

Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK November 2016

SUMMARY

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

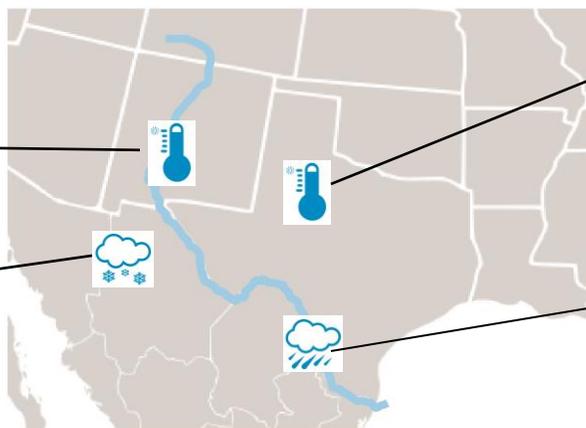
AT A GLANCE

New Mexico

New Mexico experienced its hottest October on record, with an average temperature that was 5.8°F above average.

Chihuahua

The municipalities of Juárez, Manuel Benavides, and Ojinaga experienced severe hail (1.2 – 2.4 inches; 3 – 6 cm in diameter) on November 3 – 4.



Texas

Meteorologists in the state forecast dry, warm conditions this winter due to La Niña conditions.

Tampico, Tamaulipas

Heavy storms on November 4th brought 5 inches (129 mm) of rain to the state, affecting 35,000 people and damaging 20,000 homes.

REGIONAL CLIMATE OVERVIEW

AUGUST | SEPTEMBER | OCTOBER

From August 1st through October 31st the Rio Grande/Bravo Basin received precipitation ranging from 50-300% of average (Figure 1, left). New Mexico received average to below-average precipitation in the majority of the state, while the Texas/Chihuahua/Coahuila border region received average to above-average precipitation. Temperatures were 1-2°F (0.5-1.1°C) above average for almost all of the region for the same time period (Figure 1, right). During the first half of October, precipitation was above average for most of region. Temperatures were 6-9°F (3.3-5°C) above average in the region during the same time period.

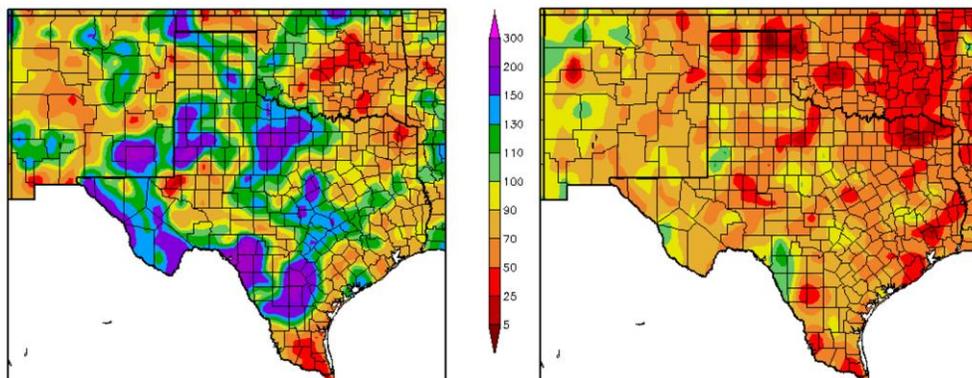


Figure 1: Percent of normal precipitation (left) and departure from normal temperature (right), for 8/1/2016 - 10/31/2016. Maps from HPRCC.

Temperatures in October in northern Mexico were above-average for the entire region, ranging from 68 to 95°F (20-35°C) (Figure 2, left). Temperatures in northern Mexico have been getting cooler over the last month, however Sonora and Sinaloa still recorded up to 15 days with maximum temperatures exceeding 105°F (40°C) (Figure 2, right).

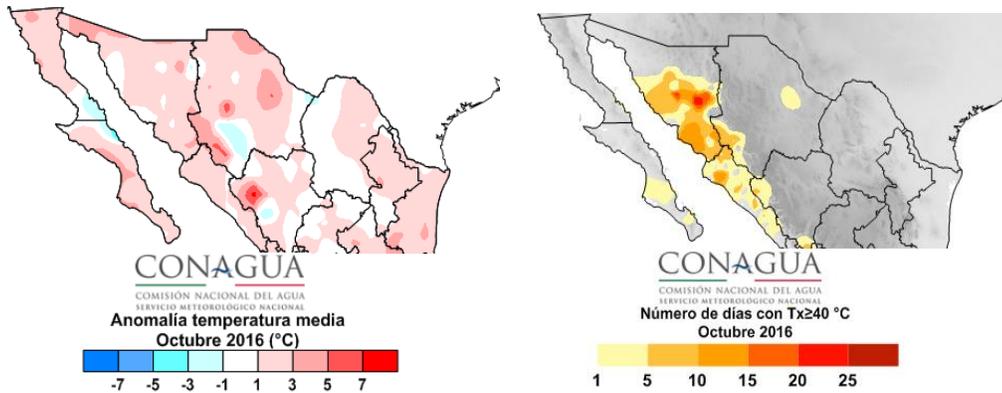


Figure 2: Temperature anomalies (left) and number of days with maximum temperatures at or above 105°F (40°C) in October. Maps from [SMN](#).

DROUGHT

According to the North American Drought Monitor (NADM), by the end of October northern New Mexico and areas in Nuevo León, Tamaulipas, and Texas were experiencing abnormally dry conditions (Figure 3). A small section along the Tamaulipas/Texas border and areas in eastern and northern Texas experienced moderate drought conditions, and the northeast corner of Texas experienced severe drought conditions. The U.S. seasonal outlook forecasts drought development in northeastern New Mexico during November to January (figure not shown).

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

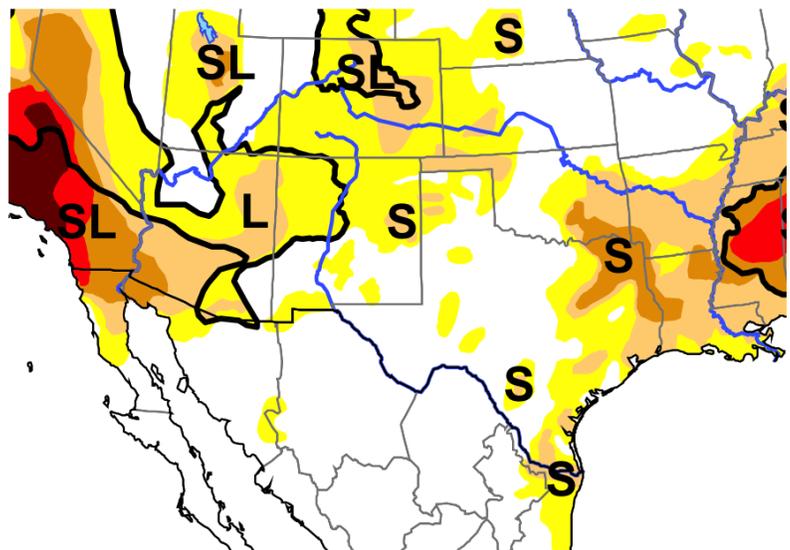


Figure 3 (above): North American Drought Monitor, released November 15, 2016.

TEMPERATURE

Both the one-month (December) and three-month (December – February) NOAA forecasts favor increased chances for above-average temperatures in the region (Figure 4). As the winter progresses, the likelihood for above-average temperatures increases, per the NOAA forecasts. This is also seen in forecasts from CONAGUA’s Servicio Meteorológico Nacional (SMN), which forecasts above-average temperatures on the Mexico side of the border through January (Figure 5).

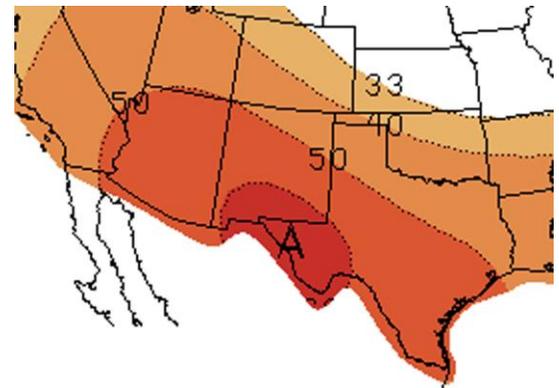


Figure 4 (above): NOAA three-month temperature outlook (December – February). Forecast made on November 17, 2016 by [CPC](#).

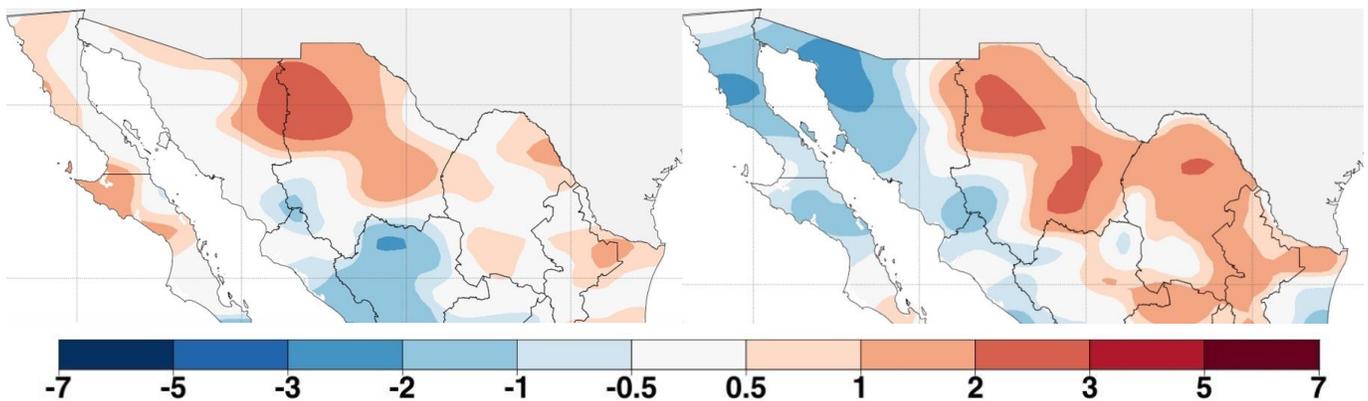
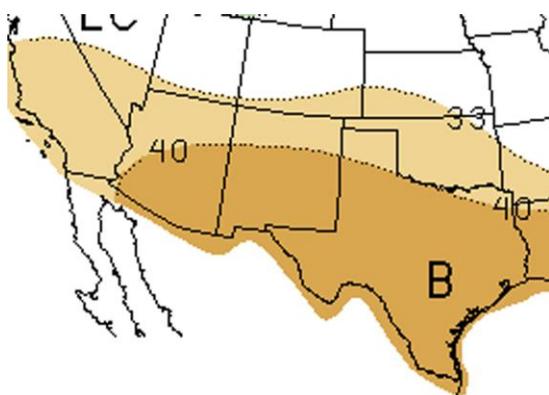


Figure 5 (above): Predicted minimum temperature anomalies for northern Mexico (in °C); December (left) and January (right). Forecast made on November 1, 2016 by [SMN](#).

PRECIPITATION



NOAA precipitation forecasts for December favor equal chances for below-average, average, and above-average precipitation for the Rio Grande/Bravo Basin (figure not shown). Forecasts through February, however, favor below-average precipitation for the entire region (Figure 6), likely because of weak La Niña conditions that have developed in the Pacific Ocean.

Figure 6 (above) : NOAA three-month precipitation outlook (December – February). Forecast made on November 17, 2016 by [CPC](#).

For Mexico, in December SMN forecasts below-average precipitation in Coahuila and Chihuahua and above-average precipitation in Nuevo León and Tamaulipas. In January, SMN forecasts below-average precipitation in isolated areas of Chihuahua and Nuevo León, above-average precipitation in eastern Chihuahua and northern Coahuila, and average precipitation in the remainder of the border region (Figure 7). 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, analogue years and the output of climate global models and (2) NOAA predicts shifts in the probability of precipitation, whereas SMN predicts precipitation amounts.

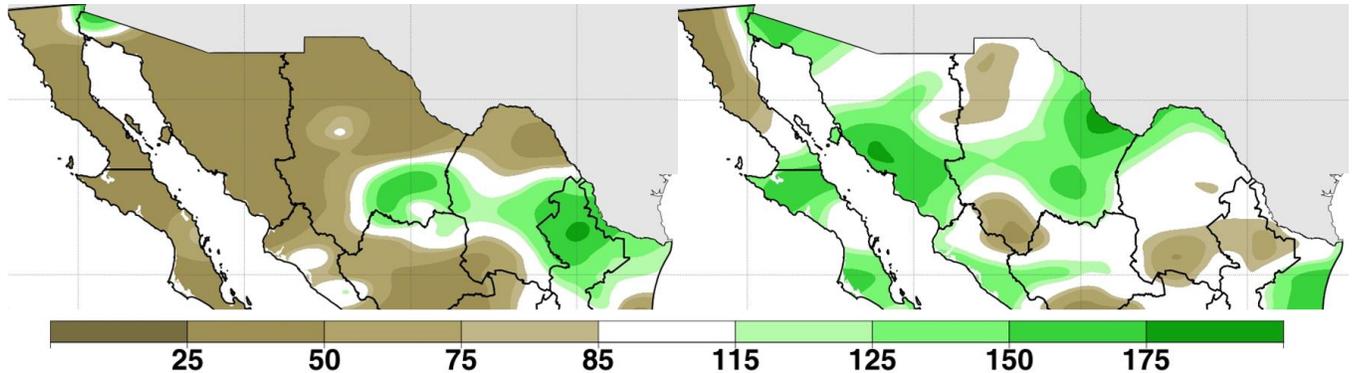


Figure 7 (above): Percent of average precipitation for northern Mexico; December (left) and January (right). Forecast made on November 1, 2016 by [SMN](#) using 1965, 1966, 1977, 2003, and 2006 as analogue years.

FIRE

During the month of October, SMN noted 52 hotspots in the Rio Grande/Bravo region, mainly concentrated in the state of Tamaulipas. Five hotspots occurred in Natural Protected Areas within Tamaulipas (Figure 8).

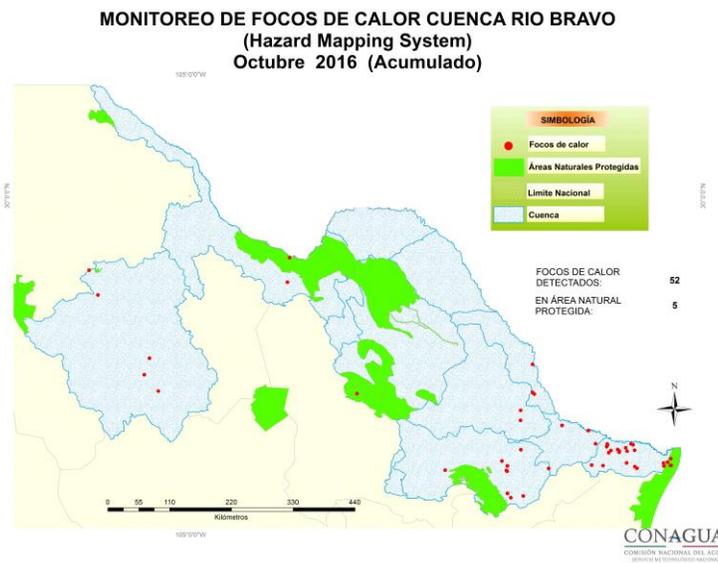


Figure 8 (left): Hotspots detected in the Rio Bravo Basin in October 2016 from [SMN](#).

SMN forecasts favor a gradual increase in above-average fire potential through January for the Mexico side of the border due to decreased rainfall and dry vegetation. The National Interagency Fire Center (NIFC) forecasts also reflect this increase in fire potential; above-normal fire activity is forecasted for eastern Sonora and western Chihuahua in December, and for areas of Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas in January (Figure 9). Fire activity is forecasted to remain normal for the U.S. side of the border through January.

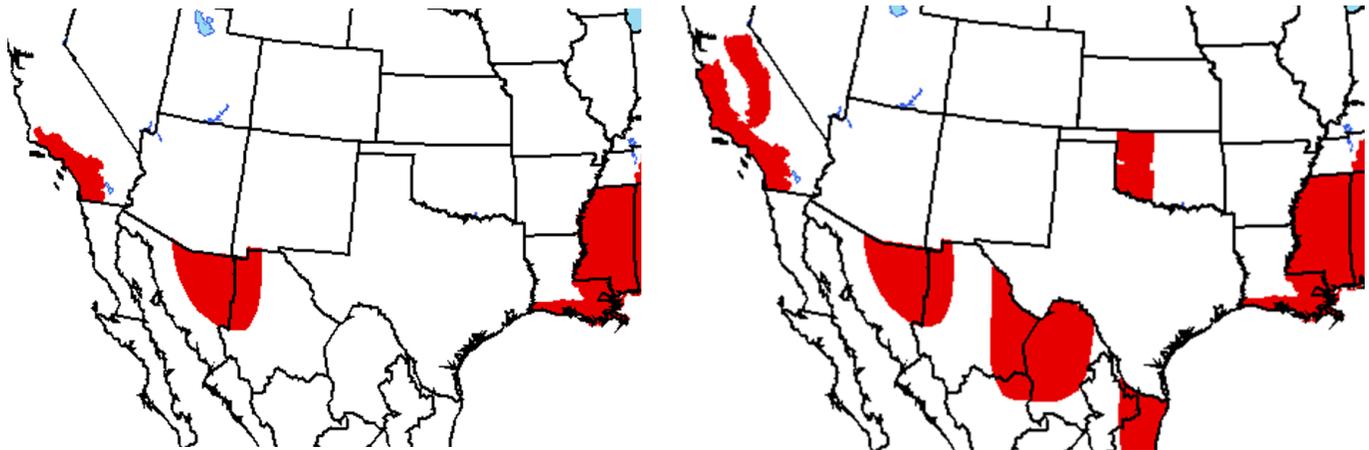


Figure 9 (above): Significant wildfire potential outlook for December and January. Red shading indicates conditions that favor above-normal fire activity. Forecast made on November 10, 2016 from [NIFC](#).

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

Currently, weak La Niña conditions are present in the equatorial Pacific Ocean and are favored to persist through winter ([NOAA](#)). Sea surface temperatures in the east-central equatorial Pacific Ocean during the first two weeks of November were indicative of weak La Niña conditions, and key variables, including atmospheric wind, cloudiness, and rainfall have also been consistent with weak La Niña characteristics ([IRI](#)). ENSO models forecast a transition to ENSO-neutral conditions in early spring 2017 (Figure 10).

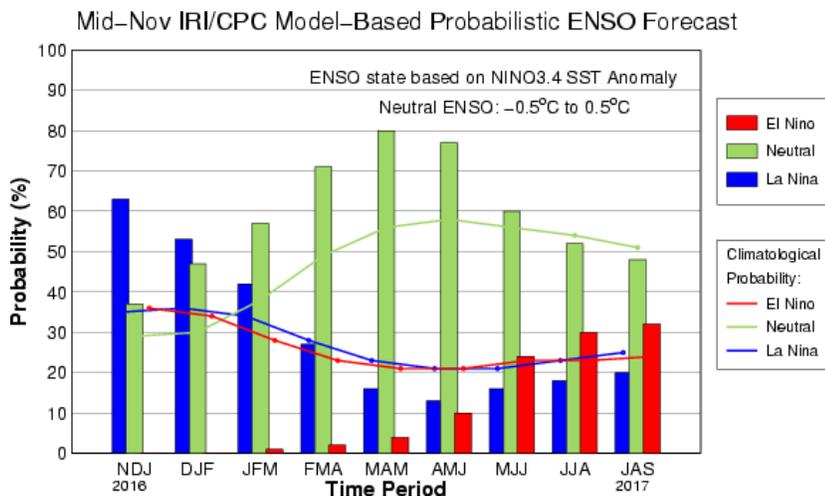


Figure 10 (above): ENSO probabilistic forecast from [IRI](#).

For more ENSO information:
 English: <http://iri.columbia.edu/our-expertise/climate/ens/ens-essentials/> and <http://www.ncdc.noaa.gov/teleconnections/ens/>.
 Spanish: <http://www.smn.gov.ar/?mod=biblioteca&id=67> and <http://www.smn.gov.ar/?mod=biblioteca&id=68>

UPCOMING FORUMS

MEXICO CLIMATE FORUM

The VII Meeting of Climate Services and XXXI Climate Outlook Forum in Mexico will be held from November 29 to December 1 in Mexico City, Mexico. Topics include: health and extreme heat; the drought monitor; early warning systems in health, wildfires, hurricane systems, and atmospheric conditions; and the upcoming climate perspective. For more information see:

<http://smn.cna.gob.mx/es/climatologia/foros-de-prediccion-climaticas>

U.S.-MEXICO ENERGY FORUM

The inaugural U.S.-Mexico Energy Forum will be hosted on December 8 and 9, 2016 in The Woodlands, Texas by the U.S.-Mexico Chamber of Commerce. The forum, titled "Opportunities and Challenges" will focus on regional perspectives to renewable energy and energy conservation, economic growth, and energy reform. Keynote speakers include Ambassador Jesús Reyes Heróles (former CEO of PEMEX and Ambassador to the United States) and George P. Bush (Texas Land Commissioner). For more information see: <https://www.eventbrite.com/e/us-mexico-energy-forum-tickets-29052942132>

NEWS HEADLINES

Through October, Only One Other Year Has Been Warmer Than 2016 in the Contiguous U.S., November 8, 2016: <https://weather.com/news/climate/news/noaa-report-october-2016-record-warm-dry-wet>

Thousands Affected by Rains in Tamaulipas, November 4, 2016:

<http://mexiconewsdaily.com/news/thousands-affected-by-rains-in-tamaulipas/>

Evaluating Water Resources for Texas Agriculture and the Potential for a Water Crisis, November 1, 2016: <http://southwestfarmpress.com/crops/evaluating-water-resources-texas-agriculture-and-potential-water-crisis>

Bureau of Reclamation, Isleta Pueblo and the Middle Rio Grande Conservancy District Agree on Future Management of Isleta Diversion Dam in New Mexico, October 21, 2016:

<http://www.prweb.com/releases/2016/10/prweb13787313.html>

NOTICE FOR DECEMBER EDITION

Due to the holiday season, the Rio Grande/Bravo Outlook will be taking the month of December off. For forecasts made in December, please refer to the links below. We wish you a wonderful holiday season and a Happy New Year. See you in January!

- For temperature and precipitation maps over the past few months, visit [HPRCC](#) or [SMN](#)
- For temperature and precipitation forecasts visit [CPC](#) or [SMN](#)
- For fire forecasts visit [NIFC](#)
- For current ENSO conditions and forecasts visit [IRI](#)

ACKNOWLEDGEMENTS

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