

We wish to gain your feedback on the value of the Rio Grande/Bravo Climate Impacts & Outlook and ideas for improvement. We appreciate if you could please complete this short, 5-minute [survey](#).

Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK July 2017

SUMMARY

Forecasts favor above-average precipitation for all of the Rio Grande/Bravo Basin through October.

AT A GLANCE

Southwest New Mexico

The area was experiencing abnormally dry to moderate drought conditions as of June 30.

Southwest U.S.

Two heat waves, in mid-June and early July, wreaked havoc on the entire region, grounding flights and fueling wildfires.



Brownsville, TX

Monsoon storms have delivered over double the normal rainfall so far this year.

REGIONAL CLIMATE OVERVIEW

APRIL | MAY | JUNE

Over the last three months (April – June) precipitation was 5–70% below average for much of both New Mexico and Texas (Figure 1; left). Areas in Central and West New Mexico, East Texas, and Big Bend to Del Rio in southwestern Texas experienced precipitation 110–200% above average. Temperatures were 0–3°F

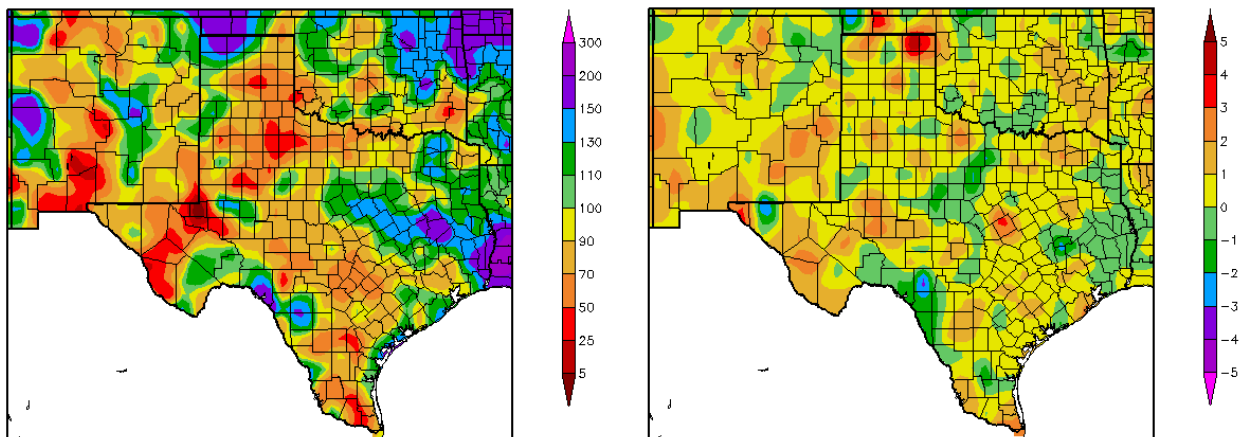


Figure 1: Percent of average precipitation (left) and departure from average temperature in degrees F (right), compared to the 1981–2010 climate average, for 4/1/2017–6/30/2017. Maps from [HPRCC](#).

(0–1.7 °C) above average for most of both states over the same time period (Figure 1; right). In Texas, the southwestern region, near Del Rio, and the central and eastern areas experienced temperatures 0–2 °F (0–1.1 °C) below average.

During the period of April to June of 2017 the temperatures continued above the average in the north of Mexico. The highest anomalies above 5 °C (9 °F) (Figure 2, left) above the average were observed mainly in southern Chihuahua and western Durango. Most regions above 40 °C (104 °F), more than 30 days, were located in Sonora and Chihuahua, and to a lesser extent in the northeast. (Figure 2, right).

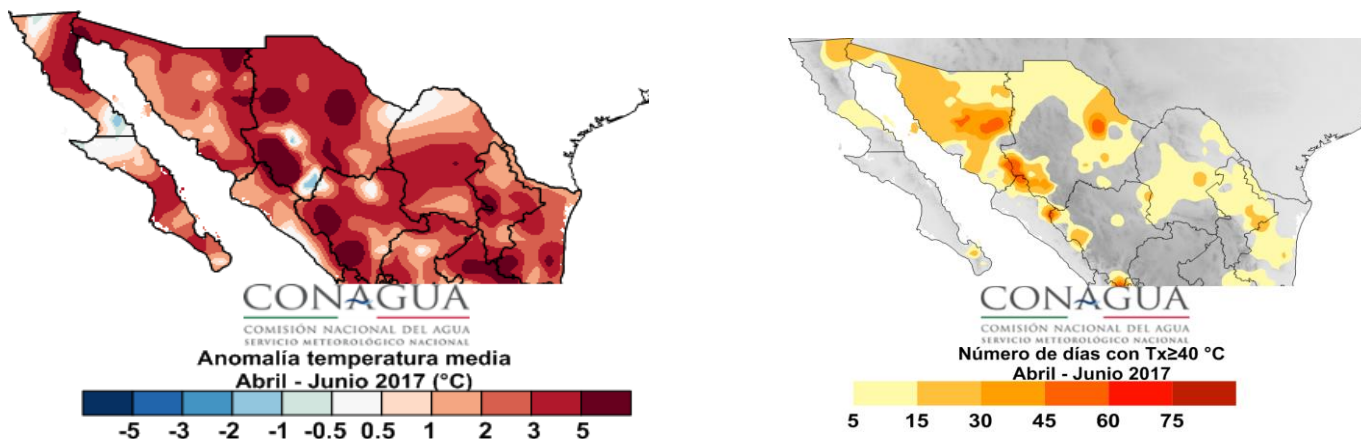


Figure 2: Temperature anomalies in °C (left) and number of days with maximum temperatures at or above 40 °C (104 °F) (right) for April–June. Maps from [SMN](#).

Temperatures from July 1 – 19 were 0–4 °F (0–2.2 °C) above average in New Mexico and most of Texas (figure not shown). Precipitation over the same time period was 5–75% below average for most of New Mexico. Precipitation was more varied in Texas, where the southern and northern portions of the state experienced precipitation 5–75% below average, and the central part of the state experienced precipitation 150–400% above average.

The first six months of the year (January – June) have been the second warmest on record for Texas and New Mexico, and the warmest on record for counties in Central and Southeast New Mexico and West and Southeast Texas ([NOAA](#)). These warm temperatures have resulted in well above average growing degree days across Texas and New Mexico. (Source: [Weekly Weather and Crop Bulletin](#)). Two heat waves—in mid-June around the summer solstice, and the beginning of July just after the 4th of July holiday—wreaked havoc in the region. Many cities set numerous records, including El Paso which reached 111 °F (44 °C) on June 23rd, and suffered numerous impacts. Two people died hiking in Carlsbad Caverns National Park, flights were cancelled at Sky Harbor Airport in Phoenix, warped train tracks derailed a train in California, and wildfires, fueled by the heat, destroyed structures and sent firefighters and citizens to the hospital.

DROUGHT

According to the [North American Drought Monitor](#) (NADM), small areas of drought had developed in the Rio Grande/Bravo region as of the end of June. Southwest New Mexico and small areas throughout Texas were experiencing abnormally dry to moderate drought conditions (Figure 3), but North American monsoon precipitation is likely to relieve drought conditions, according to the [U.S. Seasonal Drought Outlook](#) (figure not shown). Some areas in all of the Border States in Mexico were also experiencing abnormally dry conditions, as of June 31st.

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)



Agriculture and Agri-Food Canada
Environment and Climate Change Canada

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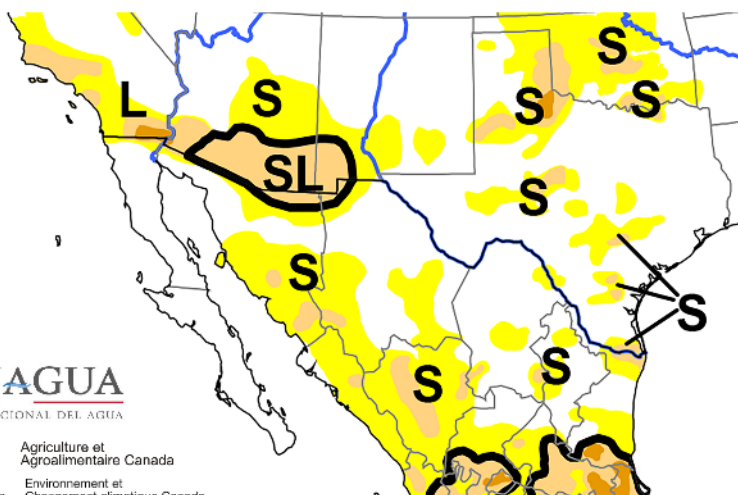


Figure 3 (left): North American Drought Monitor, released July 11, 2017.

FORECAST

AUGUST | SEPTEMBER | OCTOBER

TEMPERATURE

The one-month NOAA temperature outlook (August; Figure 4) favors increased chances for above-average temperatures in eastern New Mexico and most of Texas, and equal chances of below-, average, or above-average temperatures for western Texas and most of New Mexico. Chances for above-average temperatures increase through the summer and into the fall, with increased chances for above-average temperatures for all of both states through October, according to the NOAA three-month temperature outlook (August–October; [figure not shown](#)). The CONAGUA's National Meteorological Service (NMES) outlook for August forecasts maximum temperature conditions with above-average anomalies for the northern states of Chihuahua, Baja California, and some regions of

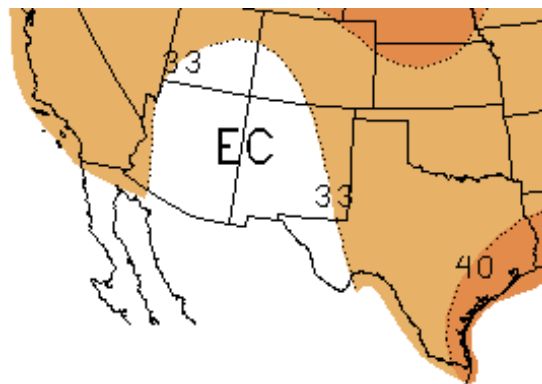


Figure 4 (above): NOAA one-month temperature outlook (August). Forecast made on July 20, 2017 by [CPC](#).

Sonora and Coahuila (Figure 5). For September similar conditions are expected in regions of Chihuahua, Coahuila and for northern of Sonora.

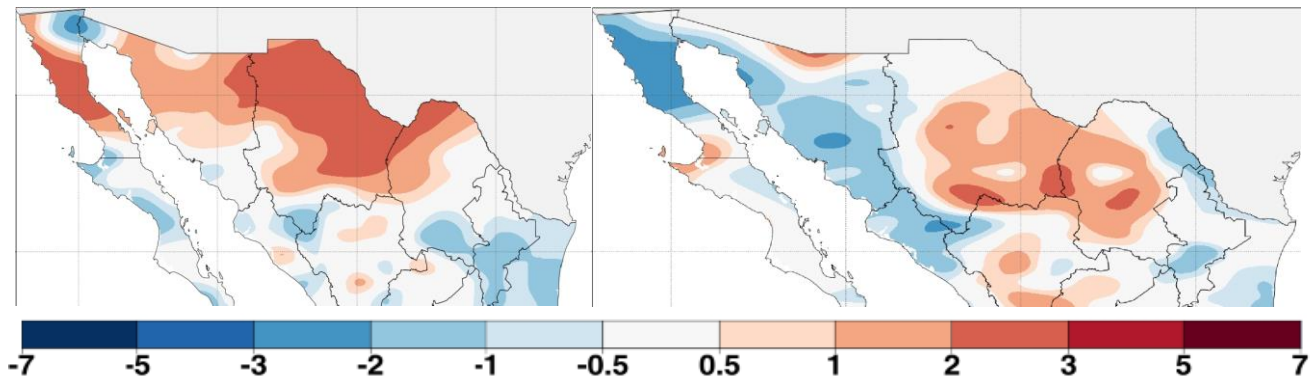


Figure 5 (above): Predicted maximum temperature anomalies for northern Mexico (in °C), August (left) and September (right). Forecast made on July 1, 2017 by [SMN](#).

PRECIPITATION

For August, the NOAA precipitation outlook predicts equal chances of below-, average, or above-average precipitation for most of Texas, and increased chances for above-average precipitation in almost all of New Mexico and along the U.S.-Mexico Border region in Texas (Figure 6). Chances for above-average precipitation increase through the summer and into the fall, with increased chances for above-average precipitation in almost all of both states through October ([figure not shown](#)).

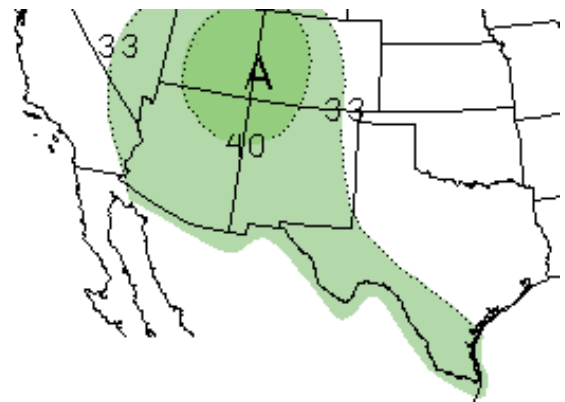


Figure 6 (above) : NOAA one-month precipitation outlook (August). Forecast made on July 20, 2017 by [CPC](#).

For the northern region of Mexico during August, the outlook for NWP precipitation forecasts below-normal conditions in Tamaulipas, Nuevo Leon, Coahuila, Sonora, Baja California and most of Chihuahua.

For September the precipitation perspective predicts similar conditions in the states of Chihuahua, northern Durango, northern Sinaloa, some regions of Sonora and Baja California; With conditions above normal, regions of Coahuila, Nuevo León and Tamaulipas are expected. As shown in figure 7.

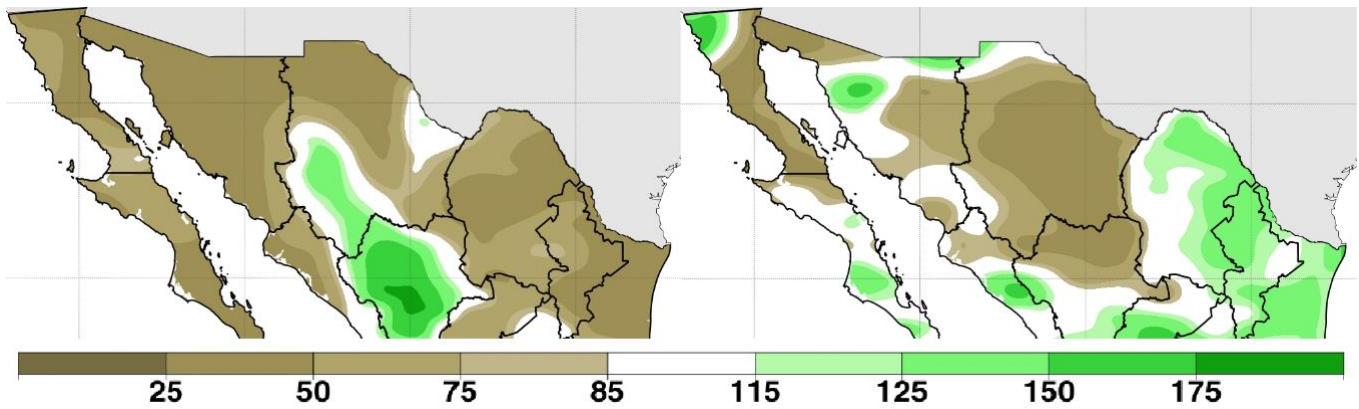


Figure 7 (above): Predicted precipitation anomalies for northern Mexico in (°C), August (left) and September (right). Forecast made on July 1, 2017 by [SMN](#).

FIRE

In June, the number of fires in the U.S. was near the 10-year average, but acres burned were about 30% higher than average and mostly concentrated in the Southwest and Great Basin states, according to the National Interagency Fire Center (NIFC). In Mexico, through early July, over 67,000 hectares (165,560 acres) have burned—the second highest, next to 2011, in the last 17 years. As the North American monsoon continues in the Southwest, NIFC forecasts, made on July 12th, favor normal fire potential for the entire Rio Grande/Bravo region for August, and decreased fire activity for South Texas in September (Figure 8). For Mexico, climatologically, the risk of forest fires increases during the months of August and September in the Northwest region, which includes the peninsula of Baja California and Sonora. For the remaining regions of the country, the risk is very low due to the rainy season, although the risk of fire is not eliminated at the national level, due to the spatial irregularity of the precipitation.

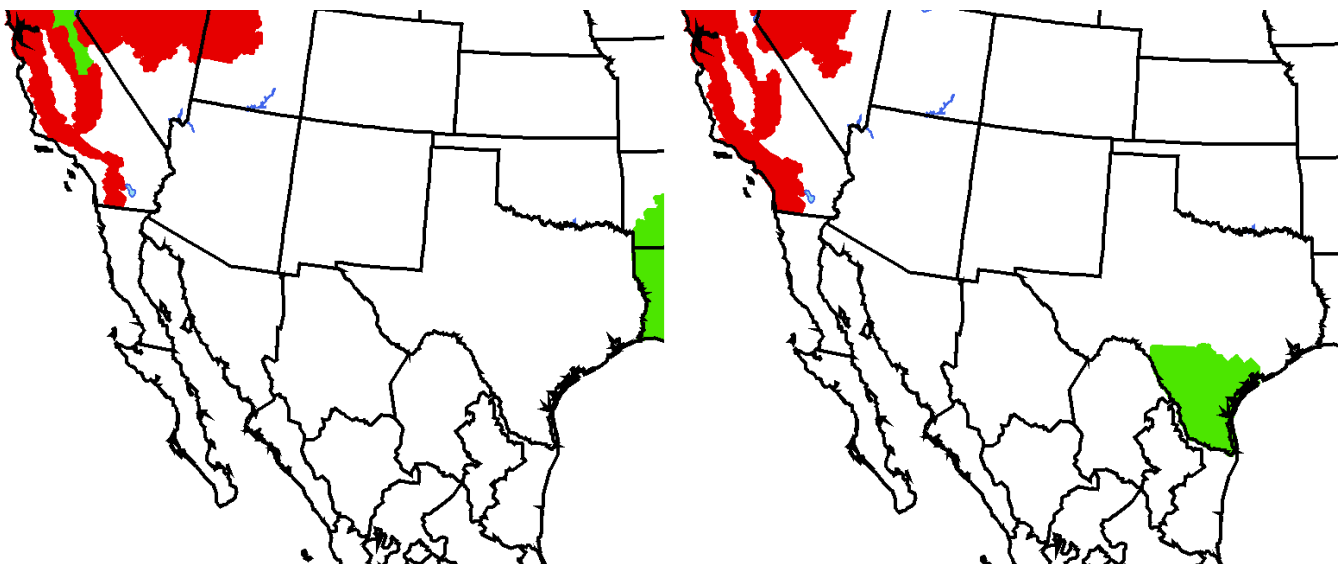


Figure 8 (above): Fire outlook for August (left) and September (right). Red shading indicates conditions that favor increased fire potential. Green shading indicates conditions that favor decreased fire potential. [Forecast](#) made on July 12, 2017 from [NIFC](#) and [SMN](#).

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

Sea surface temperatures (SSTs) in the east-central tropical Pacific Ocean were near the threshold for El Niño, but atmospheric conditions continued to reflect ENSO-neutral patterns (IRI; NOAA). Thus, the official ENSO forecast favors ENSO-neutral conditions (50-55% chance) into the winter (Figure 9). Chances for El Niño remain 35-40% relative to the long-term average through the fall and into the winter of 2017 (Figure 9).

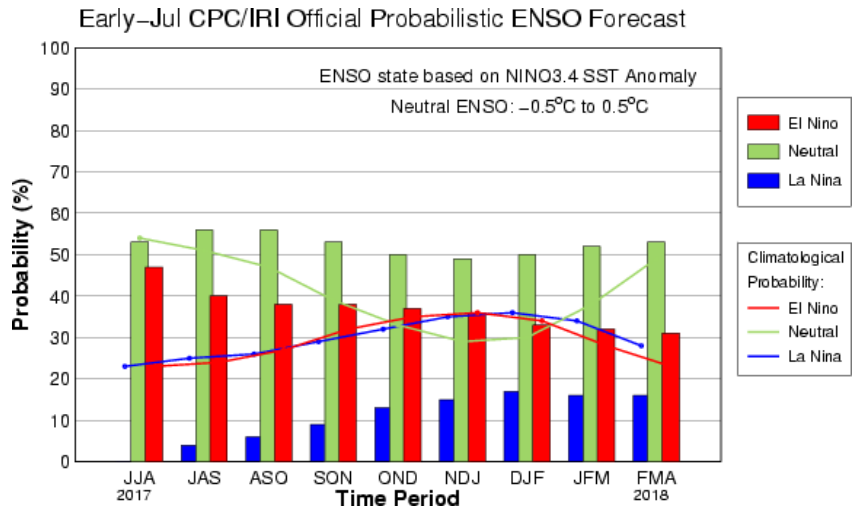


Figure 9 (above): ENSO probabilistic forecast from IRI.

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

MONSOON 2017

The North American monsoon officially began on June 15th, and the first storms arrived around June 25th, for the Rio Grande/Bravo region. Through July 20th the southern portion of Texas has received below-average precipitation, on average, and the central to northern portion has received above-average precipitation (Figure 10). Precipitation in New Mexico has been much more varied, ranging from 25-300% of average in various areas of the state.

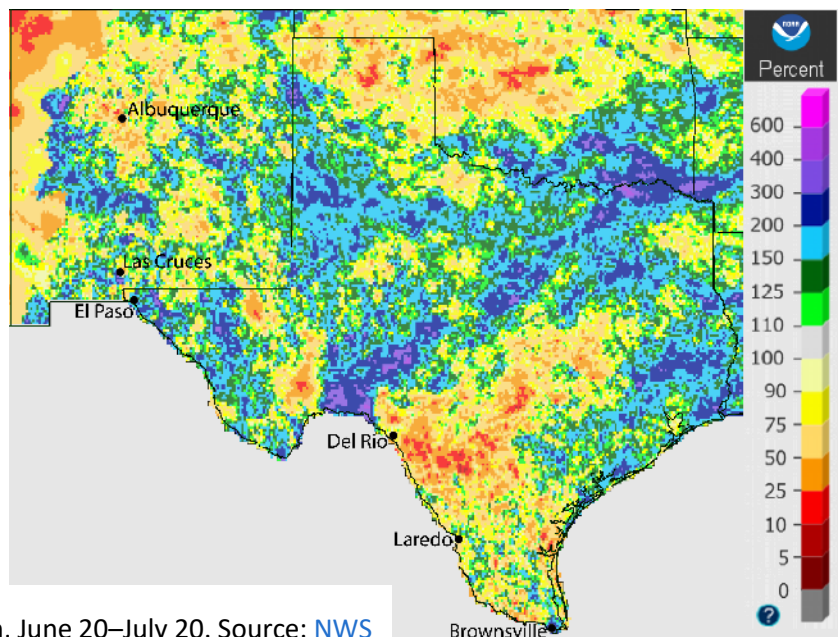


Figure 10: Percent of average precipitation, June 20–July 20. Source: NWS

Generally, monsoon precipitation is extremely variable. Even within the same city, some areas may receive large amounts of precipitation while other areas receive none. With that in mind, Figure 11 shows precipitation for 2017, compared to average, for weather stations along the Rio Grande. In El Paso, Texas, precipitation is thus far above average, thanks to two fairly large storms on June 25th (0.9 in; 22.6 mm) and July 15th (1.5 in; 36.8 mm).

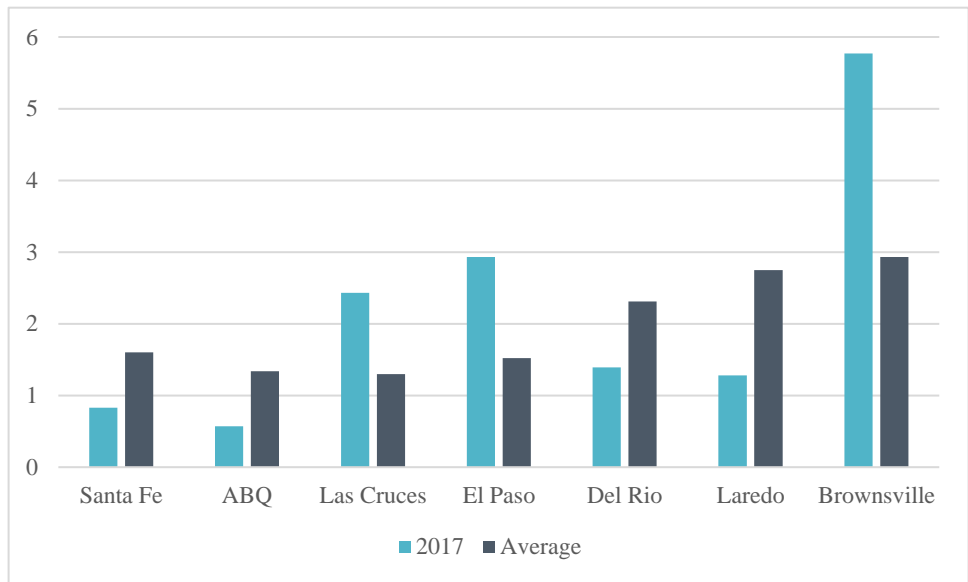


Figure 11: Precipitation amounts, June 15 – July 20, for 2017 (light blue), compared to average (dark blue). Source: [HPRCC](#)

Brownsville, Texas, has experienced precipitation about double that of average, and precipitation there has been steadier, with several storms recording over an inch (2.5 mm) of precipitation. Traveling north along the Rio Grande tells a different story. Precipitation in Albuquerque, New Mexico has been below average, with only a June 26th storm recording more than a trace of precipitation.

On the Mexican side, the monsoon began late in most of Sinaloa and Durango, where accumulated rains near 35 mm (1.4 in) accounted for less than half of what rains in the second half of June. The rains were slightly above normal in Sonora and its limits with Chihuahua. The other region that presented rains above normal was the northeast. The maximum rains accumulated in this period in northern Mexico were 143.0 mm in El Cuchillo, Nuevo León, 132.0 mm in Aqualulco, Tamaulipas and 81.2 mm in Tepache, Sonora.

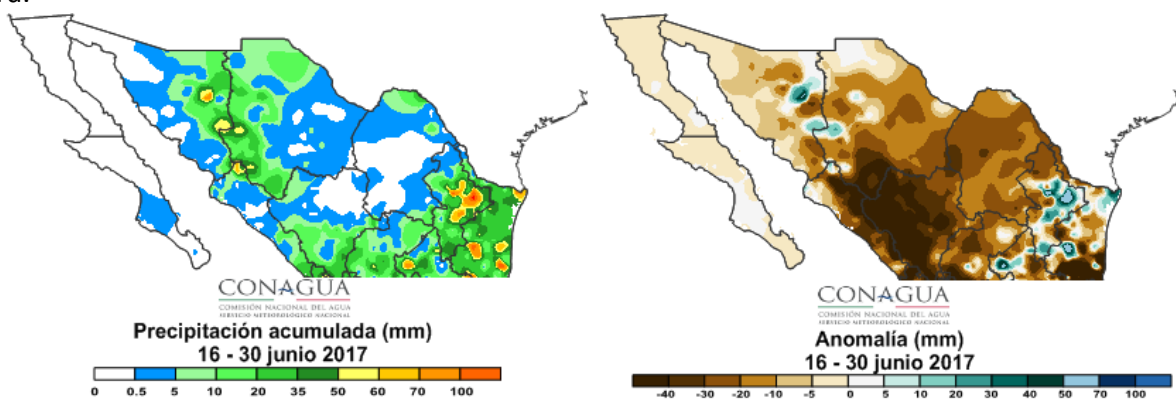


Figure 12: Accumulated precipitation from June 16-30 and anomaly in millimeters during the same period based on 1981-2010. Source: [SMN](#)

Additional Monsoon Resources:

- NWS: http://www.wrh.noaa.gov/twc/monsoon/monsoon_info.php
- CLIMAS: <http://www.climas.arizona.edu/sw-climate/monsoon>
- CONAGUA: <http://www.gob.mx/conagua/prensa/inicio-el-monzon-de-norteamerica-en-el-noroeste-de-mexico>

ANNOUNCEMENTS

98TH ANNUAL MEETING OF THE AMERICAN METEOROLOGICAL SOCIETY

The next meeting of the [American Meteorological Society](#) (AMS) is scheduled for January 7–11, 2018 in Austin, Texas. The meeting is “the world’s largest yearly gathering for the weather, water, and climate community.” [The deadline for submitting abstracts to the meeting is August 1, 2018.](#)

COURSE ON “MANAGING FOR A CHANGING CLIMATE”

The South Central Climate Science Center (SC CSC) is launching an online course, “Managing for a Changing Climate,” on August 21st. The course will provide an understanding of the climate system and climate change, including: the range of natural climate variability; external drivers of climate change; and the impacts of climate change on multiple sectors, such as ecosystems and indigenous populations. The course provides a personalized certificate upon completion. See this [flyer](#) for more information.

WEBINARS AND BRIEFINGS

The [Southern Climate Impacts Planning Program \(SCIPP\)](#) hosts webinars and posts briefings on drought and other hazards and their impacts. To be notified about upcoming webinars and briefings, please register on the webpage linked above, under “SCIPP Webinars & Briefings.”

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United States

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)

Mexico

Martín Ibarra | Idalia Ledesma | Alberto Chablé

Seasonal Forecasts
Mexico National Meteorological Services
(SMN)

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Mexico National Meteorological Services
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Mexico National Meteorological Services
(SMN)

Darío Rodríguez Rangel

Mexico National Meteorological Services
(SMN)

Juan Saldaña Colín

Climate Services
Mexico National Meteorological Services
(SMN)