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 August 2017

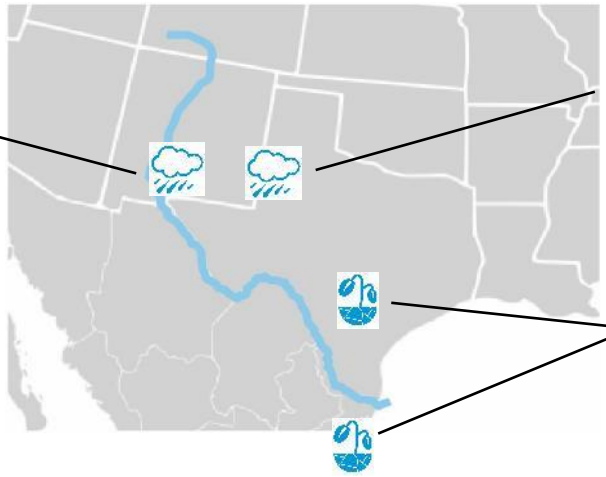
SUMMARY

Forecasts favor above-average temperatures for all of the Rio Grande/Bravo Basin, and above-average precipitation for Texas, through November.

AT A GLANCE

Las Cruces, NM

Three large monsoon storms, producing over an inch of rain each, have contributed to more than twice the average monsoon season precipitation.



Texas/East New Mexico

Above-average precipitation is forecasted through November.

South-Central Texas/South Tamaulipas

Moderate to severe drought conditions have developed.

REGIONAL CLIMATE OVERVIEW — MAY | JUNE | JULY

Over the last three months (May – July) precipitation was 25–90% below average for much of both New Mexico and Texas (Figure 1; left). Southwest New Mexico and westernmost Texas near El Paso, as well as areas near Del Rio, TX and Northwest New Mexico, experienced precipitation 110–200% of average. Temperatures were slightly above average (0–2 °F; 0–1.1 °C) 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 May to July of 2017, temperatures continued to be above average in northern Mexico. The highest anomalies, higher than 5 °C (9 °F) above average, were observed mainly in southern Chihuahua and western Durango (Figure 2, left). Most regions that experienced temperatures above 40 °C (104 °F) for more than 30 days were located in Sonora, Chihuahua and Coahuila, and to a lesser extent in the northeast portion of the country (Figure 2, right).

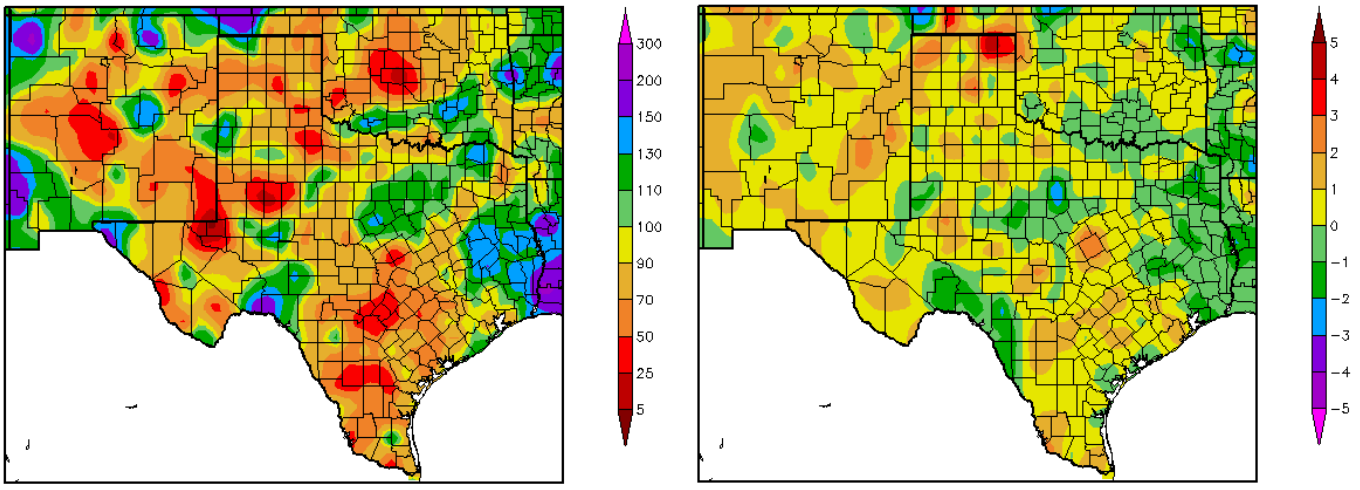


Figure 1: Percent of average precipitation (left) and departure from average temperature in degrees F (right), compared to the 1981–2010 climate average, for 5/1/2017–7/31/2017. Maps from HPRCC.

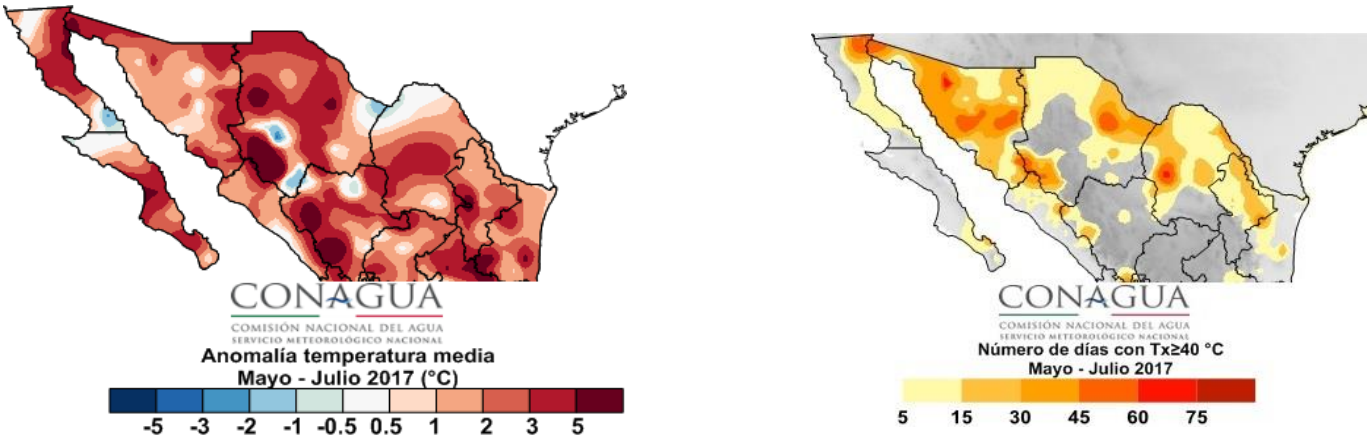


Figure 2: Temperature anomalies in °C (left) and number of days with maximum temperatures at or above 40 °C (104 °F) (right) for May–July. Maps from SMN.

Temperatures from August 1–16 were 0–4 °F (0–2.2 °C) below average in northern and eastern New Mexico and most of Texas, and 0–2 °F (0–1.1 °C) above average for Central New Mexico and southern and western Texas (figure not shown). Precipitation over the same time period was 150 – 800% above average for most of Texas and Southeast New Mexico. Central and western New Mexico, as well as southern and western Texas, near Big Bend National Park, received below average precipitation.

The first seven months of the year (January – July) have been the second warmest on record for Texas and New Mexico, and the warmest on record for counties in Central and southern New Mexico 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).

DROUGHT

Monsoon rains alleviated drought conditions in southwestern New Mexico over the past month, according to the North American Drought Monitor (NADM) (Figure 3). Moderate to severe drought developed, however, in South-Central Texas. In Mexico, delayed onset of the monsoon led to moderate to severe drought conditions in southern Tamaulipas. Some areas in all of the Border States in Mexico were also experiencing abnormally dry conditions, as of July 31st.

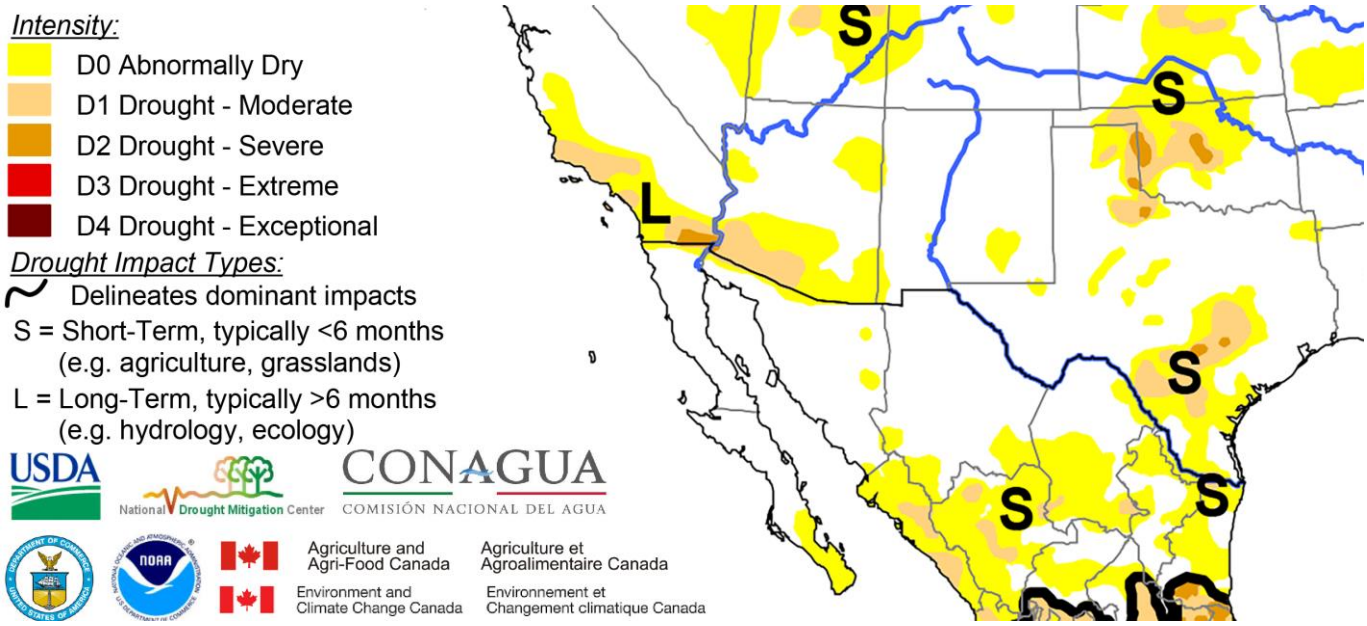


Figure 3: North American Drought Monitor, released August 16, 2017.

FORECAST — SEPTEMBER | OCTOBER | NOVEMBER

TEMPERATURE

The one-month NOAA temperature outlook (September; Figure 4) favors equal chances of below-, average, or above-average temperatures for almost all of Texas and New Mexico. Forecasts also favor increased chances for above-average temperatures along the gulf coast of Texas. 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 November, according to the NOAA three-month temperature outlook (September–November; figure not shown). The forecast from CONAGUA´s Servicio Meteorológico Nacional (SMN) for September, predicts

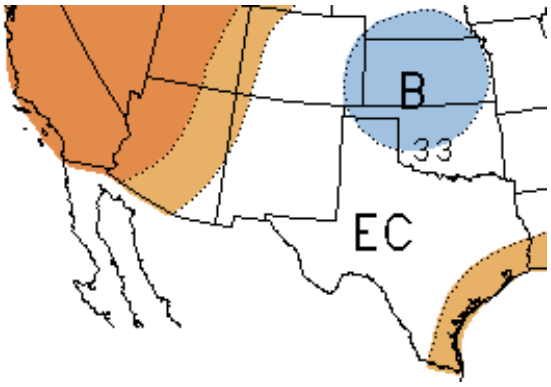


Figure 4 (above): NOAA one-month temperature outlook (September). Forecast made on August 17, 2017 by CPC.

above-average temperatures in northeastern Mexican, mainly in Coahuila, Nuevo León and Tamaulipas. For October, SMN expects the displacement of this pattern to move to the center of the region, in Chihuahua, Zacatecas and south Coahuila (Figure 5).

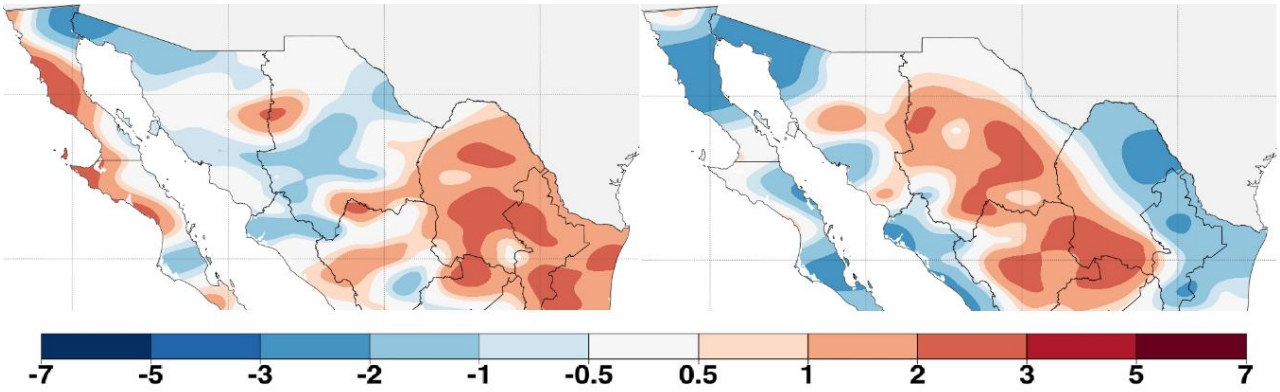


Figure 5 (above): Predicted maximum temperature anomalies for northern Mexico (in °C), September (left) and October (right). Forecast made on August 1, 2017 by SMN.

PRECIPITATION

For September, the NOAA precipitation outlook predicts equal chances of below-, average, or above-average precipitation for New Mexico and West Texas, and increased chances for above-average precipitation for the rest of Texas (Figure 6). Chances for above-average precipitation increase through the summer and into the fall, with increased chances for above-average precipitation in Southeast New Mexico and almost all of Texas through November (figure not shown).

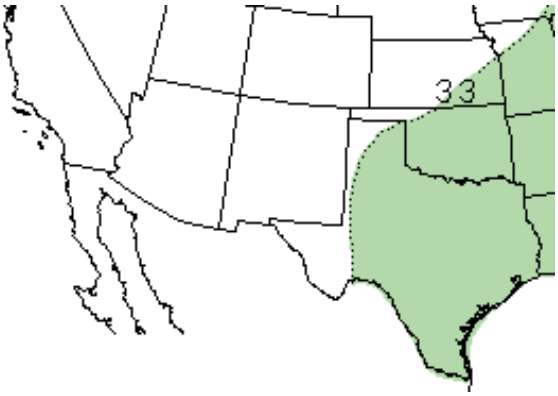


Figure 6 (above) : NOAA one-month precipitation outlook (September). Forecast made on August 17, 2017 by CPC.

For the northern region of Mexico during September, the SMN precipitation outlook predicts below-average precipitation in Coahuila, northern Chihuahua, and northern Baja California, and normal conditions in the rest of the border region. For October, precipitation is predicted to be above-average in northern Coahuila, northern Sonora and Baja California, and below-average in some regions of Chihuahua and Sonora (Figure 6).

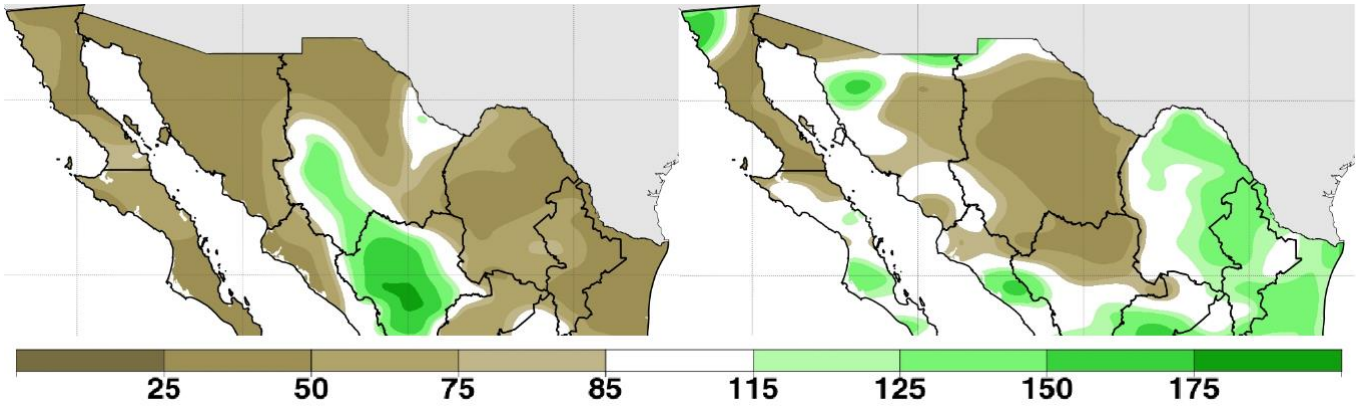


Figure 7 (above): Predicted precipitation anomalies for northern of Mexico in (°C), September (left) and October (right). Forecast made on August 1, 2017 by SMN.

FIRE

In Mexico, through late July, over 619,000 hectares had burned which is the third highest total since 1998, according to the National Interagency Fire Center (NIFC). Chihuahua was one of the states that recorded the most acres burned to date. Summer monsoon rains alleviated the threat of wildfire for most of the Southwest U.S. and Mexico, which have a normal risk of wildfire through October (Figure 8). In September, southern Texas has a reduced risk of fire, and California and Baja California have an elevated risk of fire through the early fall. 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. For the remaining regions of the country, the risk is very low due to the rainy season.

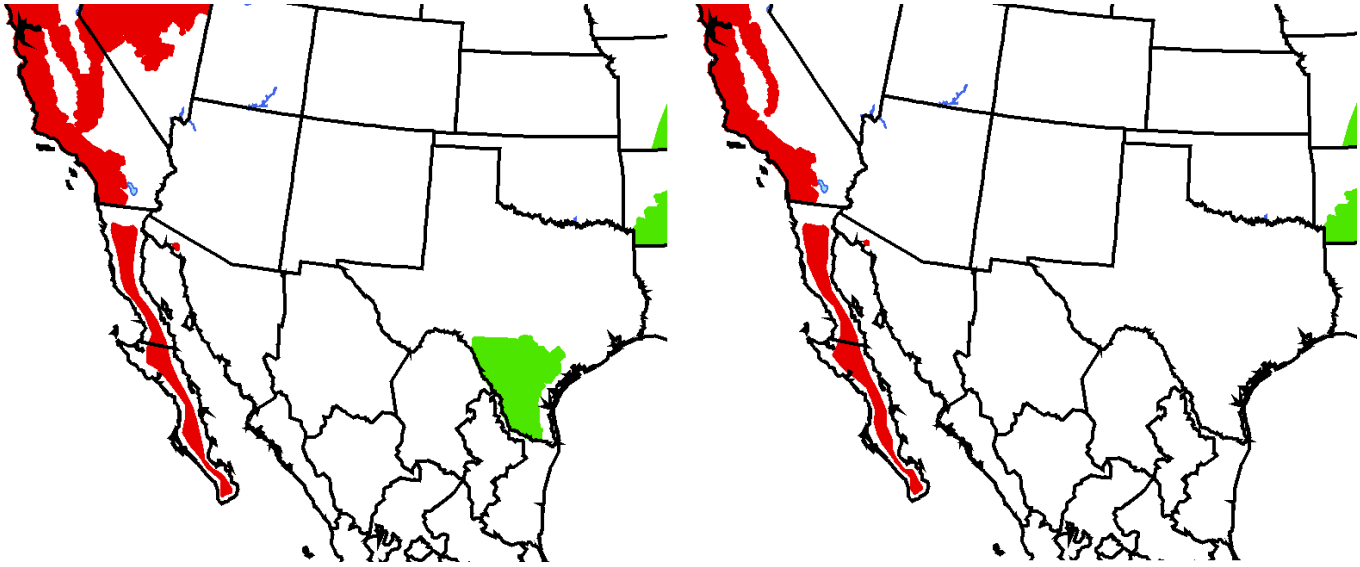


Figure 8 (above): Fire outlook for September (left) and October (right). Red shading indicates conditions that favor increased fire potential. Green shading indicates conditions that favor decreased fire potential. Forecast made on August 11, 2017 from NIFC and SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

As of mid-August, the tropical Pacific was in an ENSO-neutral state, as the ocean and atmosphere transition from a weak La Niña episode, during fall 2016. Currently, sea surface temperatures (SSTs) are near average, in the east-central tropical Pacific Ocean, and atmospheric conditions exhibit neutral patterns (IRI; NOAA). Thus, the official ENSO forecast favors ENSO-neutral conditions, with a 75-85% chance through the fall and 55-65% chance through the winter (Figure 9). Chances for El Niño remain less than 30% relative to the long-term average through the winter, and chances for La Niña increases from 10% this summer to 20% by next spring (Figure 9).

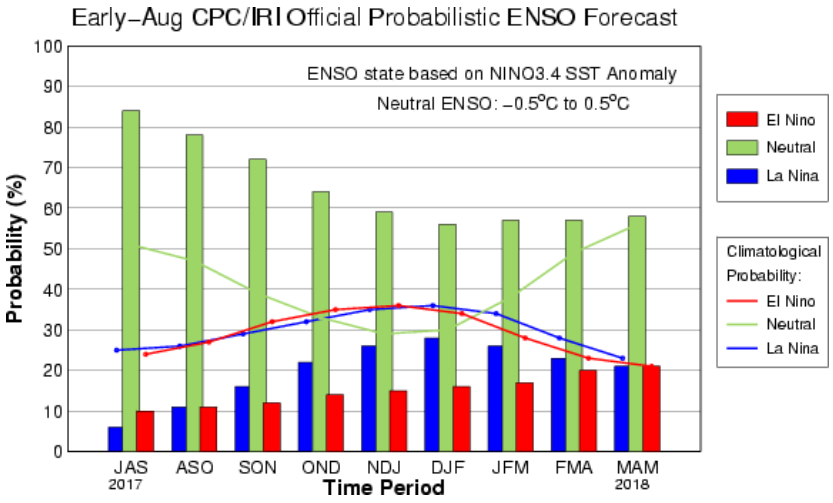


Figure 9 (above): ENSO probabilistic forecast from IRI.

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://www.smn.gov.ar/?mod=biblioteca&id=68

MONSOON 2017

Since mid-July, the majority of monsoon storms have been located north of Del Rio, Texas (Figure 10). Much of southern and eastern New Mexico, and northern and western Texas, received over 300% of average precipitation over the past 30 days. Santa Fe and Albuquerque have received most of their monsoon rainfall during this period, although they are still below average for the whole season. Two storms in Santa Fe, on July 27th and August 11th, contributed over half of this season's precipitation for the city.

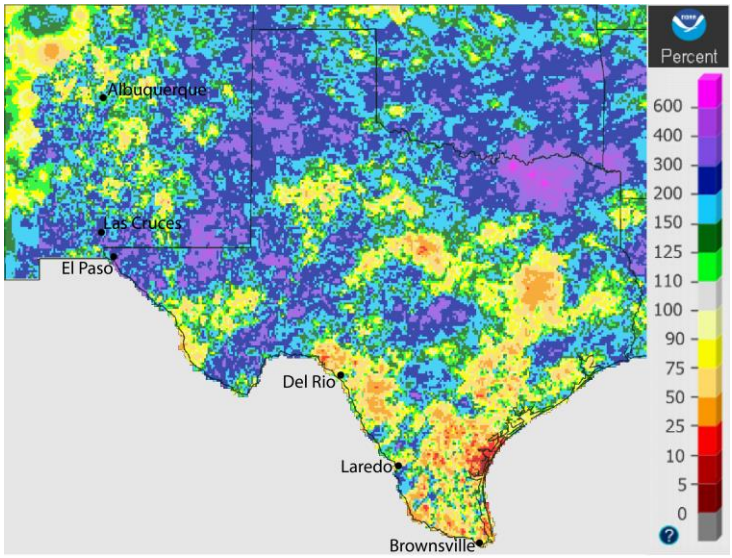


Figure 10: Percent of average precipitation, July 18–August 17. Source: NWS

In a similar pattern to the past 30 days, precipitation since the beginning of the monsoon season (June 15th) has been generally located north of Del Rio (Figure 11). In Texas, El Paso and Brownsville have experienced above-average precipitation (Figure 12). El Paso has experienced fairly steady rainfall over the season, resulting in precipitation almost double the average. Large storms in Las Cruces, on July 16th (1.1 in; 27.4 mm) and 18th (1.2 in; 30.5 mm) and August 1st (1.4 in; 35.6 mm) contributed to a season that has been well above average.

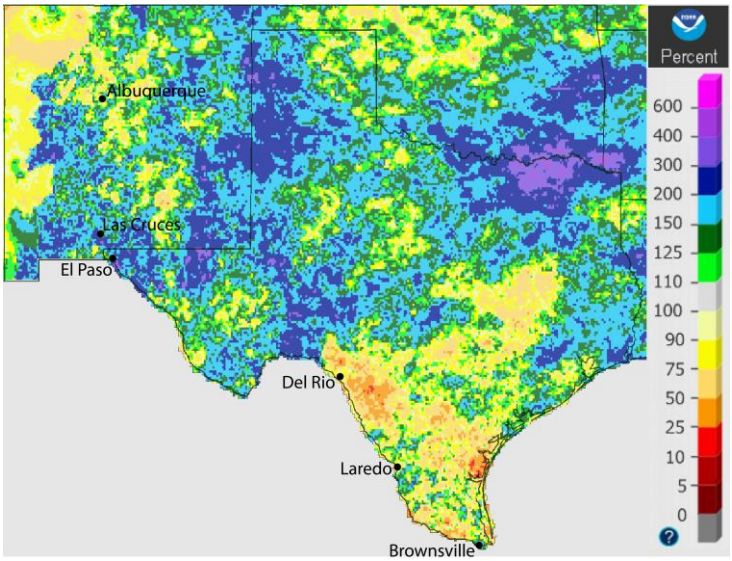


Figure 11: Percent of average precipitation, June 18–August 17. Source: NWS

After a delayed monsoon onset on the Mexican side, during the second half of June and throughout July, accumulated precipitation exceeded 300 mm (11.8 inches) in Sonora and Chihuahua. Rains were above normal in these two states, but Sinaloa, Durango and Coahuila had more marked deficits (below 50% of normal). Maximum rains accumulated in this period in northern Mexico were 432.0 mm (17 in.) in Basaseachi, Chihuahua and 376.2 mm (14.8 inches) in El Cajon Dam, Sonora.

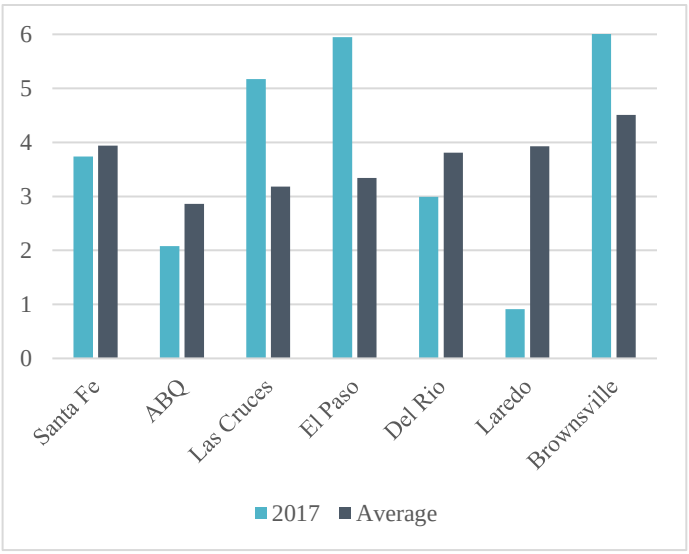
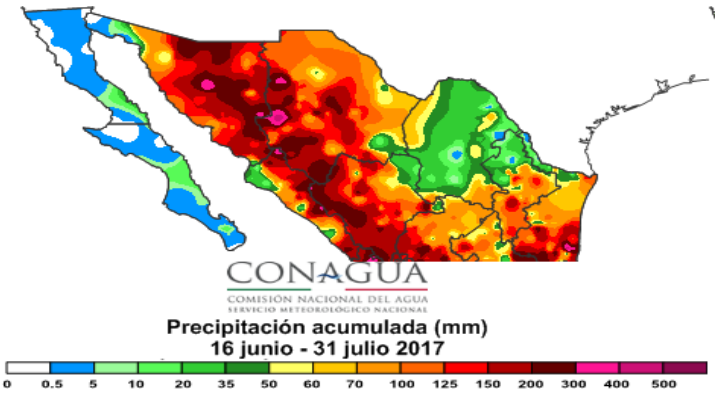


Figure 12 (right): Precipitation amounts, June 15 – August 16, for 2017 (light blue), compared to average (dark blue). Source: HPRCC



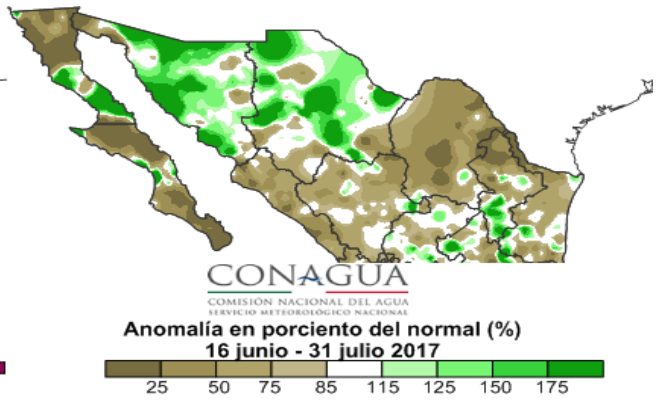


Figure 13: Accumulated precipitation from 16 June-31 July and percent of normal during the same period based on 1981-2010. Source: SMN

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."

NEWS

What it takes to recover from drought, August 9, 2017: https://phys.org/news/2017-08-recover-drought.html

August storms bring relief to Texas drought conditions, August 16, 2017: http://www.heralddemocrat.com/news/20170816/august-storms-bring-relief-to-texas-drought-conditions

Udall Delivers Keynote Address At New Mexico WRRI's Annual Water Conference: 'Federal Water Policy And New Mexico: Our Progress And The Challenges Ahead,' August 15, 2017: http://www.ladailypost.com/content/udall-delivers-keynote-address-new-mexico-wrri%E2%80%99s-annual-water-conference-federal-water

Study: Fast-Growing Texas Cities Are Hot – and Getting Hotter, August 14, 2017: http://www.publicnewsservice.org/2017-08-14/climate-change-air-quality/study-fast-growing-texas-cities-are-hot-and-getting-hotter/a58971-1

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Reynaldo Pascual | Minerva López
Drought

Julio Martínez
Diagnostic Observations

Darío Rodríguez Rangel
Fire

Juan Saldaña Colín
Climate Services