Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK

November 2018

Summary

Forecasts favor above-average temperatures, and average to above-average precipitation for most of the Rio Grande/Bravo region through February.

AT A GLANCE

1 Northern New Mexico
Extreme to exceptional drought conditions persisted, but decreased in extent, over the past month. Conditions are predicted to persist, but decrease in severity, by February.

2 Texas
For the second month in a row, October was the wettest on record for Texas, due to several heavy rain events that led to extreme flooding.

3 Southern Tamaulipas
Moderate drought conditions developed over the past month.

REGIONAL CLIMATE OVERVIEW
AUGUST | SEPTEMBER | OCTOBER

Temperatures over the past three months (August-October) were 1-3 °F (0.6-1.7 °C) above average for almost all of New Mexico and West and East Texas (Figure 1, left). Temperatures were 0-2 °F (0-1.1 °C) below average for Central Texas. Precipitation over the same time period was 50-90% of average for Central and Northwest New Mexico, 100-130% of average for the remaining areas of New Mexico, and 150-300% of average for most of Texas (Figure 1, right). Several heavy rain events in October led to extreme flooding. It was the wettest October on record for Texas, with 6.86 inches of precipitation, 4.33 inches above average. From January-October, New Mexico experienced record warm average and maximum temperatures (NOAA State of the Climate).

Temperatures from November 1 through 14 were 0-8 °F (0-4.4 °C) below average for most of both New Mexico and Texas (figure not shown). Precipitation over the same time period was 0-25% of average for western and southern New Mexico, and parts of Central Texas, and 200-400% of average for East Texas.

Temperatures were colder than normal in most of Sonora and Sinaloa, in part due to convective activity in September and October, where temperatures were 3.6-5.4 °F (2 to 3 °C) below average. Another region with below-average temperatures was northern Coahuila, where anomalies were less than to 1.8 °F (1 °C). In the rest of northern Mexico, the warmest anomalies were concentrated in Chihuahua and Durango (5.4 °F, 3 °C), Zacatecas, San Luis Potosí and Tamaulipas, with anomalies less than 5.4 °F (3 °C) (Figure 2, left). Areas where there were more than 50 days with maximum temperatures above 104 °F (40 °C) were in Mexicali and San Luis Río Colorado (between Baja California-Sonora). In the rest of the country, the number of days above this threshold has started to decline, as the seasons change from summer to winter (Figure 2, right).
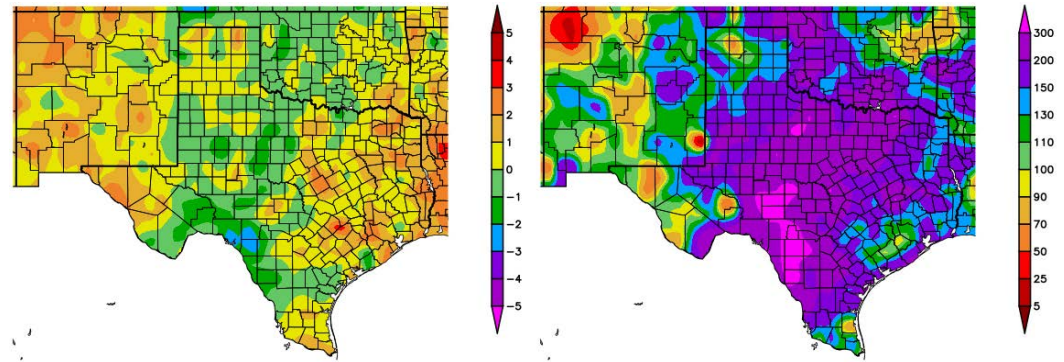

Figure 1 (above): Departure from average temperature in degrees F (left) and percent of average precipitation (right), compared to the 1981–2010 climate average, for 8/1/2018–10/31/2018. Maps from HPRCC.
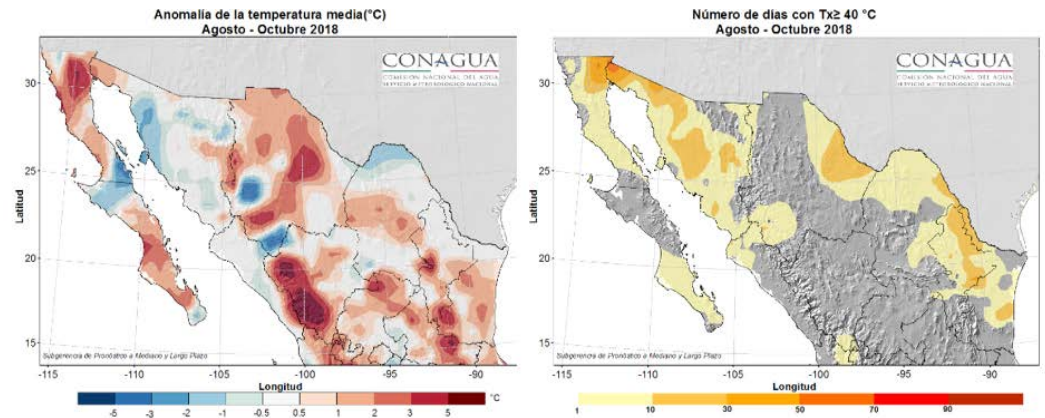

Figure 2 (above): Temperature anomalies in °C (left) and number of days with maximum temperatures at or above 104 °F (40 °C) (right) for August-October. Maps from SMN.

More than 31.4 inches (800 mm) of precipitation accumulated in Nayarit this quarter, thanks to the incursion of Hurricane Willa in October. Totals above 23.6 inches (600 mm) accumulated in southern Tamaulipas and eastern San Luis Potosí (Figure 3, left). The last three months brought very beneficial rains in the North, with most of Sonora, Chihuahua, Coahuila, Durango and Zacatecas experiencing above-average precipitation that has helped to lessen drought concerns. The only areas with below-average precipitation were northern Baja California, Central Baja California Sur, Tamaulipas, eastern San Luis Potosí, and northern Veracruz, in The Huastecas region (Figure 3, right).
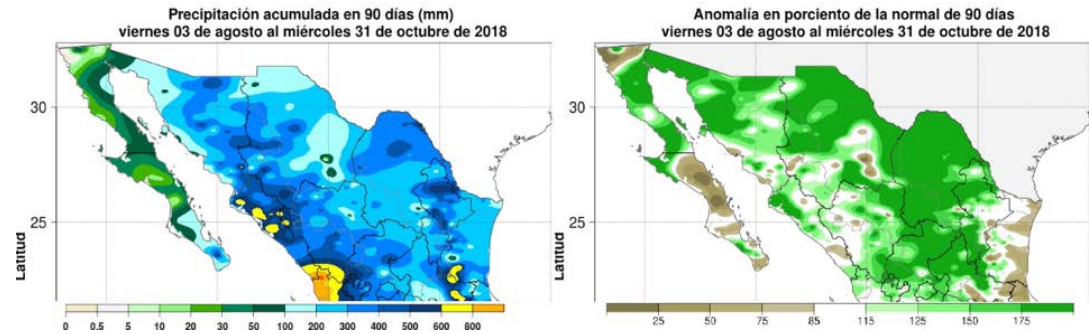

Figure 3 (above): Accumulated precipitation in mm (left) and percent of normal (right) for August-October. Maps from SMN.

DROUGHT

Drought conditions decreased in severity across the region over the past month, according to the North American Drought Monitor (NADM) (Figure 4). Drought has been almost eliminated from Texas, due to record-breaking precipitation in October. Extreme to exceptional drought still covers northern New Mexico, and abnormally dry to severe drought conditions cover the rest of the state. Drought conditions are still not present in the northern Mexico states, with only small areas in Chihuahua and Tamaulipas experiencing abnormally dry to moderate drought conditions. Drought conditions are predicted to continue, but decrease in severity across northern New Mexico, by the end of February, according to the U.S. Seasonal Drought Outlook.
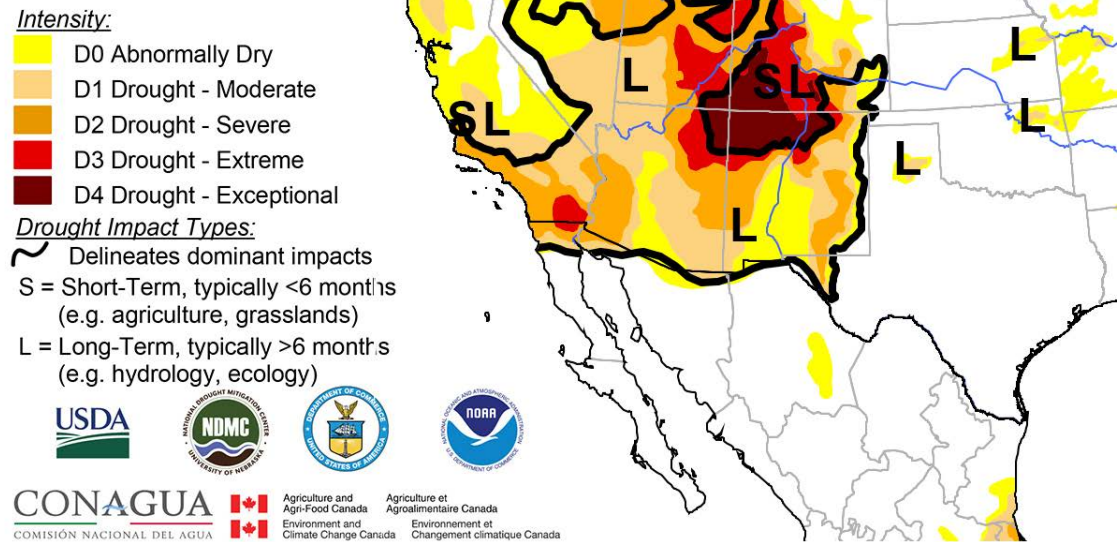

Figure 4 (above): North American Drought Monitor, released November 13, 2018.

FORECAST
DECEMBER I JANUARY I FEBRUARY

TEMPERATURE

The three-month NOAA temperature outlook (December-February; Figure 5) favors chances of above-average temperatures for all of New Mexico and far West and far North Texas, through February. The outlook favors equal chances for above-, below-, and average temperatures for the rest of Texas. The one-month outlook favors chances for above-average temperatures in almost all of both states for December (figure not shown).

The CONAGUA´s Weather Meteorological Service SMN (by acronyms in Spanish) outlook for December, predicts below-average minimum temperatures in Sonora, Nuevo León, Central Coahuila and northern Tamaulipas, and above-average minimum temperatures for Baja California and Chihuahua. For January, SMN predicts below-average anomalies in Tamaulipas, Nuevo León, western Chihuahua and northern Chihuahua, and above-average anomalies for Baja California and some areas of Sonora, western Chihuahua, and Central Coahuila. The rest of the region is expected to experience conditions similar to the average (Figure 6).

The North American Multi-Model Ensemble (NMME) is an experimental seasonal forecasting system that incorporates forecasts from several different runs of individual models, to create a multi-model ensemble of predictions. This method has been shown to produce better prediction quality, on average, than the ensemble of runs from any single model (CPC). The temperature forecast for December-February favors chances for above-average temperatures for New Mexico, most of Texas, and Chihuahua. The remainder of the region is forecasted to experience average temperatures (Figure 7).
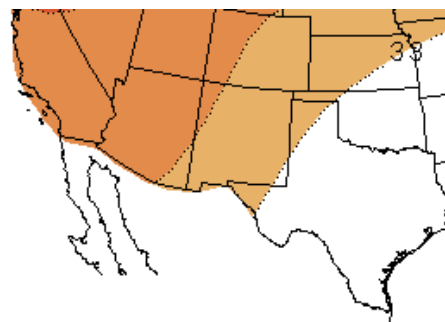

Figure 5 (left): NOAA three-month temperature outlook (December-February). Forecast made on November 15, 2018 by CPC.
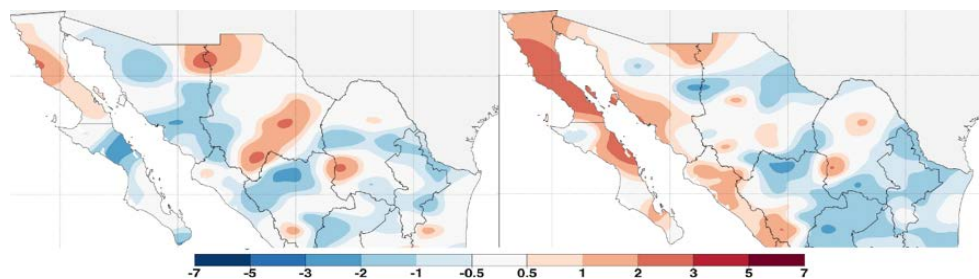

Figure 6 (above): Predicted minimum temperature anomalies for northern Mexico in (°C), December 2018 (left) and January 2019 (right). Forecast made on November 1, 2018 by SMN.
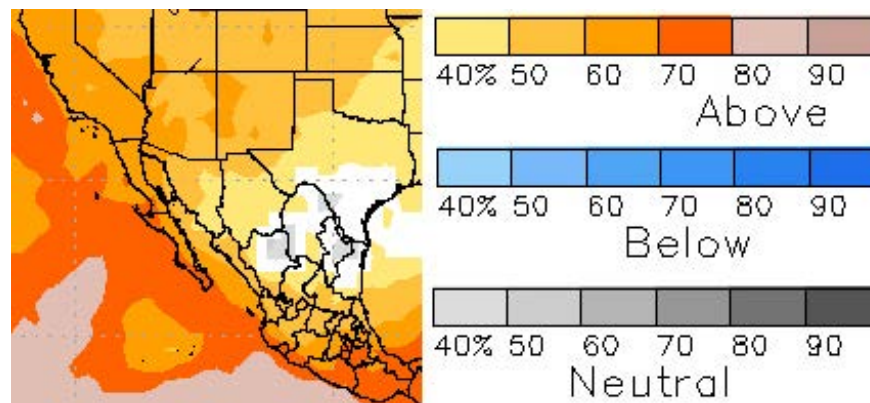

Figure 7 (above): NMME temperature forecast for December-February. Forecast made by CPC.

PRECIPITATION

The NOAA three-month precipitation outlook (December-February; Figure 8) shows increased chances of above-average precipitation for all of New Mexico and Texas through February, due to the predicted transition to El Niño during the fall. The one-month outlook (December; figure not shown) favors equal chances for above-, below-, and average precipitation for both states for December.

For December, the SMN precipitation outlook predicts above-average conditions for southern Baja California, northern Sonora, Chihuahua and Tamaulipas, eastern Coahuila, and most of Nuevo León, and below-average precipitation for small areas of Baja California. The precipitation forecast for January shows above-average conditions for Sonora, Chihuahua, western Coahuila, and Central Nuevo León and Tamaulipas, and below-average conditions in most of the Baja California Peninsula. The rest of the region is expected to experience conditions similar to the average (Figure 9).

NMME forecasts chances of average precipitation for New Mexico, most of Texas, Chihuahua, and Coahuila, and chances of above-average precipitation for Nuevo León and Tamaulipas, for December-February (Figure 10).
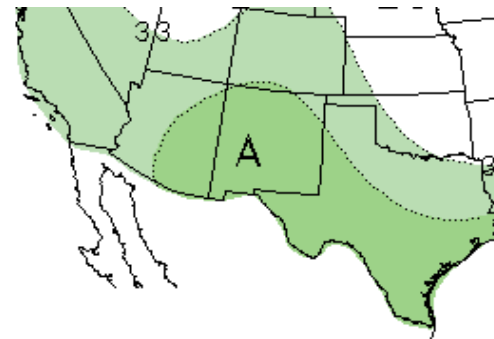

Figure 8 (left): NOAA three-month precipitation outlook (December-February). Forecast made on November 15, 2018 by CPC.
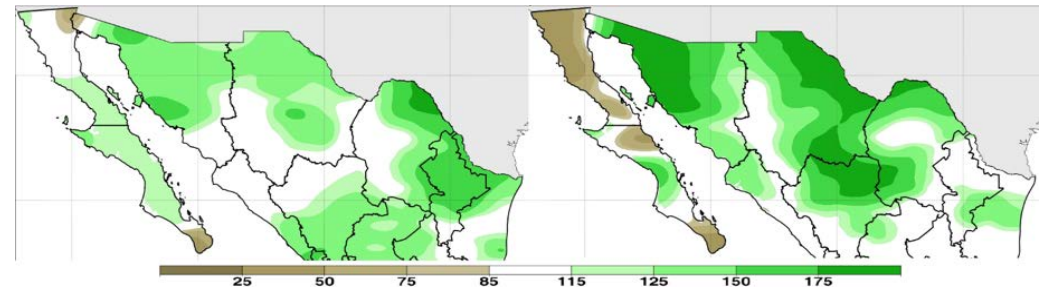

Figure 9 (above): Predicted precipitation anomalies for northern Mexico (in %), December (left) and January (right). Forecast made on October 1, 2018 by SMN.
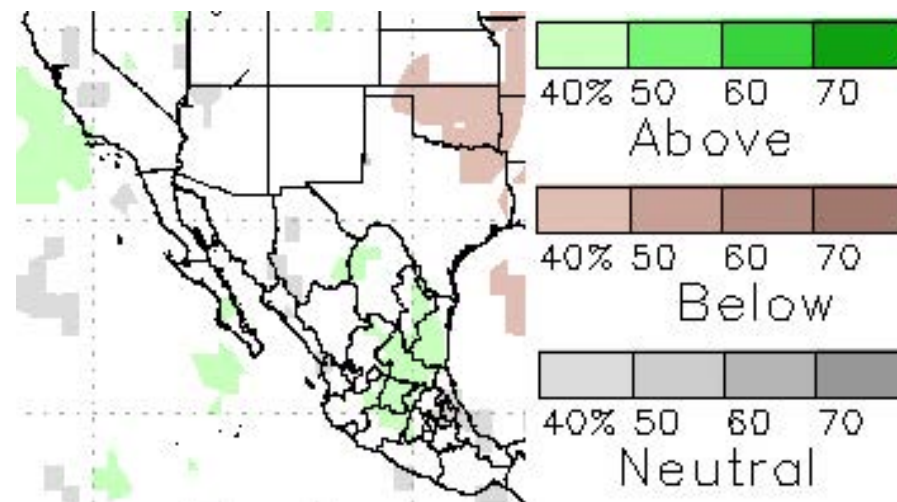

Figure 10 (left): NMME precipitation forecast for December-February. Forecast made by CPC.

FIRE

Fire potential is at a minimum during winter months, according to the North American Seasonal Fire Assessment and Outlook. The forecast for December and January indicates below-average fire potential for East Texas, and average fire potential for the remainder of Texas, New Mexico, and all of the northern Mexico states (Figure 11).
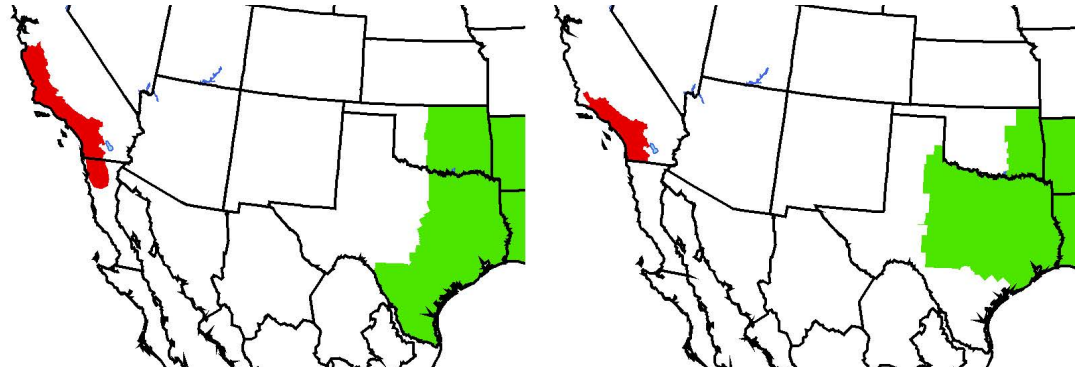

Figure 11 (above): Fire outlook for December (left) and January (right). Red shading indicates conditions that favor increased fire potential. Green shading indicates conditions that favor decreased fire potential. Forecast made on November 14, 2018 from NIFC and SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

As of mid-November, ENSO-neutral conditions prevailed, but sea-surface temperatures across the tropical Pacific were above average, showing signs of El Niño. The official forecast now predicts an about 80% chance of El Niño forming and continuing through winter, and about a 55-60% chance it will continue into the spring (Figure 12; IRI; NOAA). An El Niño watch is officially in effect. If forecasts are correct, chances of a wet winter in the Southwest U.S. and northern Mexico are likely to increase, as observed in the 3-month CPC precipitation forecasts.
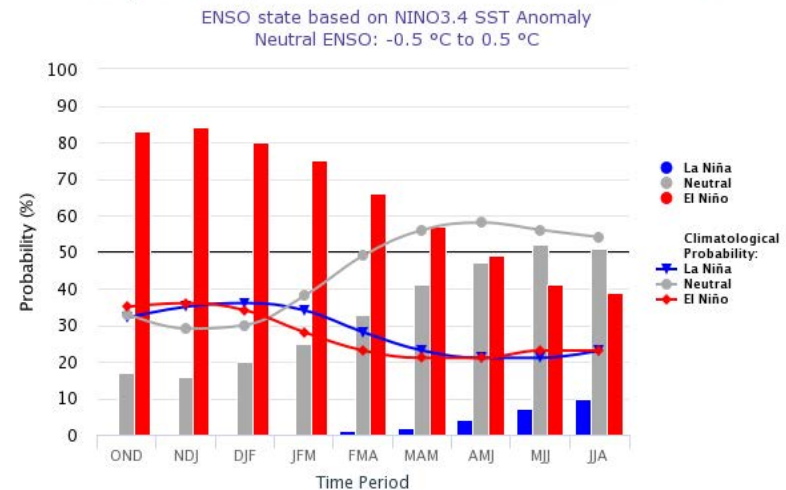

Figure12 (above): Probabilistic ENSO Forecast from IRI.

For more ENSO information:

English: http://iri.columbia.edu/our-expertise/climate/enso/enso-essentials/ y http://www.ncdc.noaa.gov/teleconnections/enso/.

Spanish: http://smn.cna.gob.mx/es/climatologia/diagnostico-climatico/enos y http://www.smn.gov.ar/?mod=biblioteca&id=68

ANNOUNCEMENTS

XXXIII CLIMATIC PERSPECTIVE FORUM IN THE MEXICAN REPUBLIC
The XXXIII Forum on Climate Perspectives in the Republic of Mexico will be held on November 28 and 29, 2018, in Mexico City, in order to inform decision makers on the climate perspective for the 2018- 2019 winter season. The relevant oceanic and atmospheric conditions will be presented, along with the predictions for winter storms, cold fronts, minimum temperatures and rains for the period from November to April 2018-2019.

WESTERN WATER SUMMIT
In this intensive two-day conference, Summit participants will collaborate and explore new approaches for water management, and share ideas for integrated water management technologies. The four main topics of the conference include water reuse, green infrastructure, soil and surface water, and water law. The summit will be held January 22-23 at the Paradise Point Resort in San Diego's Mission Bay.

ANNOUNCEMENTS

GOES-R SATELLITE
The GOES space satellites are tools used to formulate meteorological forecasts, and are able to analyze more accurately different atmospheric systems.

NEWS

Rio Grande River: One of the Most Endangered in the World, 26 de octubre, 2018
As The Rio Grande Dries Up, Experts Look For New Water Sources, 12 de noviembre, 2018
New Mexico Weighs Options for Reusing Oil and Gas Wastewater, 12 de noviembre, 2018
Pronostican sequías y días más calurosos, 26 de noviembre, 2018