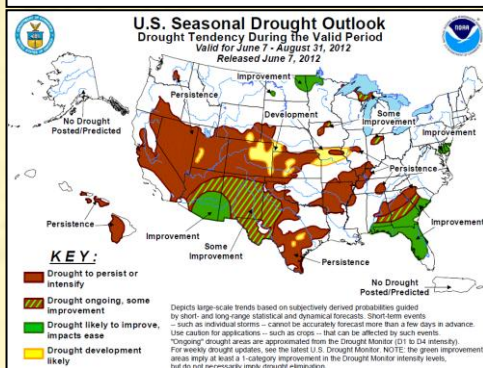
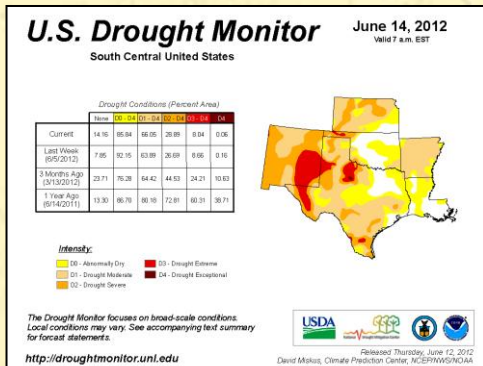


MANAGING DROUGHT

IN THE SOUTHERN PLAINS

Webinar Topic: Then and Now
June 14, 2012



Resources

U.S. Drought Portal

<http://www.drought.gov>

National Drought Mitigation Center

<http://drought.unl.edu>

Drought Impact Reporter

<http://droughtreporter.unl.edu>

State Climatologists

<http://www.stateclimate.org>

Southern Climate Impacts Planning Program (SCIPP)

<http://www.southernclimate.org>

Climate Assessment for the Southwest (CLIMAS)

<http://www.climas.arizona.edu>

Southern Plains Portal

http://www.drought.gov/portal/serve.r.pt/community/southern_plains

Regional Drought Summary

Brian Fuchs, National Drought Mitigation Center

A year ago, the Southern Plains and Gulf Coast were mired in extreme drought, while the remainder of the U.S., outside of the Hawaiian Islands, was drought-free. Today, we don't see the large area of intense drought through the Southern Plains, but there is a lot more color on the map. Flooding in the Midwest last year has been replaced by drought, along with an expansion of drought conditions and wildfires across the West.

The recovery in the Southern Plains is not complete, as severe and extreme drought lingers in West Texas and eastern New Mexico. Meanwhile nearly the entire state of Arkansas is in drought as are large parts of Missouri and surrounding states, including edging northward to the corn belt in the last several weeks. A lack of winter recharge of the soil profile combined with heat has combined to stress crops during what is normally one of the wettest times of the year. On longer timescales, last year's drought along the Gulf Coast and Red River is still apparent, suggesting water resources should be monitored closely.

Warm temperatures are expected to persist across the Midwest and Southern Plains for at least the next two weeks, and likely the remainder of summer. Precipitation is forecast in the northern parts of the region all the way up through the Midwest, although forecasts appear more uncertain this time of year. Much of the region averages 1 to 1.5 inches of rain per week this time of year, so even indications of heavy rainfall may only be normal.

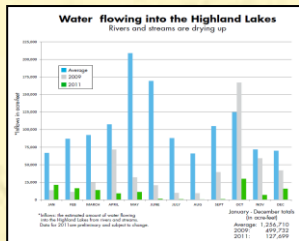
The drought outlook shows persistence and development for much of the area with some improvement in New Mexico and West Texas. An active monsoon is expected in Arizona, influencing parts of New Mexico, and tropical rainfall in Florida.

According to Kansas State Climatologist Mary Knapp, the southeastern part of Kansas has received plentiful rainfall in April and early May, but western and northern parts of the state have been drier. Many of the conservation reserves and grasslands did not green up in the spring due to lingering effects of last year's drought. However, the warm weather accelerated crop growth, leading to a wheat harvest 3 weeks earlier than average. This has allowed double-cropping in some locations with sorghum or beans. Rainfall has been sufficient to maintain crop development, but not enough to solve underlying hydrologic issues.

We need your help. Nobody knows drought impacts like the people who live there. Your reports to the [Drought Impact Reporter](http://droughtreporter.unl.edu) or your State Climatologist helps the [U.S. Drought Monitor](http://www.drought.gov) do a better assessment of conditions, which in turn helps federal agencies target assistance to vulnerable areas. Reports could be simply things you notice or it could be specific losses, such as crops withering, selling cattle, or wildlife changes.

Then and Now

The Hill Country of south central Texas, which includes the Lower Colorado watershed, has recorded near to above normal rainfall since January but gains in reservoir storage have been limited. October 2010-September 2011 was the driest *water year* on record in Texas, with some areas more than 20 inches below normal. Consequently, inflow into Lakes Buchanan and Travis, the primary storage reservoirs for the Lower Colorado River Authority (LCRA) were only 10% of average, dropping total system storage as low as 37% of capacity, the 3rd lowest since the system was constructed.

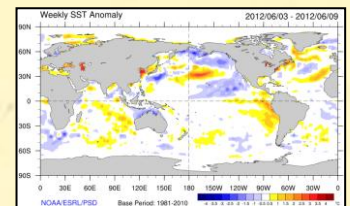


Fortunately, since September, much of the area is near to slightly above normal. However, the heaviest rainfall either missed the basin or was absorbed by the very dry soils. Consequently, runoff and inflow into the lakes has still been limited. Aside from March, which was the first above-normal month in more than a year, April and May have returned back to well below normal numbers. Reservoir capacity now stands at 51%.

For the first time in its history, the LCRA was forced to curtail water to downstream agricultural users. Not enough water could have been released to germinate and sustain a rice crop, which accounts for 55-60% of total rice production in Texas and 5-10% of the national rice crop. Consequently, the decision was made to conserve the water in hopes of recovery for next year. The possibilities of an El Niño pattern, which typically results in wet conditions for Texas, would aid recovery, but absent a very wet pattern, projections are to maintain current storage if precipitation is near average or return to levels recorded in 2011 if the weather turns dry again.

Since last fall, a renewed La Niña has faded into neutral conditions and appears to be on a track toward El Niño. La Niña typically relates to dry winter and spring for the Southern Plains, although this past event was drastically different from the one preceding it in 2010-2011. Only about 1 in 5 La Niña events result in a wet pattern for the region; fortunately the event that just ended was one of those. Dry conditions were shifted further to the west and east, giving the Southern Plains a much-needed break.

So why was it so different? Part of the answer may lie in other influences of the Atlantic Ocean and North Pacific. Last year, warm temperatures in the tropical Atlantic helped shift precipitation away from the area, as thunderstorms tended to develop over the warm water rather than over land. This year, the Atlantic is cooler, which may assist summer rainfall patterns near the coast. However, even with rainfall we are not out of the woods; a lingering warm pattern means higher evaporation during the summer, which will still stress vegetation regardless of rainfall.



Looking ahead, the NOAA Climate Prediction Center has issued an El Niño watch, meaning probabilities of development are greater than 50%. Historically, El Niño favors wet, cool winters in the Southern Plains. Cool, though, is relative as winters have been warming, so as of now forecasts show equal chances of near-normal compared to warm or cool temperatures. In the longer-term, the Pacific and Atlantic ocean cycles remain unfavorable for drought relief. Hopes are for El Niño to help us recover before diving into the next drought.

As extreme drought conditions have eased in the Southern Plains, it appears that drought may be coming on strongly and quickly in the Midwest. Like last year, temperature has a big effect. This year, those temperature and precipitation patterns appear to be starting earlier. Rainfall deficits over the last 5 weeks are well below-normal over Missouri and Arkansas, combined with a top-5 warmest May on record (2nd-warmest for the U.S. as a whole). This hot, dry pattern comes at a critical time for crop development and is beginning to impact a large portion of the corn belt.

The combination of warm temperatures and low dew point increases the *vapor pressure deficit*, a variable used to monitor plant transpiration. The greater the difference, the more water a plant needs to keep up. In May 2012, this plant water use has been running much higher than the historical daily averages. Solar radiation also is running well above-average, which is the biggest factor driving moisture loss from the soil profile and vegetation (i.e., evapotranspiration). Total water lost from soil and plants in May was 5.90 inches, a value more typical of the height of summer.



Missouri may be more vulnerable to flash drought than Iowa or Illinois because of high clay content and shallow topsoils in parts of the state. The lessened ability of soil to hold on to that moisture leaves crops more vulnerable, particularly in early development stages in Spring as the root system is developing. Soybean emergence has been uneven and corn is short with poor root development and curling of the leaves.



Presenters:

Bob Rose – Lower Colorado River Authority
John Nielsen-Gammon – Texas State Climatologist
Pat Guinan – Missouri State Climatologist