Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK January 2017

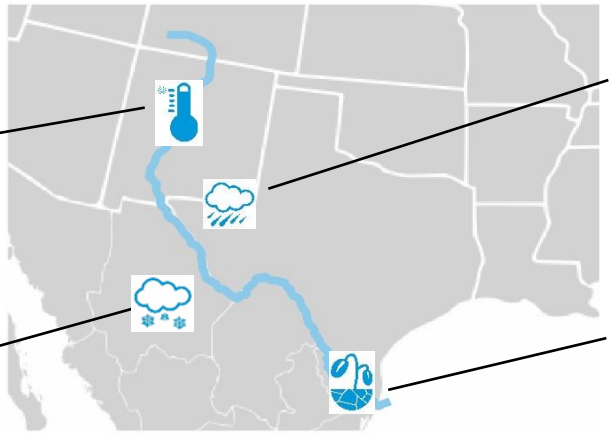
SUMMARY

Forecasts favor above-average temperatures and below-average precipitation in the Rio Grande/Bravo Basin through April.

AT A GLANCE

New Mexico

New Mexico experienced its hottest October on record, with an average temperature that was 5.8°F (3.2°C) above average.



Rio Grande/Bravo Region

A large majority of the region experienced precipitation much above average during November and December, reducing the risk of drought in the region.

Sonora/Chihuahua/Durango

Winter storm December 2-5 closed highways and schools.

Texas/Tamaulipas Border

Development of drought conditions is predicted by end of April.

REGIONAL CLIMATE OVERVIEW — OCTOBER | NOVEMBER | DECEMBER

During October 2016, most the Rio Grande/Bravo Basin in New Mexico and Texas experienced precipitation 0-50% of average. November and December were wetter-than-average for most of the region. Together, these months (October – December) were drier-than-average for most of the region (Figure 1, left). Small areas in eastern New Mexico and western and southern Texas received precipitation as low as 5% of average, while the Texas/Coahuila border region received up to 200% of average precipitation. Other pockets in the Texas/Chihuahua border region and western New Mexico received precipitation 100-150% above average. Temperatures in October through December were 2-6 °F (1.1-3.3 °C) above average (Figure 1, right).

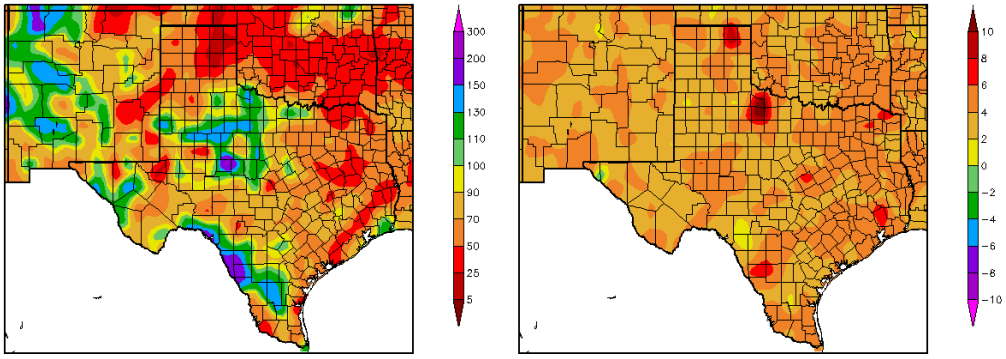


Figure 1: Percent of normal precipitation (left) and departure from normal temperature in degrees F (right), for 10/1/2016 - 12/31/2016. Maps from HPRCC.

Since the start of 2017 (through January 23rd), precipitation has been 200-800% of average for the large majority of New Mexico and western-most Texas, and 0-75% of average for most of the Texas/Mexico border region (figure not shown). For the same period, temperatures were 2-8°F (1.1-4.5°C) above average for most of the region, while areas in southern Texas experienced temperatures up to 10°F (5.5°C) above average.

October – December temperatures in northern Mexico were 3.6-5.4 °F (2-3 °C) above average in most of the region (Figure 2, left). The high temperatures also decreased the number of frost days, with only northern Durango reporting more than 45 days with temperatures below 32 °F (0 °C) (Figure 2, right).

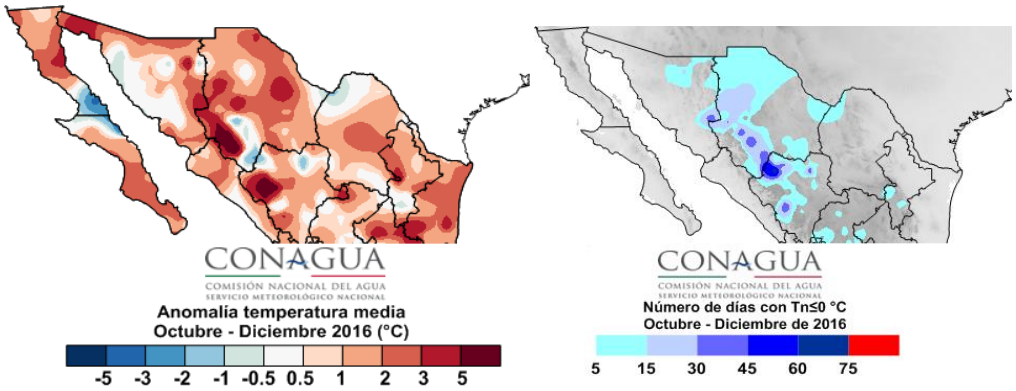


Figure 2: Temperature anomalies in degrees C (left) and number of days with minimum temperatures at or below 0 °C (32 °F) (right) in October-December. Maps from SMN.

DROUGHT

According to the North American Drought Monitor (NADM), by the end of December northeastern New Mexico and the New Mexico/Chihuahua and Texas/Tamaulipas border areas were experiencing abnormally dry conditions, an improvement from previous months, due to above-average precipitation in November and December (Figure 3). A small area in northeastern New Mexico experienced moderate drought conditions, which are predicted to persist through April, according to the U.S. Seasonal Drought Outlook (figure not shown). The outlook also predicts that drought conditions will develop in the Texas/Tamaulipas border region.

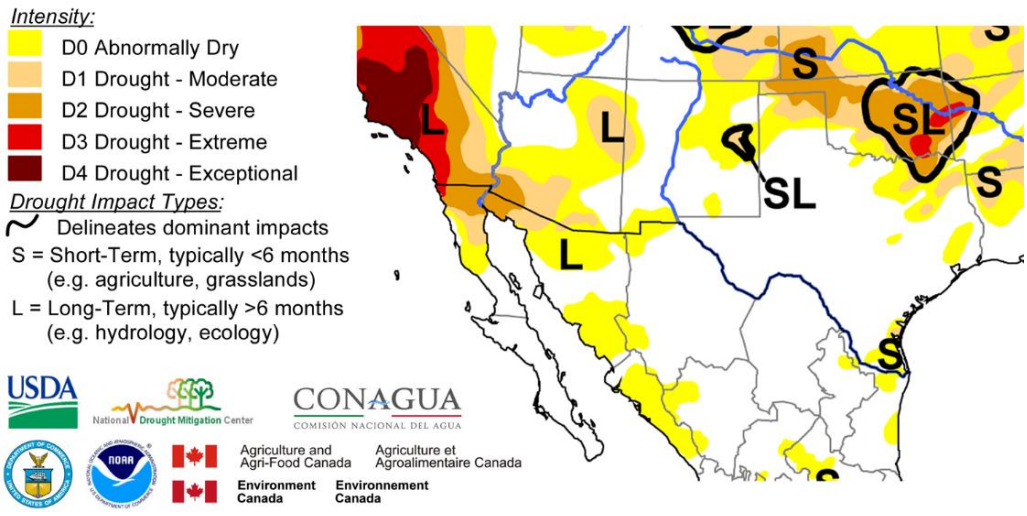


Figure 3 (left): North American Drought Monitor, released January 19, 2017.

TEMPERATURE

Both the one-month (February) and three-month (February – April) NOAA forecasts favor increased chances for above-average temperatures in the region (Figure 4). As the winter progresses into spring, the likelihood for above-average temperatures increases, according to 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 March (Figure 5).

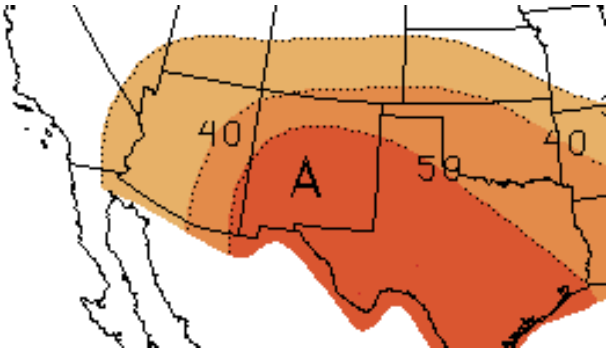


Figure 4 (above): NOAA three-month temperature outlook (February – April). Forecast made on January 19, 2017 by CPC.

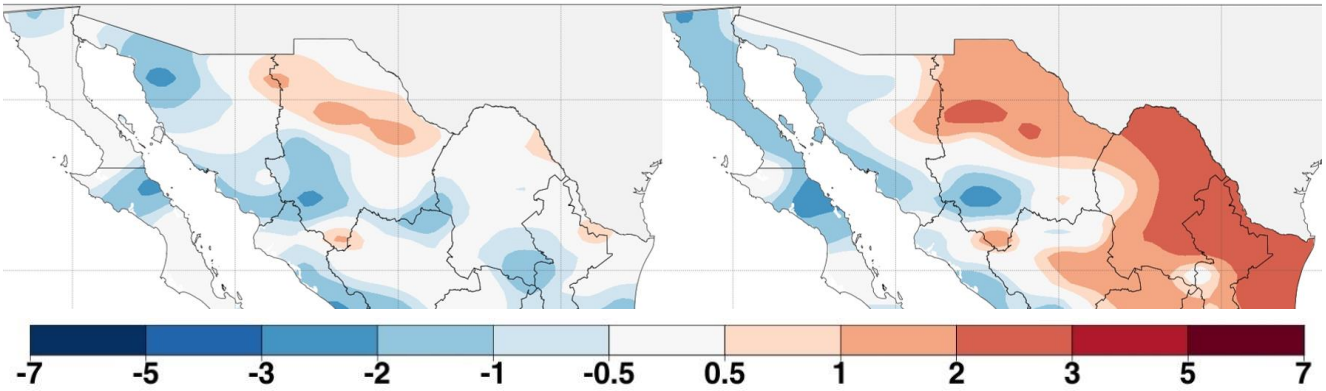
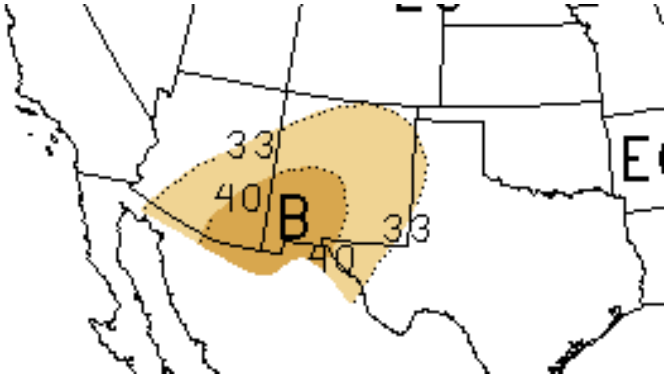


Figure 5 (above): Predicted minimum temperature anomalies for northern Mexico (in °C); February (left) and March (right). Forecast made on January 1, 2017 by SMN.

PRECIPITATION



NOAA predicts increased chances of below-average precipitation for the Rio Grande/Bravo Basin in February (figure not shown). Forecasts through April also forecast increased chances of below-average precipitation in New Mexico and the western edge of Texas (Figure 6).

Figure 6 (above) : NOAA three-month precipitation outlook (February – April). Forecast made on January 19, 2017 by CPC.

For Mexico, in February SMN forecasts below-average precipitation in the northern part of the states of Sonora, Chihuahua, Coahuila, Nuevo León and Tamaulipas. In March, SMN forecasts below-average precipitation in Sonora and from near to above-average precipitation in Chihuahua and Coahuila (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.

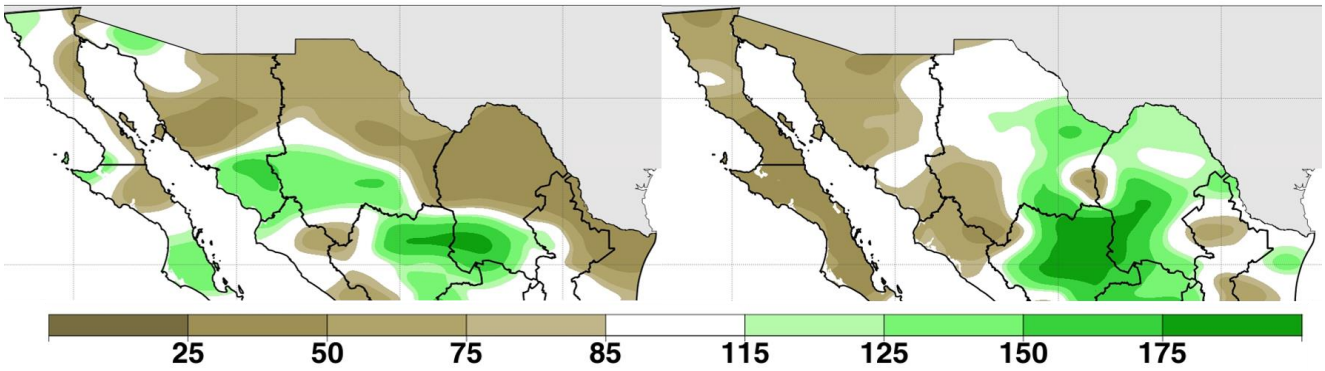


Figure 7 (above): Percent of average precipitation for northern Mexico; February (left) and March (right). Forecast made on January 1, 2017 by SMN.

FIRE

During the month of December, SMN noted 13 hotspots in the Rio Grande/Bravo region, mainly concentrated in the states of Chihuahua and Tamaulipas, with 6 and 5 hotspots, respectively. Any hotspots occurred in Natural Protected Areas (Figure 8).

The National Interagency Fire Center (NIFC) forecasts, made on the first of the year, favor above-normal fire potential for north-central Texas and eastern New Mexico through April (Figure 9). Earlier forecasts made in December also favor above-normal fire potential for northern Coahuila, Nuevo León, and Tamaulipas in February (figure not shown).

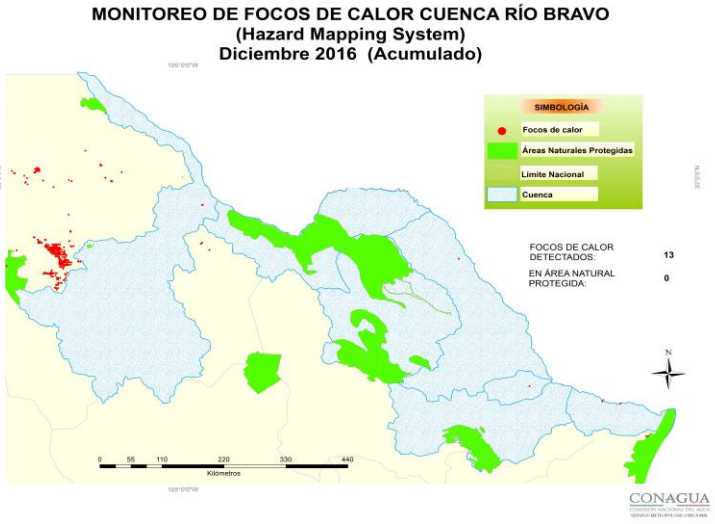


Figure 8 (above): Hostpots detected in the Rio Bravo Basin in December 2016 from SMN.

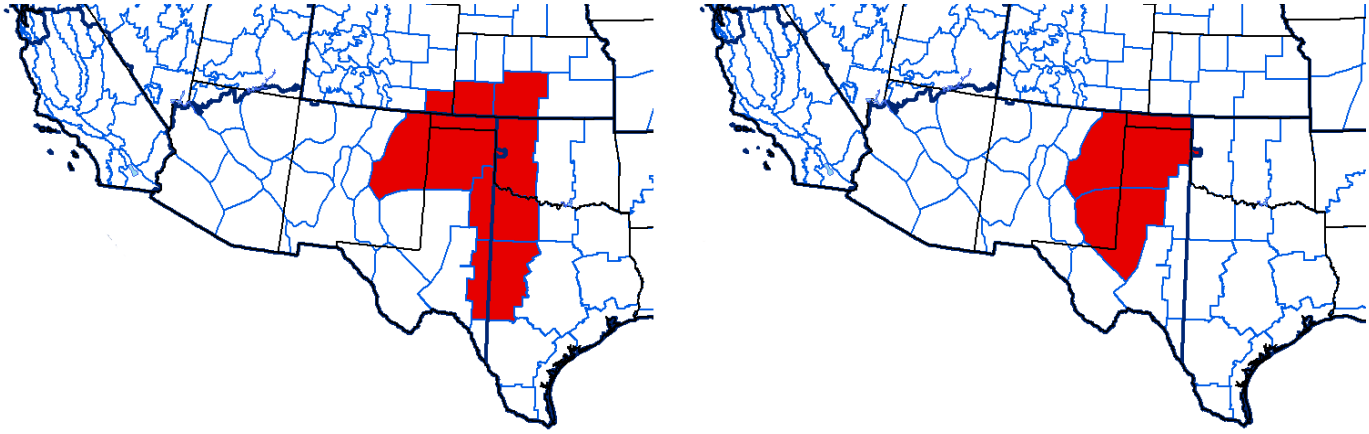
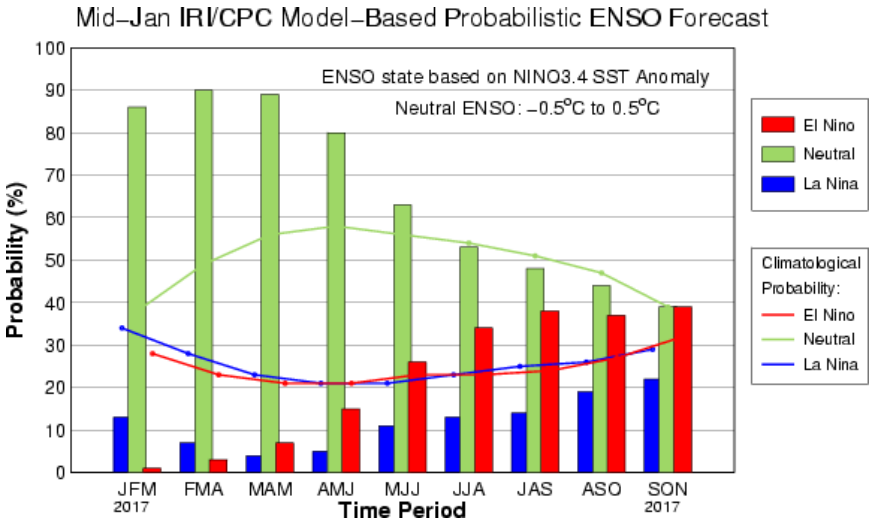


Figure 9 (above): Significant wildfire potential outlook for February (left) and March/April (right). Red shading indicates conditions that favor above-normal fire activity. Forecast made on January 1, 2017 from NIFC.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

As of mid-January, weak La Niña conditions were still present in the equatorial Pacific Ocean. However, the collection of ENSO models predicts an imminent transition to ENSO-neutral conditions by February, with these conditions lasting through the summer (Figure 10). NOAA still advises that the "atmospheric impact from La Niña could persist during the upcoming months," noting that above-average temperatures and below-average precipitation are forecasted for the southern tier of the U.S., conditions normally associated with La Niña events.



For more ENSO information:
English: http://iri.columbia.edu/our-expertise/climate/enso/enso-essentials/ and http://www.ncdc.noaa.gov/teleconnections/enso/.

Spanish: http://www.smn.gov.ar/?mod=bibliteca&id=67 and http://www.smn.gov.ar/?mod=bibliteca&id=68

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

UPCOMING FORUMS AND REQUESTS

THE RIO BRAVO/GRANDE IN THE PERSPECTIVE OF CLIMATE CHANGE

The Rio Grande/Bravo is essential to the adequate distribution of water resources in the U.S.-Mexico region, and climate change will only aggravate the current problems impacting the river. This meeting, to be held in Ciudad Juárez, Mexico on May 3-4, will focus on the socio-environmental impacts of climate change in the Rio Grande/Bravo Basin. Abstracts are still being accepted until February 7. For more information, contact Dr. Martín J. Montero Martínez (IMTA) at martin_montero@tlaloc.imta.mx.

NATIONAL ADAPTATION FORUM

The next meeting of the National Adaptation Forum will be on May 9-11, 2017 in Saint Paul, Minnesota. The call for proposals is now closed, but registration is still open to attend the forum. The National Adaptation Forum, which brings together members of the adaptation community that are focused on moving beyond awareness to adaptation action, will foster knowledge exchange among these members and will provide other opportunities for professional development through formal trainings and presentations by practitioners. More information can be found here.

23RD CONFERENCE ON APPLIED CLIMATOLOGY

Sponsored by the American Meteorological Society, the 23rd Conference on Applied Climatology will be held in Asheville, North Carolina on June 26-28, 2017. The committee is still accepting abstracts through February 27th and registration beings in late March. More information about the conference can be found here.

INVITATION TO SUBMIT CHAPTERS

CONACyT Mexico, the Mexican Institute of Water Technology and the Autonomous University of Chapingo are inviting submission of chapters to be published in a book on the socio-environmental impacts of climate change in the Usumacinta River Basin. Chapter submission, in accordance with editorial standards, is continued until March 30, 2017. More information can be found here.

NEWS HEADLINES

Snow closes roads in Durango, Chihuahua, December 6, 2016: http://mexiconewsdaily.com/news/snow-closes-roads-in-durango-chihuahua/

Rocky Mountain snow brightens Doña Ana County water outlook, January 13, 2017: http://www.lcsun-news.com/story/news/local/agriculture/2017/01/13/rocky-mountain-snow-brightens-do-ana-county-water-outlook/96540428/

Feds issue decision on operating plan for Rio Grande, January 6, 2017*:* http://www.alamogordonews.com/story/news/2017/01/06/feds-issue-decision-operating-plan-rio-grande/96265828/. U.S. Bureau of Reclamation Rio Grande Project Operations: https://www.usbr.gov/uc/albuq/rm/RGP/.

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