

SUMMARY

Forecasts through September favor above-average temperatures in the Rio Grande/Bravo Basin area.

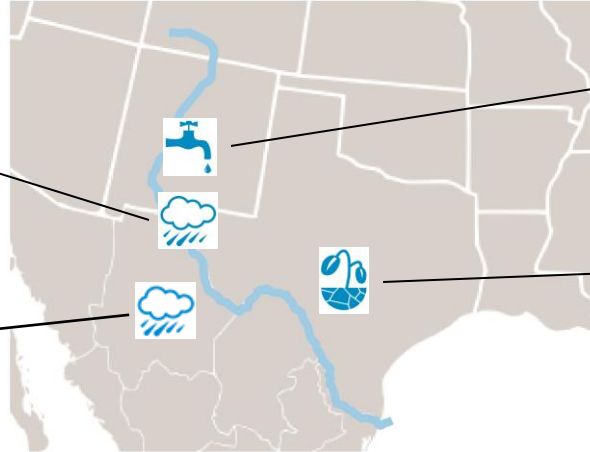
AT A GLANCE

El Paso/Ciudad Juarez

The city received 0.24 inches of precipitation in July, 1.3 inches below the 1981 – 2010 average

Ciudad Delicia, Chihuahua

In July, Ciudad Delicias, Chihuahua, received 0.55 inches (14.04 mm) of precipitation 2.2 inches (55.8 mm) below the 1971-2010 average of 2.74 inches (69.5 mm)



Elephant Butte Reservoir, New Mexico

The reservoir was at 8% of capacity in mid-August

Southern Texas

Drought development is forecasted for southern Texas by October

REGIONAL CLIMATE OVERVIEW

MAY | JUNE | JULY

From May 1st through July 31st the Rio Grande/Bravo Basin received precipitation ranging from 25-200% of average. New Mexico and western Texas received below-average precipitation, while central and eastern Texas experienced average to above-average precipitation (Figure 1, left). Temperatures were 1-3°F (0.5-1.6°C) above average for most of the region (Figure 1, right). During the first half of August, precipitation varied from slightly below average (75%) in eastern New Mexico and western Texas to well-above average (400%) in eastern Texas and the lower border region. Temperatures were 2-4 °F (1.1-2.2°C) above average in the basin region during the same period. July of 2016 was the warmest on record in Mexico for the 1971-2016 period, where the national average temperature of 80.24 °F (26.8°C) was 5.7 °F (3.2 °C) warmer than average. At the state level, the northern Mexican states of Baja California, Coahuila, Chihuahua, Durango, and Nuevo Leon also recorded their warmest July, as did the central states of Hidalgo, Queretaro, and Tlaxcala and the southern states Chiapas and Yucatan.

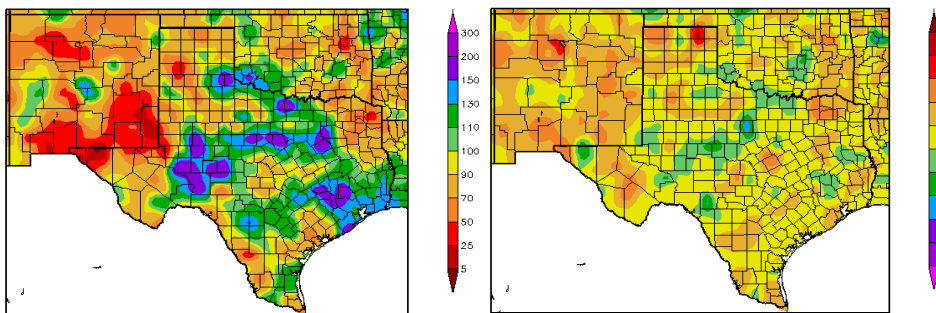


Figure 1: Percent of normal precipitation (left), and departure from normal temperature (right), for 5/1/2016 – 7/31/2016. Maps from HPRCC.

DROUGHT

According to the North American Drought Monitor (NADM), western and southeastern New Mexico and isolated areas in Texas, Coahuila, and Chihuahua are experiencing moderate drought conditions as of July 31, 2016 (Figure 2). The NADM shows the remainder of New Mexico, isolated areas in Texas, western and eastern Chihuahua, northern Nuevo Leon, and northern Tamaulipas as experiencing abnormally dry conditions. Drought removal by September in New Mexico is likely, due to expected summer monsoon precipitation; however, NOAA’s Climate Prediction Center (CPC) forecasts favor drought development in southern Texas over the next month attributable to both observed and forecasted below-average precipitation (figure not shown).

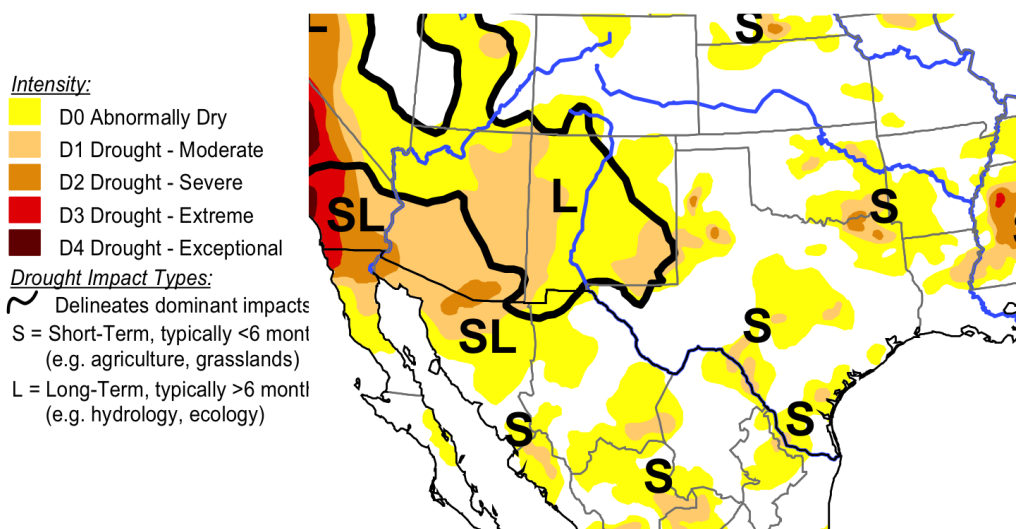


Figure 2 (above): North American Drought Monitor, released August 15, 2016.

FORECAST

SEPTEMBER | OCTOBER | NOVEMBER

TEMPERATURE

The NOAA outlook for September favors increased chances of above-average temperatures in most of New Mexico and the El Paso/Ciudad Juarez region, and equal chances of above-average, average, and below-average temperatures in almost all of Texas (Figure 3). The three-month NOAA temperature outlook favors increased chances of above-average temperatures in the entire Rio Grande basin (Figure not shown).

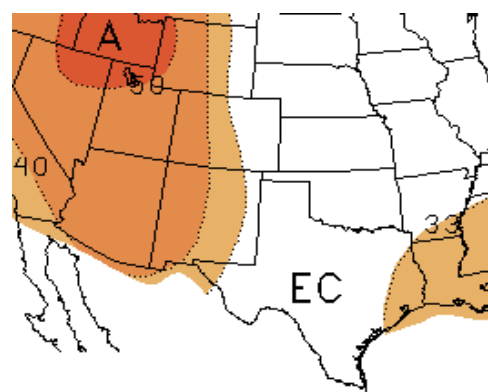


Figure 3 (above): NOAA September temperature outlook. Forecast made on August 18, 2016 by [CPC](#).

CONAGUA’s Servicio Meteorológico Nacional (SMN) forecasts above-average maximum temperatures in September for western

Chihuahua and the lower border region. In October, SMN forecasts favor above-average temperatures in western Chihuahua and below-average temperatures in eastern Chihuahua and northern Coahuila (Figure 4).

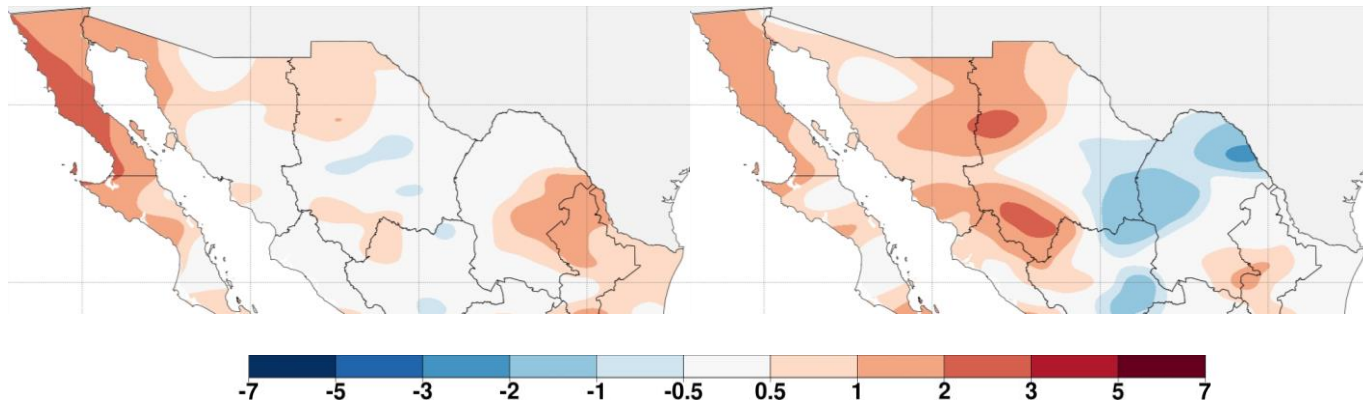


Figure 4 (above): Predicted maximum temperature anomalies for northern Mexico (in °C). September (left) and October (right). Forecast made on August 1, 2016 by [SMN](#).

PRECIPITATION

Both the September and three-month NOAA precipitation forecasts favor equal chances of above-average, average, and below-average precipitation for the Rio Grande/Bravo basin (Figure 5). SMN forecasts average to above-average precipitation in the basin region in September. In October, SMN forecasts favor below-average precipitation for the majority of the region (Figure 6).

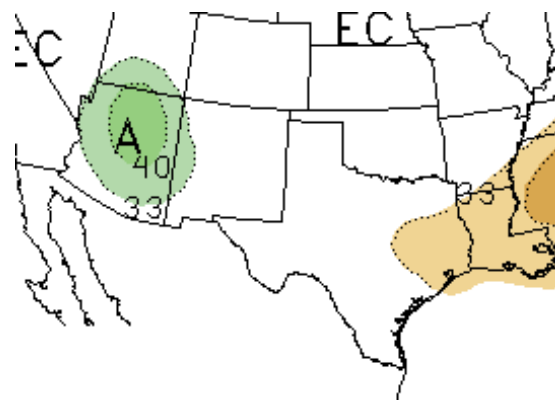


Figure 5 (above): NOAA September precipitation outlook. Forecast made on August 18, 2016 by [CPC](#).

Differences between the NOAA and SMN forecasts could be due to several factors: (1) NOAA forecasts are based on a combination of statistical and dynamic models, whereas SMN forecasts use statistical models based on similar years from history, and the SMN forecasts give higher significance to the role of the Atlantic Ocean in the analogue years used, and (2) NOAA predicts shifts in the probability of precipitation, whereas the SMN predicts precipitation amounts.

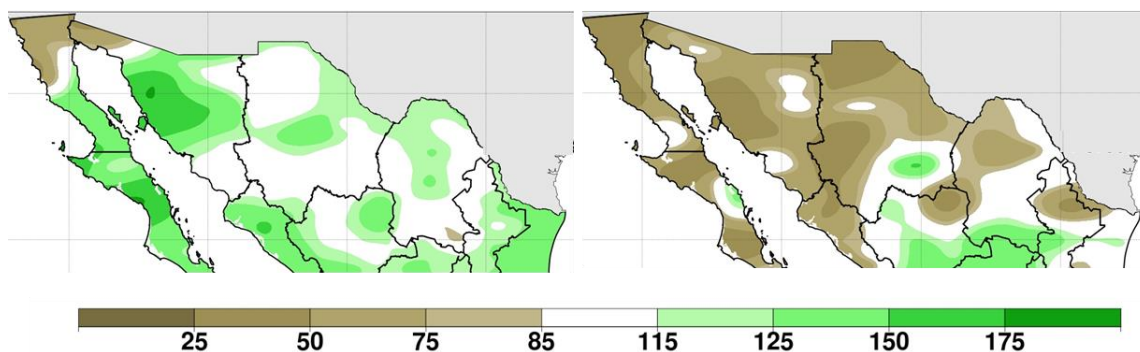


Figure 6 (above): Percent of average precipitation for northern Mexico, September (left) and October (right). Forecast made on August 1, 2016 by [SMN](#) using 1983, 1992, 1993, 2004, and 2005 as analogue years.

FIRE

The National Interagency Fire Center (NIFC) forecasts normal fire potential for most of the Rio Grande/Bravo region through October. Forecasts favor above-normal fire activity through October in central and eastern Texas due to dry conditions in July and early August (Figure 7).

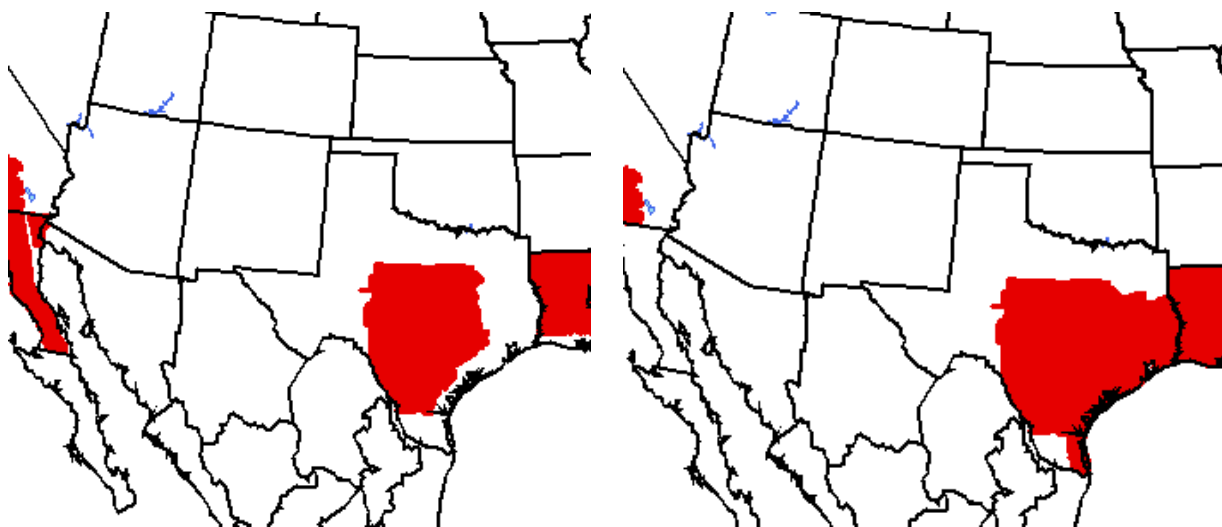


Figure 7 (above): Significant wildfire potential outlook for September (left) and October (right). Red shading indicates conditions that favor above-normal fire activity. Forecast made on August 10, 2016 from [NIFC](#).

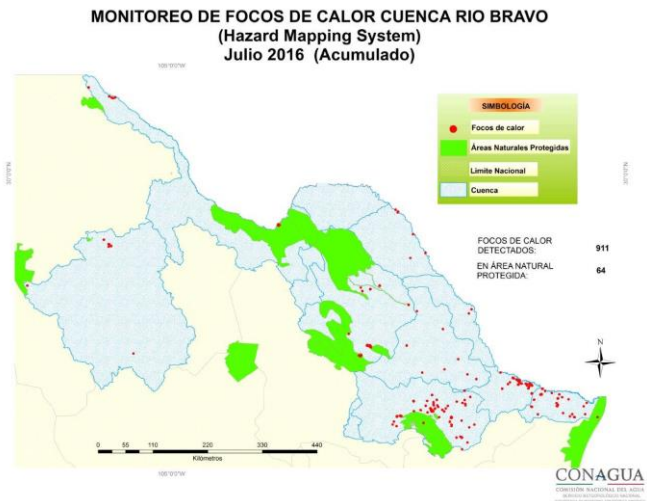
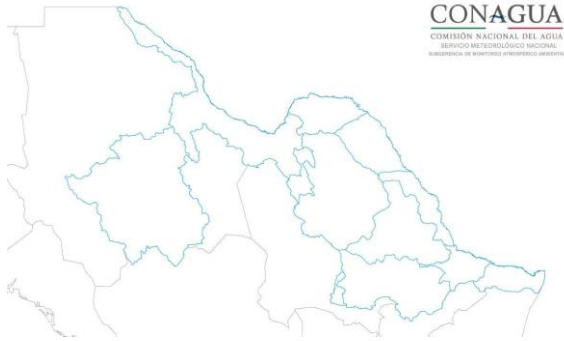


Figure 8 (above): Significant wildfire potential outlook in Mexico for August 2016 (left), and Hotspots detected in the Rio Grande/Bravo Basin in July 2016 (right) by SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

ENSO-neutral conditions were observed in July and early August, as indicated by slightly below average sea surface temperatures ([NOAA](#)). Forecasts slightly favor a shift to La Niña conditions, with a 55-60% chance of La Niña development in fall and winter of 2016-2017 (Figure 8). Models also indicate an approximately 40% chance that ENSO neutral conditions will persist through the winter. Models currently predict weak La Niña intensity. La Niña winters tend to be warm and dry in the Southwest U.S. and northern Mexico, which could amplify drought conditions and impact water supply in the region ([IRI](#)).

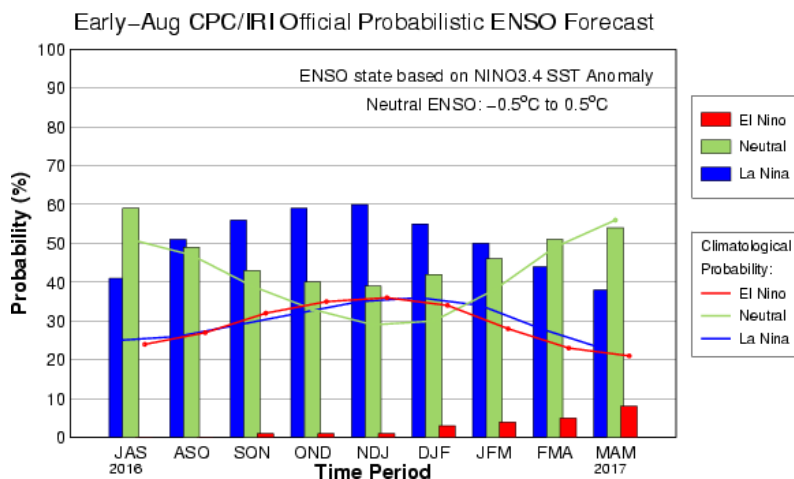


Figure 8 (above): ENSO probabilistic forecast from [IRI](#).

For more ENSO information:

English:

<http://iri.columbia.edu/our-expertise/climate/enso/ens-o-essentials/> and <http://www.ncdc.noaa.gov/teleconnections/enso/>.

Spanish:

<http://www.smn.gov.ar/?m=od=biblioteca&id=67> and <http://www.smn.gov.ar/?m=od=biblioteca&id=68>

THE NORTH AMERICAN MONSOON

A large portion of the Rio Grande basin region experiences the North American Monsoon during the summer, which accounts for approximately half of total annual precipitation in most areas (CPC). As a result of unequal rates of warming over land and water, wind patterns over northern Mexico and the U.S. Southwest reverse, pulling moisture from the Gulf of Mexico, Gulf of California and the eastern Pacific Ocean. Monsoon season typically begins in mid to late June in northwest Mexico (Sonora, Chihuahua, Sinaloa, and Durango) and early July in the U.S. Southwest (New Mexico and Arizona).

The southwestern U.S. experienced a strong start to the 2016 monsoon season in late June, with above-average precipitation in the Rio Grande basin region. In July, high-pressure systems in northern Mexico prevented significant monsoon activity for the first half of the month in the U.S. Though the final two weeks in July saw increased monsoon activity in the region, precipitation for the month in El Paso, Texas totaled a mere 0.24 inches, well below the 1981-2010 monthly average of 1.55 inches. August has brought more rain to the El Paso/Ciudad Juarez area, with precipitation totals for the first two weeks totaling 1.8 inches. Average monsoon season (June-September) precipitation in El Paso is 5.44 inches (NOAA). Precipitation during July in Delicias, Chihuahua, registered 0.55 inches (14.04 mm), 2.2 inches below-average of 2.74 inches (69.5 mm), according to 1981-2010 climatology.

NOAA forecasts through the end of the monsoon season indicate equal chances of below-average, average, and above-average precipitation, though NOAA notes that the precipitation outlook has high uncertainty due to sparse model signal coverage.

NEWS HEADLINES

Drought Conditions Spread Throughout Texas, August 5, 2016:

<http://www.heralddemocrat.com/news/local/drought-conditions-spread-throughout-texas>

Triple Digit Temperatures; Lack of Water Dry Out Rio Grande River, July 30, 2016:

http://www.santafenewmexican.com/news/local_news/triple-digit-temperatures-lack-of-moisture-dry-out-the-rio/article_dceb4f42-a96e-5396-a564-4598d634a682.html

El Paso Area's Monsoon Season Off to a Dry Start, July 26, 2016:

<http://www.elpasotimes.com/story/weather/2016/07/26/el-paso-areas-monsoon-season-off-dry-start/87573942/>

ACKNOWLEDGEMENTS

Victor Murphy
Climate Focal Point
NOAA-National Weather Service
Southern Region

Gregg Garfin
Climatologist
Climate Assessment for the Southwest
(CLIMAS)

Sarah LeRoy
Research Assistant
Climate Assessment for the Southwest
(CLIMAS)

Mark Shafer
Director of Climate Services
Southern Climate Impacts Planning Program

Meredith Muth
International Program Manager
Climate Program Office
(NOAA)

Hennessy Miller
Graduate Research Assistant
University of Arizona

Blanca E. Irigoyen/Brisia E. Espinoza
Climate Services
National Meteorological Services (SMN)

Reynaldo Pascual/Adelina Albanil
Drought
Mexico National Meteorological Services
(SMN)

Martín Ibarra/Martín Guillén
Seasonal Forecasts
Mexico National Meteorological Services
(SMN)

Julio Martínez/José L. Rodríguez
Diagnostic Observations
Mexico National Meteorological Services
(SMN)

Héctor Robles
Wildfire
Mexico National Meteorological Services
(SMN)