Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK

September 2018

Summary   Forecasts favor above-average temperatures for the entire Rio Grande/Bravo region, and above-average precipitation for western New Mexico through December.

AT A GLANCE

1 New Mexico
From January-August, New Mexico experienced record warm average and maximum temperatures.

2 Northern New Mexico/Texas Panhandle
Severe to exceptional drought conditions persisted over the past month. Drought conditions are predicted to continue, but decrease in severity by November.

3 Tamaulipas, MX
Moderate drought conditions developed over the past month.

REGIONAL CLIMATE OVERVIEW
JUNE | JULY | AUGUST

Temperatures over the past three months (June-August) were 2-5 °F (1.1-2.8 °C) above average for most of New Mexico and Texas (Figure 1, left). Precipitation over the same time period was 25-70% of average for most of both states (Figure 1, right). From January-August, New Mexico experienced record warm average and maximum temperatures, and Texas temperatures were much above average (NOAA State of the Climate).

Temperatures from September 1 through 19 were 0-4 °F (0-2.2 °C) above average in most of New Mexico, and northern, eastern, and westernmost Texas. The rest of Texas experienced temperatures 0-3 °F (0-1.8 °C) below average (figure not shown). Precipitation over the same time period was 200-800% of average for most of Texas, 100-200% for Northeast and Southwest New Mexico, and 5-75% of average for Northwest New Mexico, westernmost Texas, and the Texas panhandle.

From June to August, temperatures continued to be warmer than average over much of Baja California, and the North-Central and Northeast parts of the country. However, the Northwest, mainly Sonora, was again colder than normal. Anomalies greater than 9°F (5°C) above average covered most of Durango and some of Chihuahua, and the Northeast experienced anomalies 3.6–5.4°F (2–3°C) above average (Figure 2, left). The distribution of the number of days with maximum temperatures at or above 104°F (40°C) was similar to the May-July quarter, with the highest number of days (more than 70 days) in the limits of Sonora and Baja California (Figure 2, right).

Monsoon rains continued to be above average in Northwest Mexico in June-August, leading to drought recovery in the region. Greater than 23.6 in (600 mm) accumulated in the limits between Sinaloa-Nayarit and Sonora-Chihuahua (Figure 3, left). Rains were above average in most of Sonora and Chihuahua, but the Northeast continued to be dry for another quarter (Figure 3, right).
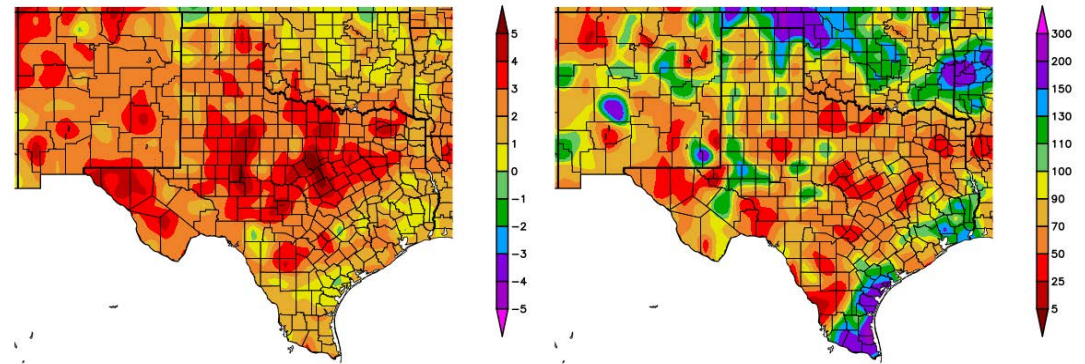
Figure 1 (above): Departure from average temperature in degrees F (left) and percent of average precipitation (right), compared to the 1981–2010 climate average, for 6/1/2018–8/31/2018. Maps from HPRCC
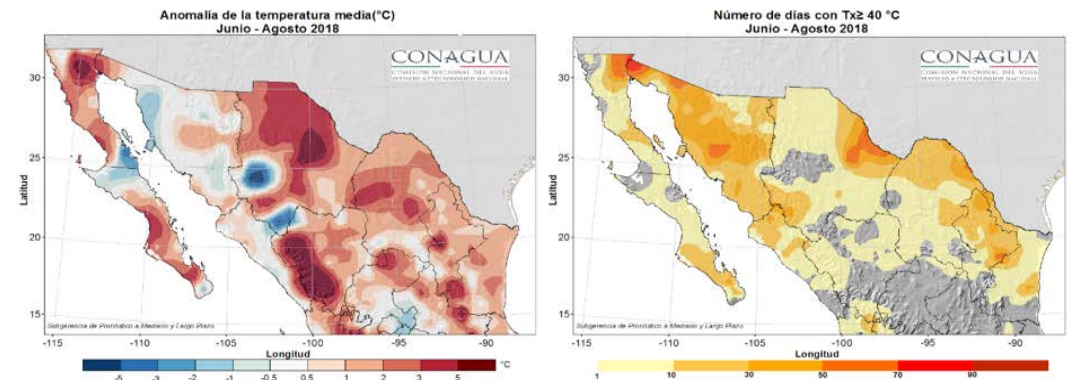
Figure 2 (above): Temperature anomalies in °C (left) and number of days with maximum temperatures at or above 104 °F (40 °C) (right) for June–August. Maps from SMN.
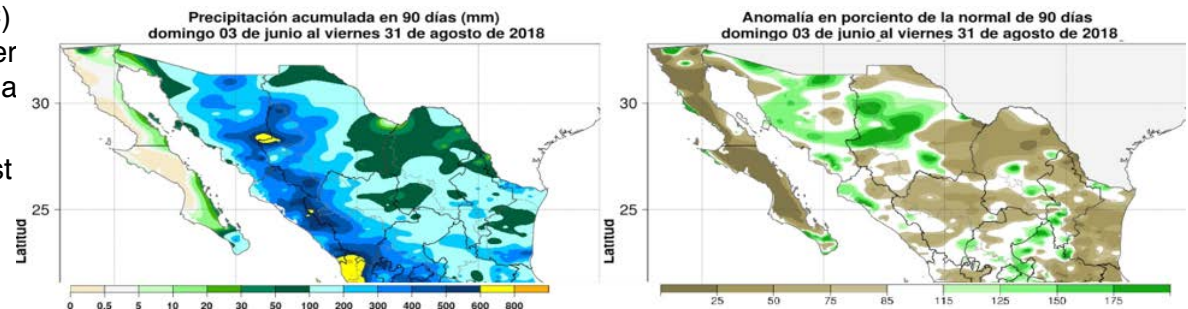
Figure 3 (left): Accumulated precipitation in mm (left) and percent of normal (right) for June–August. Maps from SMN.

DROUGHT

Drought conditions persisted at levels similar to last month in New Mexico and Texas, according to the North American Drought Monitor (NADM) (Figure 4). Severe to exceptional drought still covers over half of New Mexico. In Texas, severe to extreme drought conditions persist, mostly in the central portion of the state, and near Laredo. In Mexico, moderate drought conditions developed in southern Chihuahua and Coahuila, and in Tamaulipas and Nuevo León. Drought conditions are predicted to continue, but decrease in severity across most of New Mexico and the Texas panhandle, by the end of November, according to the U.S. Seasonal Drought Outlook. In southern New Mexico, drought is likely to dissipate during this time. For Central, Northeast, and Southwest Texas, drought conditions are predicted to persist.
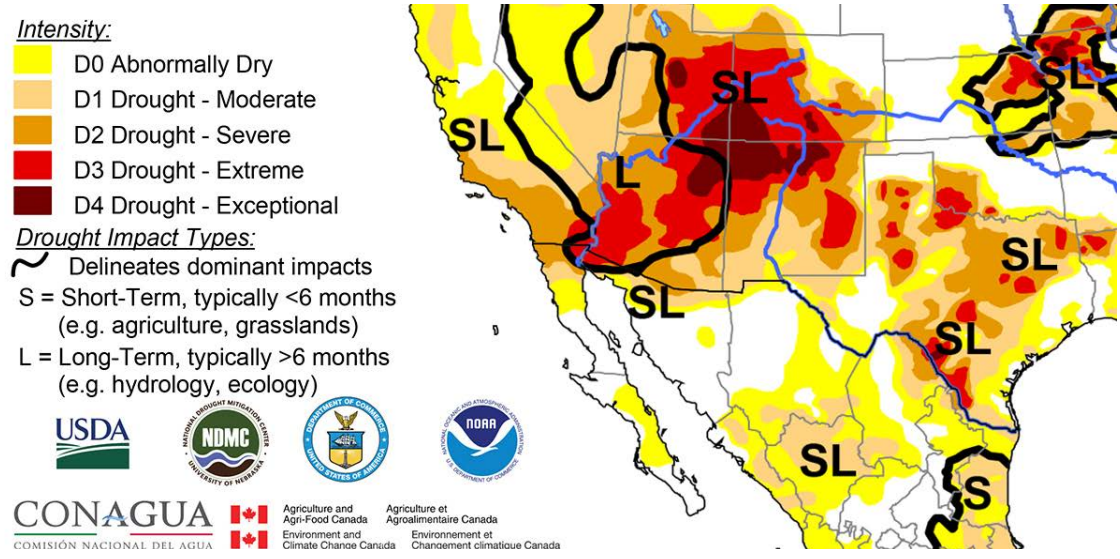

Figure 4 (above): North American Drought Monitor, released September 12, 2018.
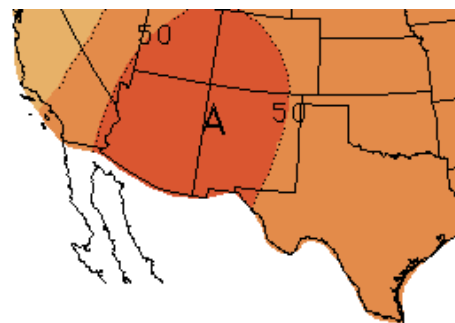
FORECAST
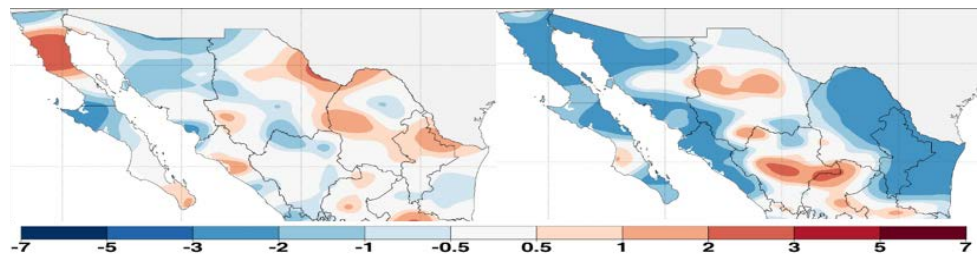### OCTOBER | NOVEMBER | DECEMBER

TEMPERATURE

The three-month NOAA temperature outlook (October-December; Figure 5) favors chances of above-average temperatures for all of New Mexico and Texas, through December. The one-month outlook favors chances for above-average temperatures in the western half of New Mexico, and equal chances for below-average, average, or above-average temperatures for all of Texas and eastern New Mexico for October (figure not shown).

The SMN outlook for October predicts above-average maximum temperatures in the center of Baja California, Northeast Chihuahua, Northwest and Central Coahuila, and northern Nuevo León and Tamaulipas (Figure 6). Alternatively, below-average maximum temperatures are expected in northern Baja California, a large part of Sonora, and Northwest and southern Chihuahua. For November, above-average maximum temperatures are expected in the central and southern regions of Chihuahua, central and eastern Durango, and northern Zacatecas, while below-average conditions are expected in the Peninsula of Baja California, Sonora, Sinaloa, Coahuila, Nuevo León and Tamaulipas.

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 October-December favors chances for above-average temperatures for almost all of the Rio Grande-Bravo region (Figure 7).

Figure 5 (left): NOAA three-month temperature outlook (October-December). Forecast made on September 20, 2018 by CPC.

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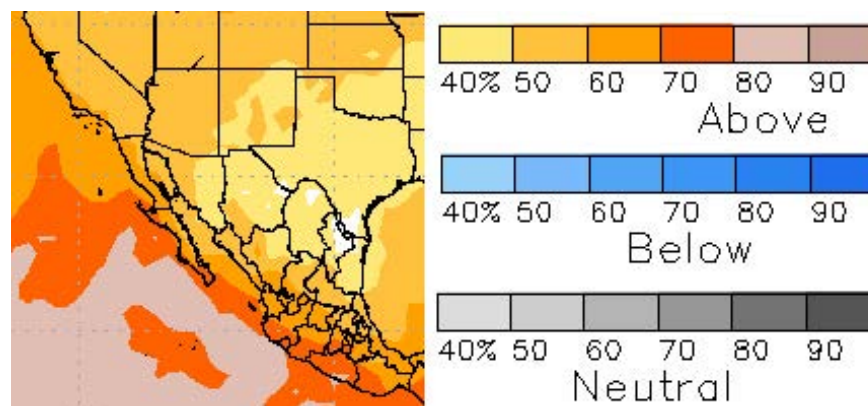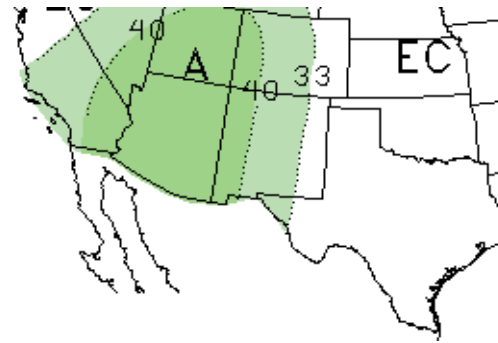

Figure 7 (above): NMME temperature forecast for October-December. Forecast made by CPC.
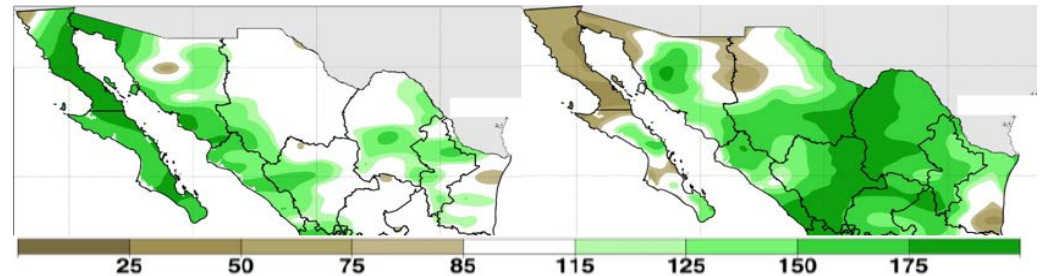
PRECIPITATION

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

For October, the SMN precipitation forecast predicts above-average precipitation for the Peninsula of Baja California, Sonora, Southwest Chihuahua, central and western Durango, Central and Northeast Coahuila, much of Nuevo León, and southern Tamaulipas (Figure 9). Below-average conditions are expected for Northwest Baja California, Central Sonora and northern Tamaulipas. For November, above-average conditions are expected in regions of Baja California Sur, central and southern Sonora, Sinaloa, Durango, southern and eastern Chihuahua, Coahuila, Nuevo León, Zacatecas, San Luis Potosí and northern Tamaulipas. Below-average conditions are expected in Baja California, northern Sonora, Northwest Chihuahua, and southern Tamaulipas; the rest of the region is expected to experience precipitation similar to average.

NMME forecasts increased chances of above-average precipitation for Central and South New Mexico, western and southern Texas, and most of the northern Mexican states, except for southern Tamaulipas, for October-December (Figure 10). The forecast likely reflects the predicted transition to El Niño in the fall.

Figure 8 (left): NOAA three-month precipitation outlook (October-December). Forecast made on September 20, 2018 by CPC.


Figure 9 (above): Predicted precipitation anomalies for northern Mexico (in %), October (left) and November (right). Forecast made on September 1, 2018 by SMN.
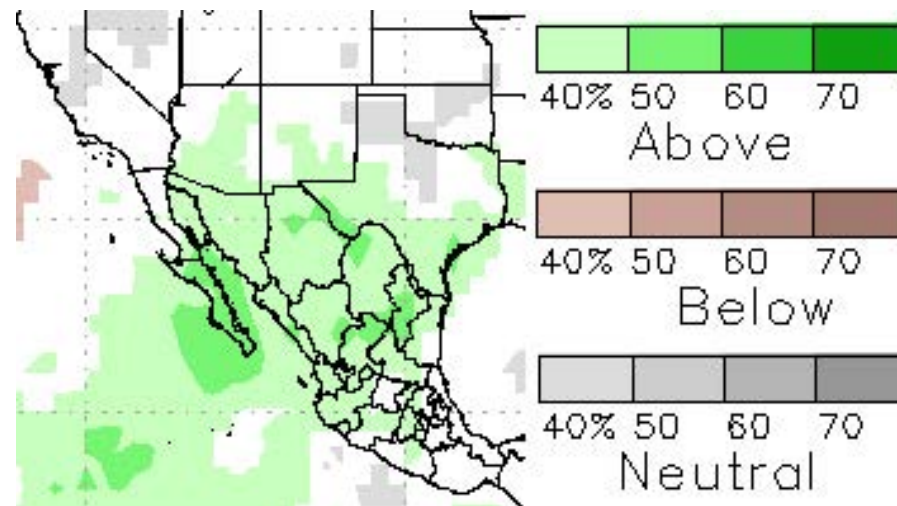
Figure 10 (left): NMME precipitation forecast for October-December. Forecast made by CPC.
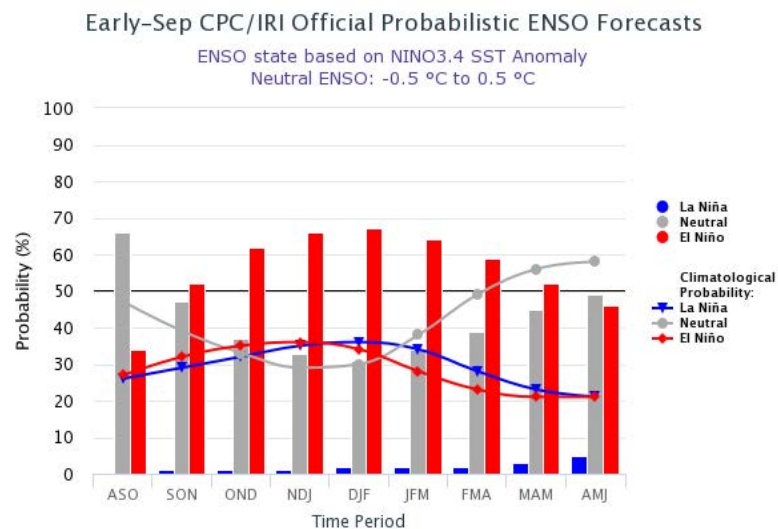
FIRE

Monsoon precipitation in the Southwest U.S. and northern Mexico this summer has eliminated prospects for above-average fire potential across the region, according to the U.S. National Significant Wildland Fire Potential Outlook and SMN. Forecasts for October and November indicate average fire potential for all of New Mexico, West Texas, and Mexico, except for the Baja California peninsula where conditions favor increased fire potential (Figure 11). Conditions in the eastern half of Texas favor decreased fire potential.
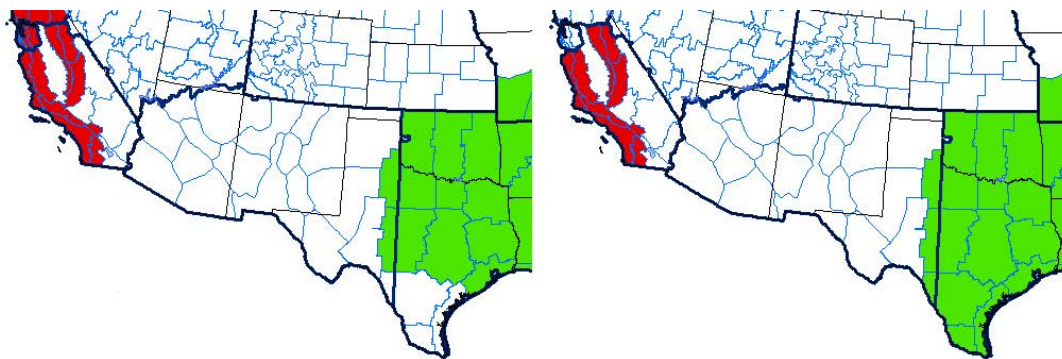
Figure 11 (above): Fire outlook for October (left) and November (right). Red shading indicates conditions that favor increased fire potential. Green shading indicates conditions that favor decreased fire potential. Forecast from NIFC and SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

As of mid-September, sea-surface temperatures and atmospheric conditions in the tropical Pacific Ocean continued to indicate ENSO-neutral conditions. Weak El Niño conditions are forecasted to develop by the fall (IRI; NOAA). An El Niño watch is officially in effect. The latest forecasts suggest weak El Niño development by fall (an about 50-55% chance), growing to an ~65-70% chance by winter (Figure 12). If forecasts are correct, chances of a wet winter in the Southwest U.S. and northern Mexico are likely to increase.

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

HEAT WATCH

The heat season is coming to an end in the Rio Grande-Bravo region, but maximum temperature records were still set in some areas over the past month. On August 25, Laredo, TX reached 104 °F (40 °C), and on August 29, El Paso reached 102 °F (39 °C), both setting records. Maximum temperatures on September 1 and 2 set records in Laredo and Brownsville, TX, with temperatures of 104 °F (40 °C) and 99 °F (37 °C), respectively. In mid-September, temperatures reached record levels in Albuquerque and Santa Fe, NM with temperatures of 92 °F (33 °C) on September 17 and 18 in Albuquerque, and 90 °F (32 °C) on September 17 in Santa Fe.

Heat waves decreased in Northwest Mexico, but warmth continued in the North-Central region of the country. In Chihuahua, the record of 111 °F (44.0 °C) on August 3 matched the prior record from August 14, 1976 in the Dam Luis L. Leon. While in Nuevo León, there was a new record of temperature on August 19 with 111 °F (44.0 °C) that surpassed the previous record of 110 °F (43.5 °C) on August 4, 2009 in La Pamona, N. L. The maximum monthly temperature was 118 °F (48.0 °C) in Mexicali, B. C. recorded on August 4 - 6 and 117 °F (47.0 °C) in San Luis Rio Colorado, recorded on August 3 - 5, these values did not exceed their previous records in both locations.

MONSOON TRACKER

*The following summary is adapted from the September 2018 issue of the [CLIMAS Southwest Climate Outlook](#).

Monsoon precipitation varies considerably in space and time across the Southwest, as illustrated by monthly totals for various stations (Fig. 13). Statewide patterns highlight widespread areas of both above- and below-average totals (see Fig. 15 and 16). The Fig. 14 plots of daily precipitation, temperature, and dewpoint temperature for the same stations as Fig. 13 capture the intermittent nature of monsoon precipitation as well as the persistent elevated dewpoint most locations experienced this summer.

In many years, breaks in monsoon activity (sometimes for extended periods) occur, characterized by decreased humidity and increased temperatures. While we had fewer such intervals this year, that was no indicator of consistent precipitation (El Paso and Phoenix are both good examples). As noted last month, sustained periods of high dewpoints without precipitation led to extreme heat warnings in the region and persistent warm overnight temperatures. Without storm-induced cooling, elevated dewpoint temperatures can be downright miserable, especially for households that rely on evaporative coolers for interior climate control.
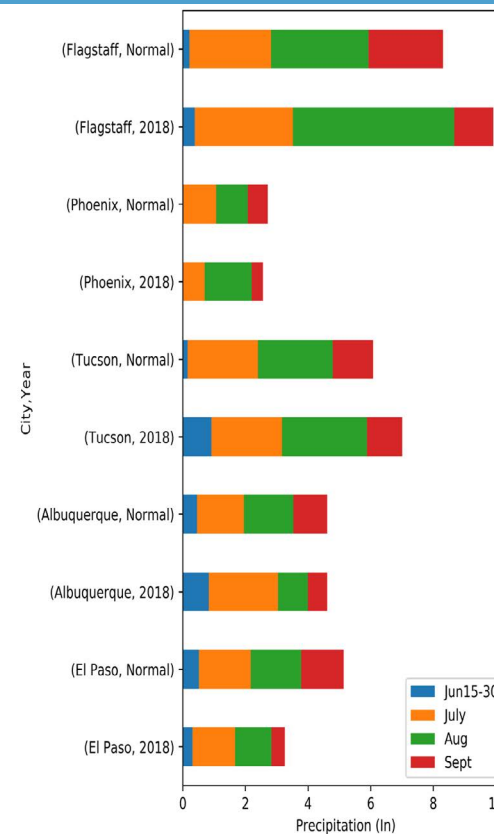
Figure 13 (left): Monthly monsoon precipitation totals – 2018 vs. average.

MONSOON TRACKER CONT'D

The seasonal totals and percent of average precipitation since August 21 (Fig. 15) and June 21 (Fig. 16) help characterize the spatial variability and intensity of the monsoon thus far. Looking at city totals as of September 20, Albuquerque and Las Cruces, NM have both received average precipitation since the start of the monsoon. El Paso, TX has received below-average precipitation, and other cities along the TX-Mexico border have received above-average precipitation.
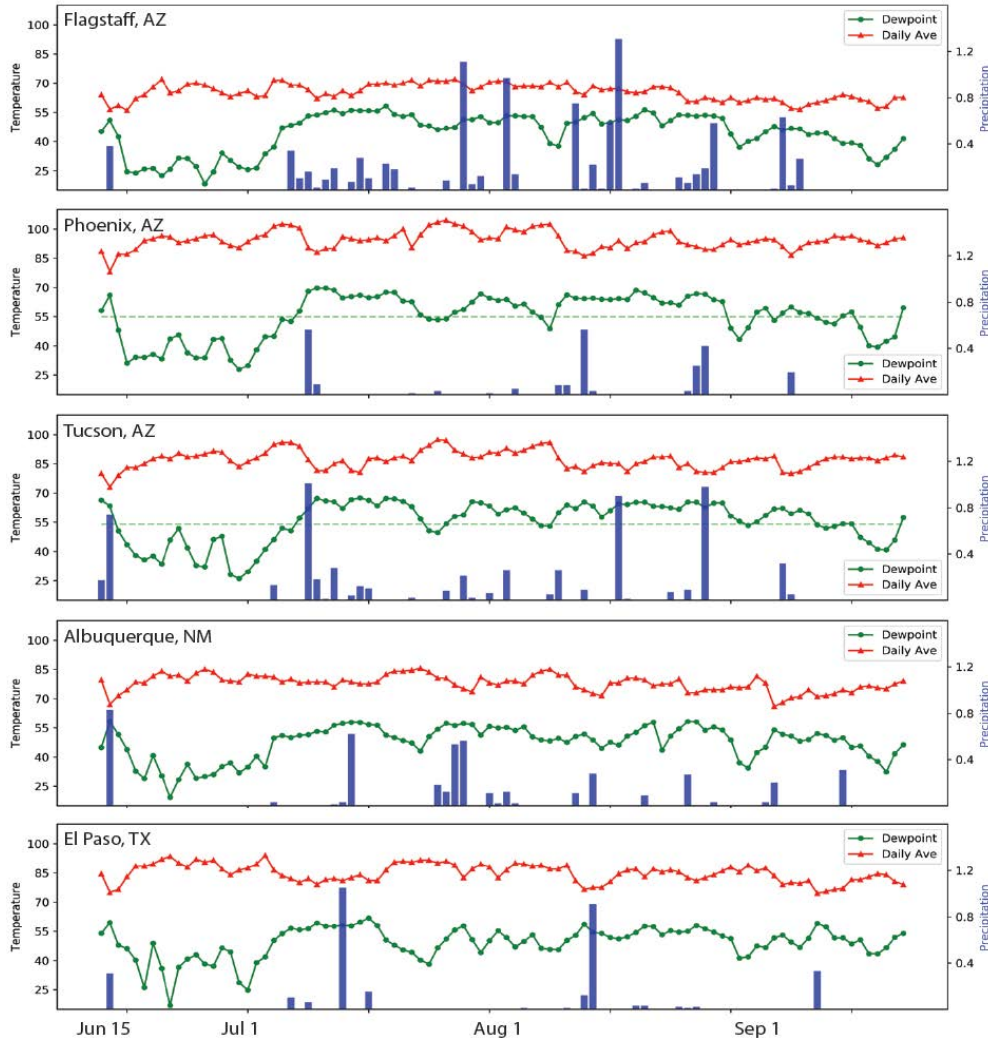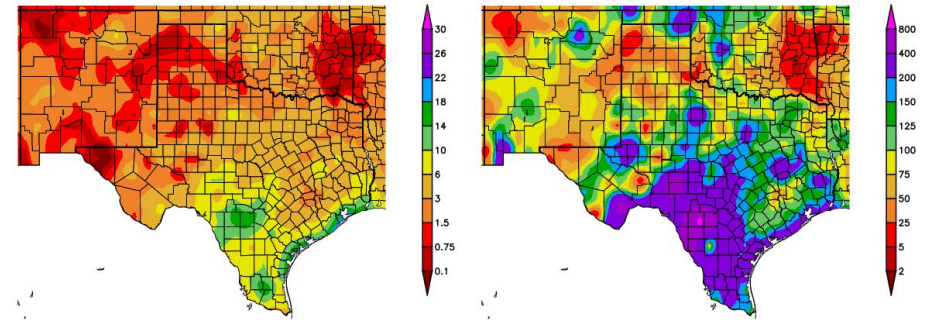

Figure 15 (above): Total precipitation (in inches) (left), and percent of average precipitation (right), for August 21-September 19. Maps from HPRCC.
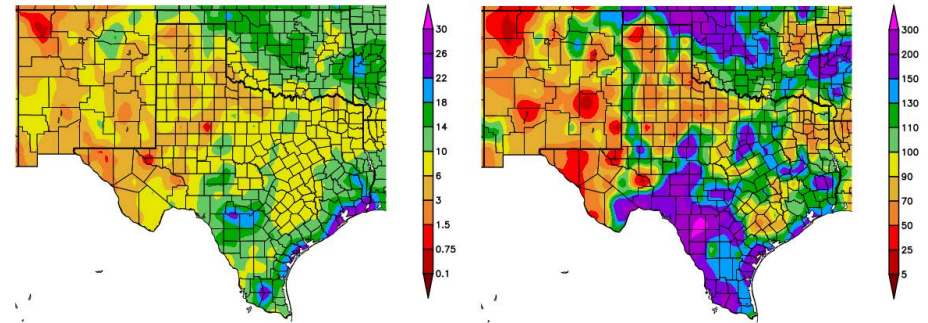

Figure 16 (above): Total precipitation (in inches) (left), and percent of average precipitation (right), for June 21-September 19. Maps from HPRCC.

Figure 14: Dewpoint and daily average temperature, daily precipitation, June 15-August 13, 2018.

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-mon-zon-de-norteamerica-en-el-noroeste-de-mexico

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ANNOUNCEMENTS

SMART WATER SYSTEMS: TECHNOLOGICAL INNOVATIONS & ANALYTICS WEBINAR

This webinar introduces the concept of smart water systems and how technology and data analysis are used in the industry. The webinar presentations illustrate an innovative approach to reduce non-recurrent water, improve the exchange of information for activities related to water in the city, and introduce the Smart Water Network Forum. The webinar will be released live on October 17 at 11:00 a.m. MT.

RESNEXUS 2018 CONFERENCE – RETHINKING URBAN RESILIENCE

The ResNexus conference will be held at Wageningen University and Research in Wageningen, the Netherlands, on November 7 and 8, 2018. The conference will bring together academics and professionals working in government and civil society working with water and energy.

NEWS

$2M deal aims to keep Rio Grande flowing in New Mexico, August 24, 2018
Central New Mexico Project? How a 50-year-old rule could let New Mexico use Arizona Water, August 26, 2018
The Rio Grande is Dying. Does Anyone Care?, September 8, 2018
NM's reservoirs weathered this year. But what will happen next year?, September 21, 2018