Southeastern Nebraska**

Region with D-4 Exceptional Drought

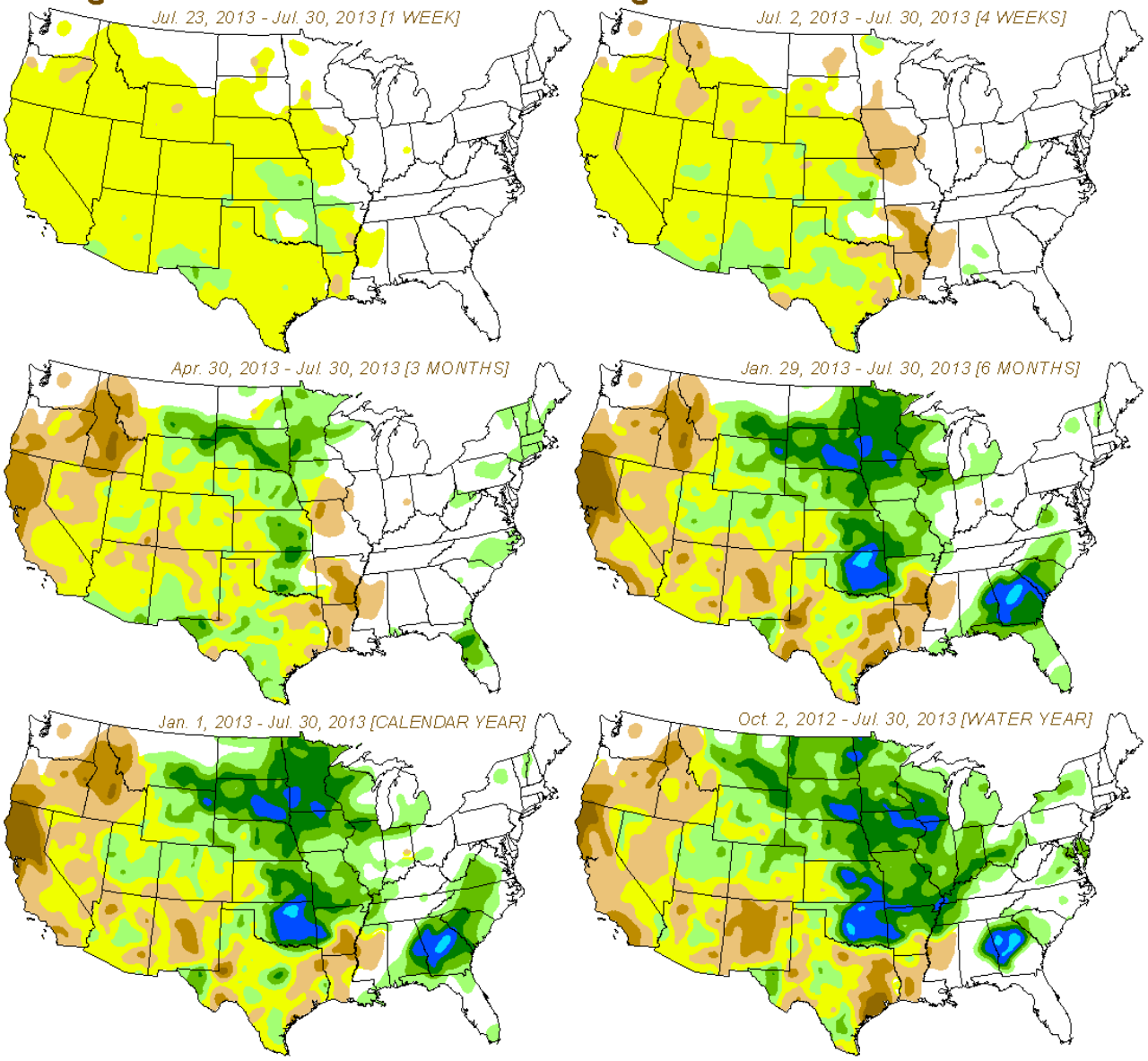
- ✓ Texas Drought Website.
- ✓ Texas Reservoirs.

- 'Multimillion-dollar' rains save crops but barely budge drought - July 25, **Texas**
- As drought worsens, lakes near Austin dry up - July 21, **Central Texas**
- Farmers Look to TCEQ to Restore Water to Dry Crops – July 26



Note some improvement in all D-categories during this past week.

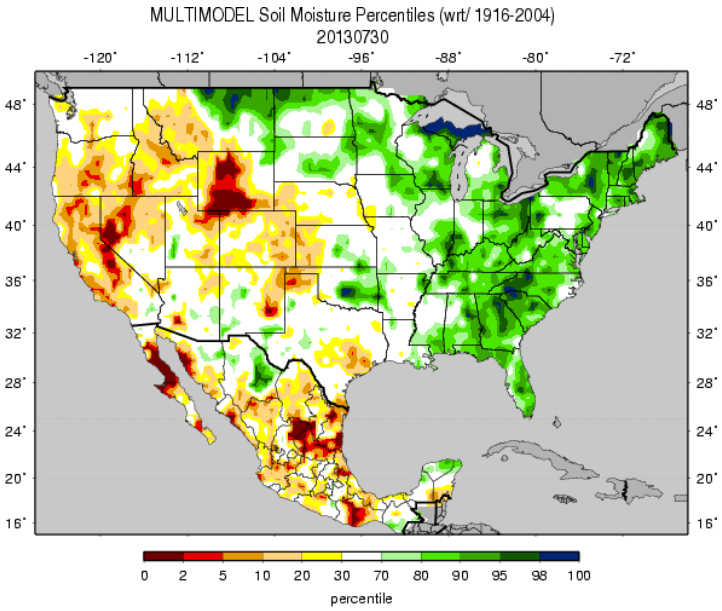
Drought Monitor Classification Changes for Selected Time Periods



These maps depict approximate changes in drought intensity from selected initial times to the current week, with no consideration given to intervening weeks. The change calculations are based on interpolated 4 km grids of the Drought Monitor depiction, and as a result, will be smoother than if based on the published version.

This week's Drought Monitor changes (upper left panel) show some deterioration over Oregon and some improvements over the southern reaches of the Southwest, western Texas, and the central-southern Plains (KS, OK, AR). During the past four weeks, the impact from the Southwest Monsoon is evident (upper right panel). During much of the growing season (middle left), the central and western Great Plains have had significant improvements in drought conditions. The eastern Plains have seen some deterioration.

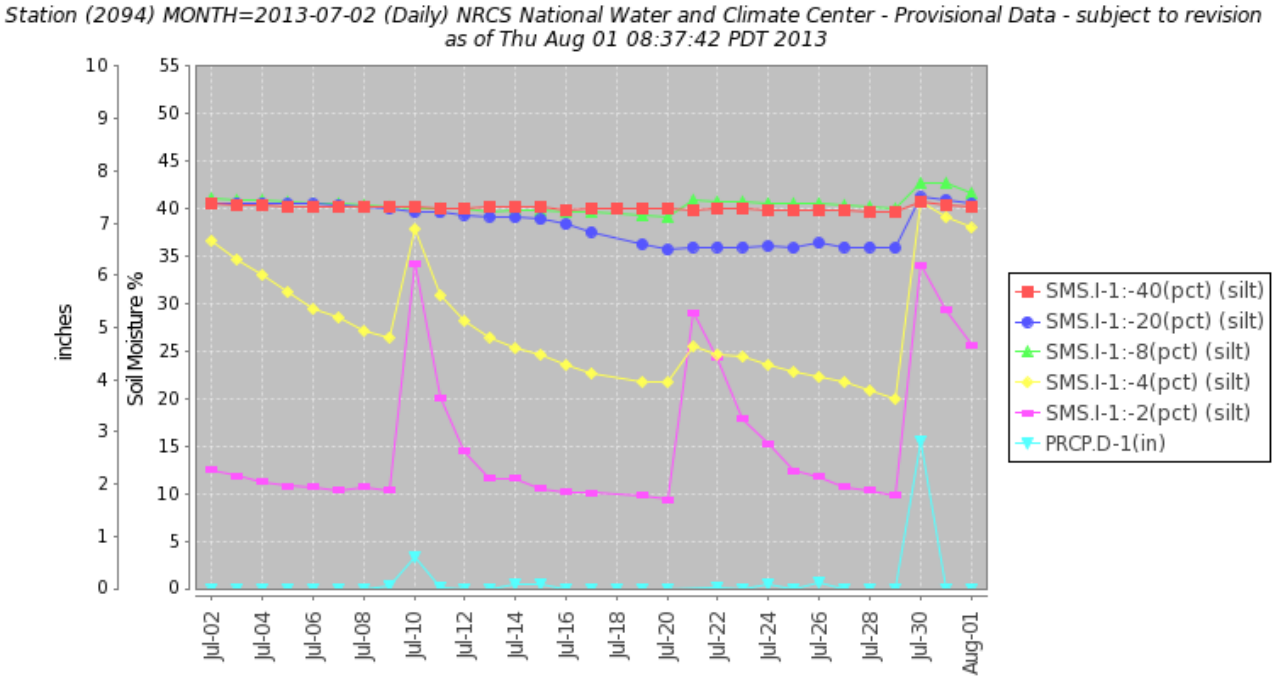
Soil Moisture



Soil moisture ranking in percentile as of July 30 shows considerable dryness over the western Great Basin, eastern California, and Wyoming Rockies. Excess moisture is noted over northern Montana, the upper peninsula of Michigan, and over much of the eastern seaboard. Improvement over Arizona and New Mexico due to the SW Monsoon continues.

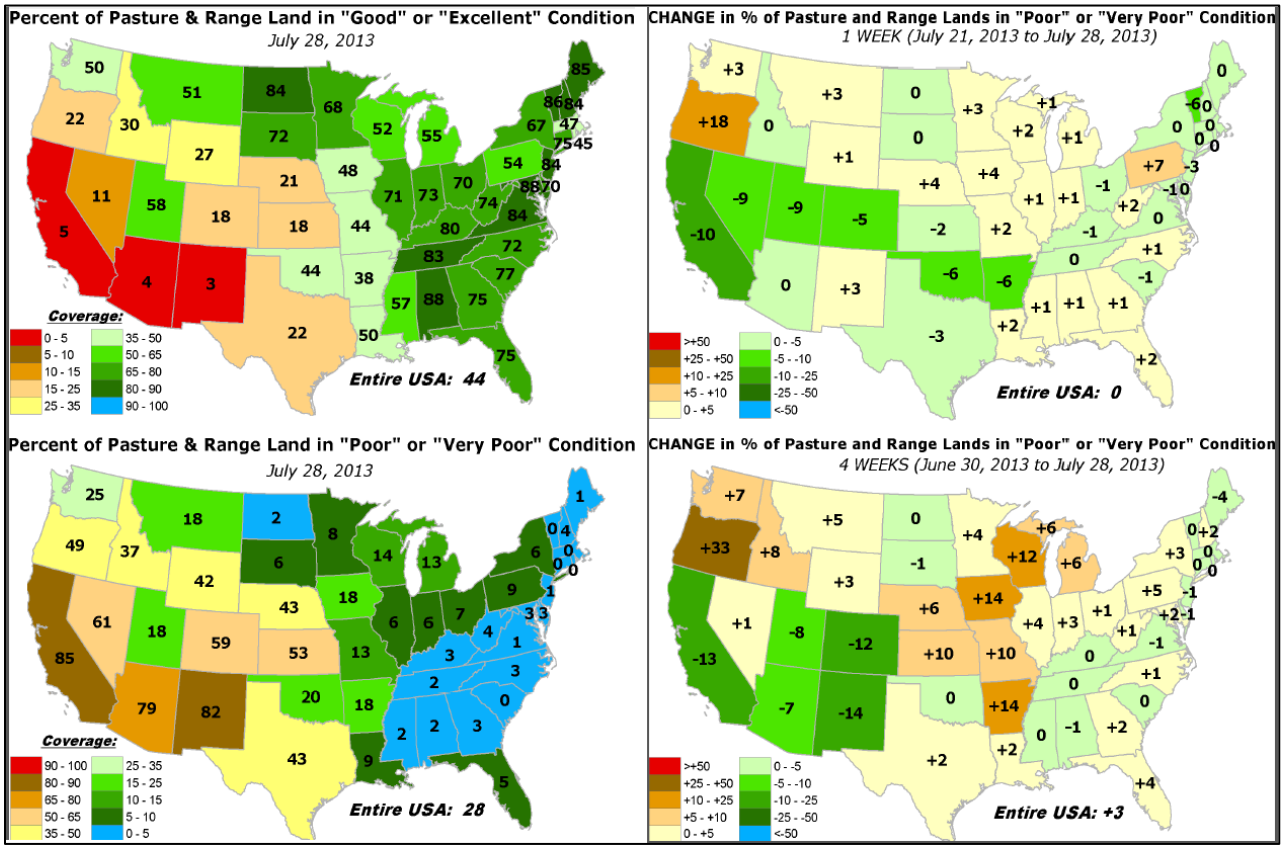
Useful Hydrological Links: *Crop Moisture Index; Palmer Drought Severity Index; Standardized Precipitation Index; Surface Water Supply Index; Weekly supplemental maps, Minnesota Climate Working Group; Experimental High Resolution Drought Trigger Tool;* NLDAS Drought Monitor Soil Moisture

Soil Climate Analysis Network (SCAN)

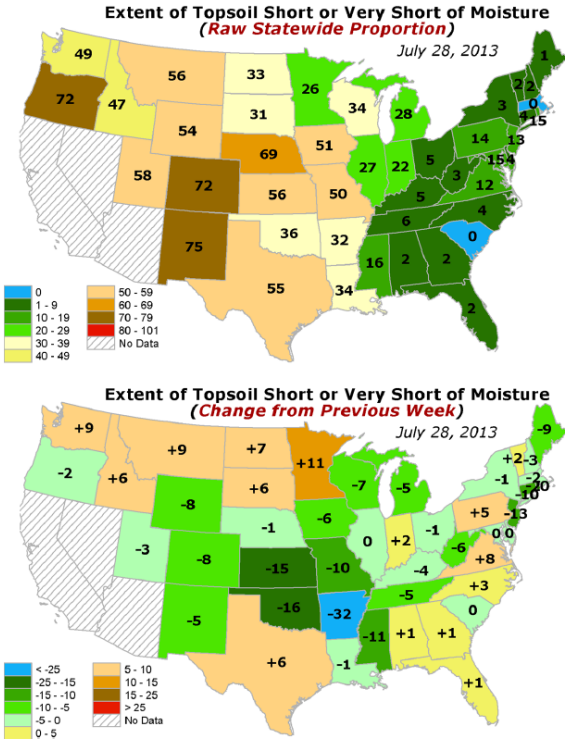


This NRCS resource shows a site over north-central Kansas. Recent heavy rain saturated topsoils, while soils at depth remain saturated.

Useful Agriculture Links: *Vegetation Drought Response Index; Evaporative Stress Index; Vegetation Health Index; NDVI Greenness Map; GRACE-Based Surface Soil Moisture; North American Soil Moisture Network. Monthly Wild Fire Forecast Report.*



Pastures and rangelands continue to suffer over much of the West; especially over California, Arizona, and New Mexico (top left panel). The East has little to no adverse conditions (lower left). California is the big winner for improvement this week while Oregon shows the greatest deterioration (upper right). The impact of the Southwest Monsoon is obvious (lower right).



As of July 28, topsoil moisture continues to be exceptionally poor over Colorado, New Mexico, and Oregon followed closely by Nebraska (top map).

The influence of the Southwest Monsoon from New Mexico to Wyoming is noted by improvements from 5 to 8 percent this past week. Note that heavy rains also boosted the topsoil moisture over Nebraska, Kansas, and Arkansas (lower map).

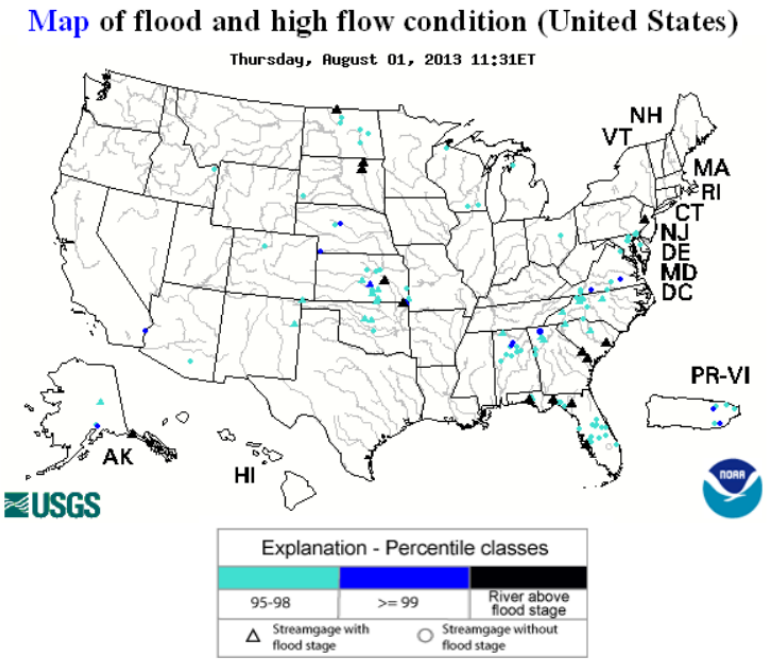
Values for California, Nevada, and Arizona are not available.

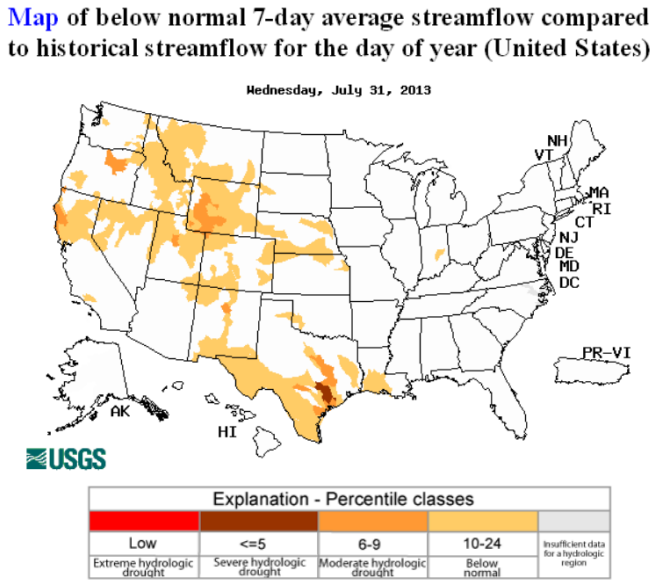
Figures on this page courtesy of Rich Tinker, NOAA

U.S. Historical Streamflow

Flooding persists along the southeast coastal regions (e.g., NC, SC, GA, and n. FL) and the Red River Valley in South Dakota.

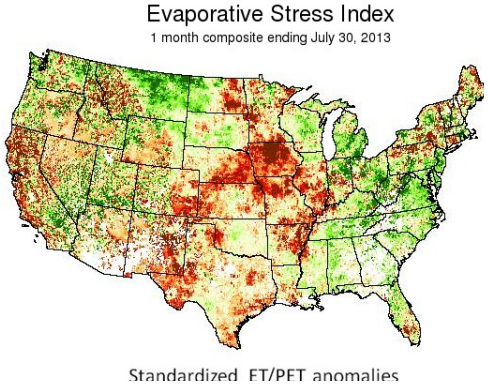
See the USGS National Water Information System Mapper.





Severe conditions exist only over a small area in southeastern Texas.

Despite a moderate monsoon since the start of early July, New Mexico and Arizona vegetation has not experienced significant recovery yet, as shown in this one month composite. →



Complete National Drought Summary

The following complete **Weather and Drought Summary** is provided by this week's NDMC Author: Brian Fuchs, National Drought Mitigation Center

National Drought Summary -- July 30, 2013

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/.

"Cooler than normal conditions along with a wet week allowed for improvements in the drought status over several central Plains states. The seasonal monsoon continues to be active in the southwest, but many of the rain events have been spotty. Rain continues to fall over most of the eastern United States, with only a few areas of drought east of the Missouri River.

The Northeast: A fairly wet week over much of the Northeast, where the most rain was recorded in portions of upper New York and Maine. The shower activity was spotty and while some areas recorded 2-3 inches of rain for the week, others did not see much. No changes were made to the drought status this week.

Mid-Atlantic: As with the Northeast, there are no significant drought issues in the region. Outside of portions of Virginia and West Virginia, precipitation was generally light for the week, but temperatures that were 4-6 degrees Fahrenheit below normal helped to ease any concerns over dryness in the short term.

Southeast: As with much of the eastern United States, most temperatures were 2-6 degrees Fahrenheit below normal for the week. Portions of western North Carolina picked up 2-3 inches of rain, with local amounts even greater. Pockets of intense thunderstorm rain were evident throughout the region, and for the most part, most areas picked up rain outside of central Georgia and into Tennessee. No drought issues were noted in the region this week.

South: Several rain events this week brought significant precipitation to the region in portions of Oklahoma and Arkansas. A full category improvement was made to the drought status in western Arkansas, eastern Oklahoma and central Oklahoma, where the rain amounts generally exceeded 3 inches for the week. In western Oklahoma, the D4 in Cimarron County was improved to D3 as the recent rains have allowed for some green up in the region. Improvements were made in portions of west Texas with the benefit of the active monsoon and in portions of the panhandle where local rains warranted improvements. In Arkansas, a new area of D2 was introduced in the southeast portion of the state that has continued to miss out on the rain. The impact label for much of west Texas was changed to "L" this week as long-term issues are the predominant impacts in the area.

Midwest: Some good rains in portions of western Missouri and eastern Iowa were the highlight of a generally dry week in the region. As with other locations, the cooler July temperatures helped to alleviate many concerns over the dryness. In Iowa, the D0 was expanded farther to the east in the central portion of the state, and some discussions took place about introducing moderate drought this week in western Iowa. Short-term dryness in portions of central Minnesota allowed for the expansion of D0 there this week. The heavy rain that brought relief to portions of Oklahoma and Arkansas also impacted southern Missouri and allowed for the removal of the abnormally dry conditions that previously existed.

The Plains: Significant rain over central to southeast Kansas allowed for a full category improvement this week. A large portion of Kanas recorded more than 4 inches of rain this week with a series of rain events. In portions of northeast Kansas and southeast Nebraska, some areas did pick up 2 or more inches of rain this week. Improvements were held off as these same areas were still below normal for July and have deficits of 4-6 inches over the last 60 days. In western Nebraska, a small area in the panhandle saw D3 improve to D2 this week. In the Dakotas, the short-term dryness continues in many areas. Abnormally dry conditions were expanded in central North Dakota, while D0 and D1 conditions were expanded in southeast South Dakota. The D3 conditions in southwest South Dakota expanded in response to the dryness this week as well.

The West: The active monsoon season brought beneficial moisture to many areas of Utah, Colorado, Arizona, and New Mexico. Improvements were made this week to the D2 region of southwest Arizona and to the D1

regions in central Arizona. In southern New Mexico, the D3 and D4 conditions were improved in the southern portions of the state, and some D4 improvement also took place in southeast New Mexico. In Colorado, D4 was improved in the southeast portion of the state, D3 was improved in the south central, D2 was improved in the northeast and D1 improved in the north central. In the east central, D3 expanded this week to the west as local impacts of the dryness worsened. Some degradation occurred in Wyoming this week as the short-term dryness has set in over the last few months. In central Wyoming, D2 was expanded to the south and in southwest portions of the state; D3 was expanded to the west. In extreme northeast Utah, D1 was degraded to D2 this week. Dryness in Oregon allowed for several areas to show expansion this week. In the northeast portion of the state, D1 was expanded to the south and west while in eastern portions of the state, D0 was expanded to the north.

Hawaii, Alaska and Puerto Rico: In Hawaii, Tropical Storm/Depression Flossie passed to the northeast of the Islands. Areas of the Big Island recorded 1-2 inches of rain, Maui generally had 1-3 inches of rain and some spots up to 5 inches, Oahu recorded 0.50-1 inch, and Kauai recorded 1-3 inches. The full impact of these rains will be assessed over the coming weeks for potential improvements. There were no changes in Alaska or Puerto Rico this week.

Looking Ahead: Over the next five days (July 31-August 4) temperatures will continue to be cool over much of the United States, with departures from normal in the 3-6 degrees Fahrenheit range over the Northeast, Midwest, northern Plains, and West Coast. The warmest temperatures are expected over the South. The active rain pattern will continue over much of the eastern half of the United States. Rainfall of more than an inch is projected over areas from Nebraska eastward, including much of the East Coast. The monsoon rainfalls over the desert Southwest will likely continue into next week. Most of the West and Texas are expected to stay dry during this time.

The CPC 6-10 day forecast (August 5-9) The best chances for cooler than normal temperatures will be over the central and northern Plains, Midwest, and Northeast, with the best chances for above normal temperatures in Alaska, the Pacific Northwest and the southern Plains. There are good chances for above normal precipitation over much of the eastern half of the United States, with the best chances in the central Plains. The best chances for below normal precipitation are in southern Texas and the Great Basin of the western United States."

State Activities

State government drought activities can be tracked through their drought plans. NRCS Snow Survey and Water Supply Forecasting (SSWSF) Program State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SSWSF information. Additional information describing the tools available from the Drought Monitor can also be found at the U.S. Drought Portal.

For More Information

The National Water and Climate Center (NWCC) Homepage provides the latest available snowpack and water supply information. This document is available weekly. CONUS Snowpack and Drought Report. Reports from 2007 are available online. Reports from 2001-2006 are available on request.

This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/
Micheal L. Golden
Deputy Chief, Soil Science and Resource Assessment

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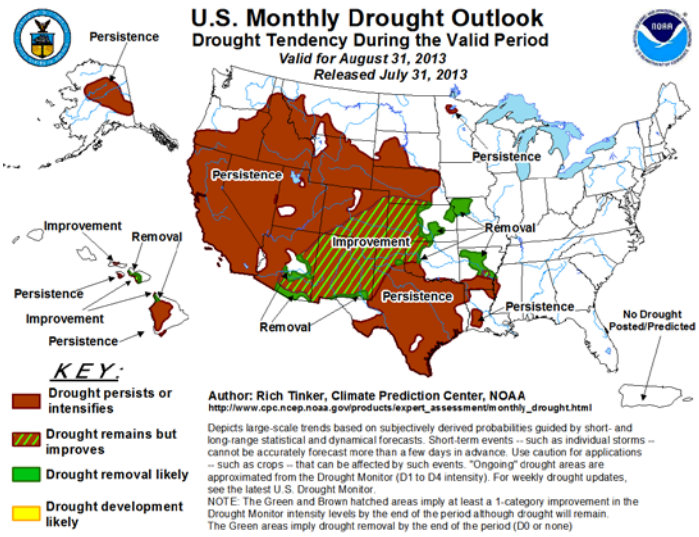
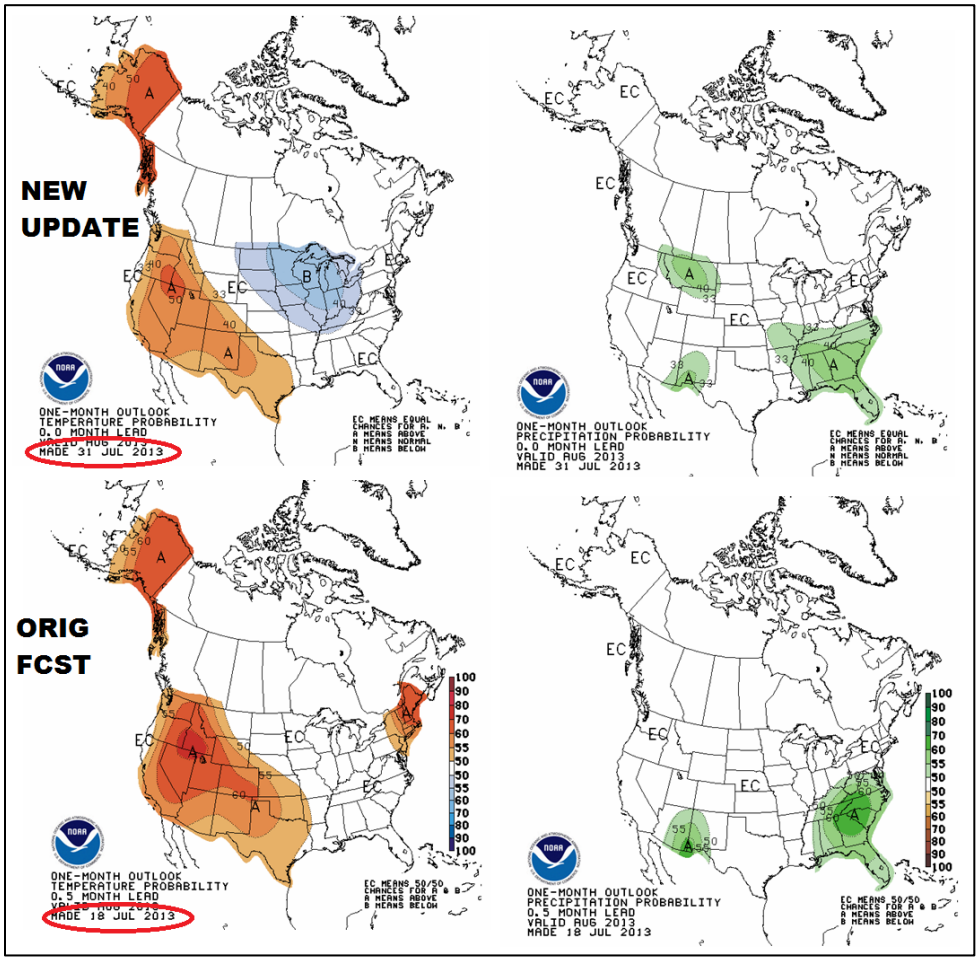
Drought Outlook (Forecast through August)

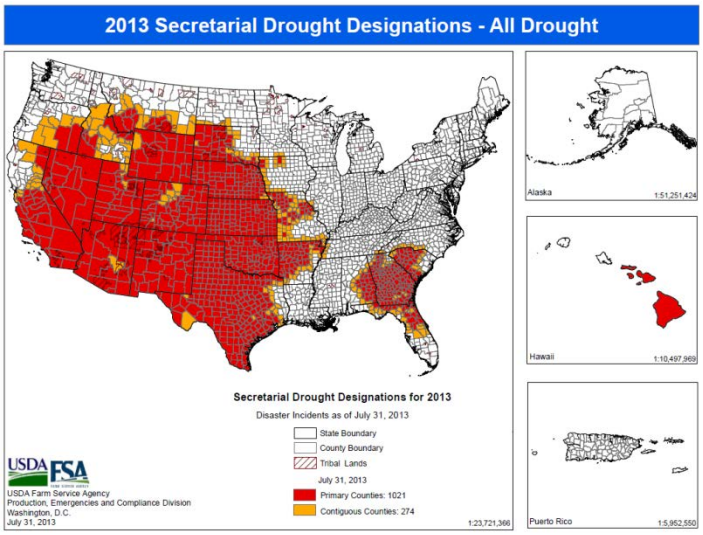


U.S. Monthly Drought Outlook released July 31.

Note: Expect improvements over parts of the Four Corner States and the Big Bend region of Texas by the end of October.



New August forecast issued July 31 by NOAA's CPC differences somewhat from the one issued July 18; especially for temperatures over the Great Lakes States and New England.



Refer to USDA Drought Assistance website and National Sustainable Agriculture Information Service. Read about the new USDA Regional Climate Hubs.

Drought News

Noteworthy topics in the news this week:

Ag

- Reports of crop stress/damage in Arkansas, Colorado, Idaho, Iowa, Kansas, Montana, New Mexico, Texas, and Utah
- Midwestern feed lots continue to lose nearly $200 per cow, due to high feed costs that persisted through the winter. The new corn crop should bring relief soon.
- The drought-diminished corn crop in 2012 pushed up the demand for wheat as a substitute feed grain. In 2012/2013 marketing year, which ended on May 31, 360 million bushels were used for feed, making it the largest amount since 1998/1999 when 391 million bushels were used for feed.
- A crop report for the week of July 16 indicated drought impacts in all 12 AgriLife Extension districts, but the report described conditions prior to the rains that fell last weekend. The crop report put Texas at the top in terms of impact counts.

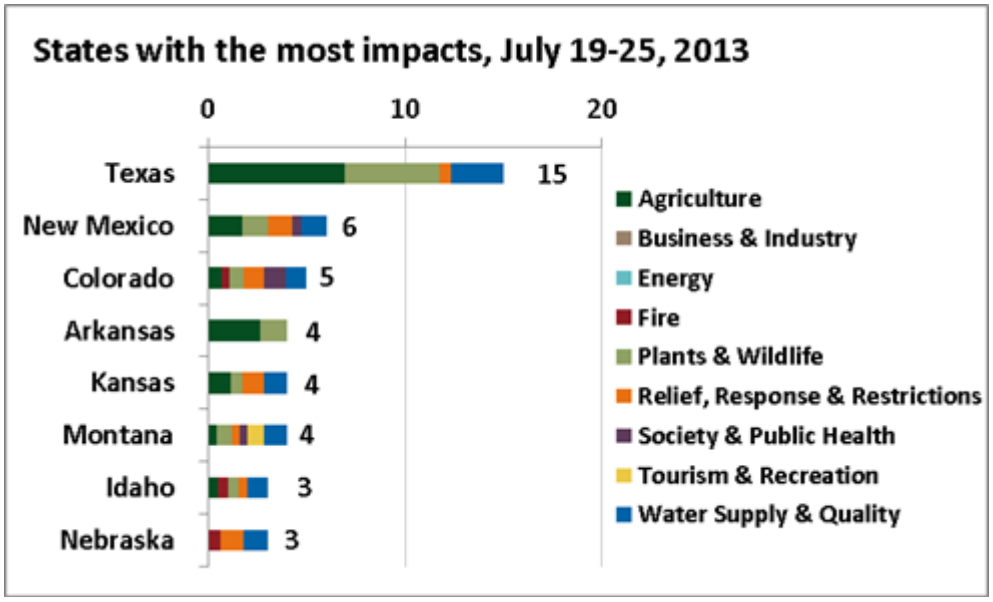
Water

- Low river levels in Montana are bringing fishing restrictions, known as hoot owl closures, because fishing is permitted at night and restricted during certain daytime hours.
- Disputes over water have skyrocketed in Colorado, where water is at a premium during drought. There has been enough contention in Montezuma County in southwestern Colorado for the sheriff to appoint a water deputy to mediate and enforce during squabbles over water.
- Texans in the Austin area are frustrated with the way the Lower Colorado River Authority has managed water since 2008 and feel that more water conservation was needed

- Drought Turns the Rio Grande Into The "Rio Sand"
  July 15, **New Mexico**. Satellite images show the disappearance of water in the Elephant Butte Reservoir in New Mexico. Monsoon rains and a healthy snowpack this coming winter will be essential if irrigators in south central New Mexico and west Texas hope to get any water next year.

- Required flows drop: Watermaster hopeful, but drought situation 'isn't looking good'
  July 19, **Klamath Basin in southern Oregon, northern California**. The Klamath Basin watermaster finished regulation last week and is monitoring stream flows to see that required minimum flows have been met. He said that in the basin, only Crooked Creek was meeting required flows. The amount of the required flow decreases on July 1 and August 1.

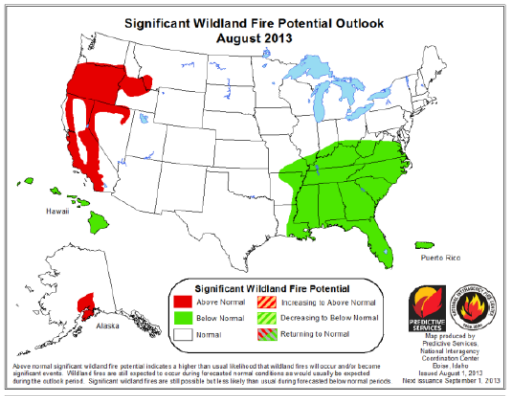
- Water Supply to 40 Million People Continues to Dwindle

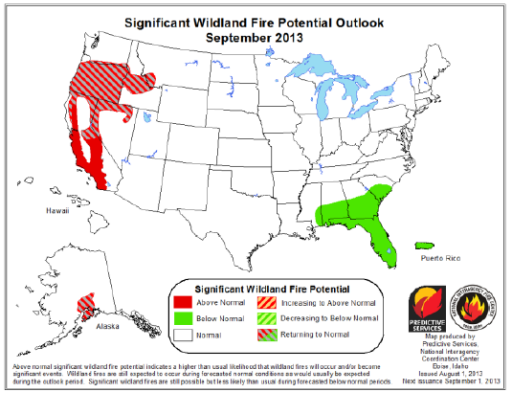


The Texas crop report is the reason that state has the most impacts, and was for the week before the rains fell. Without that report, Texas would have been toward the bottom of the graph.

Analyses about the 2012 drought continue to come out as they are completed, examining the event from different angles and highlighting various trends. A very telling event this week illustrated irrigation's effect on the Nebraska economy in 2012. The study showed that irrigation brought $11 billion into the state's economy, kept more than 31,000 jobs from being eliminated, and revealed that an inch of irrigation water put on an acre of cropland last year translated to about $100 in economic benefit.

Fire prediction for August and the remainder of the season:





August

- Significant fire potential remains above normal for a large portion of the Northwest and the California mountains as fuels remain much drier than normal.
- South central Alaska will have higher significant fire potential in early August.
- The East will remain wet through August.

September

- Significant fire potential will decrease to normal across the Northwest, the northern Great Basin and the northern Sierras as Fall approaches.
- The mountains of northwestern and southern California will continue with above normal significant fire potential, especially as the chance for off-shore wind events increases.
- Below normal fire potential will continue in Florida and southern parts of Alabama, Georgia, and South Carolina.