

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 June 2017

SUMMARY

Forecasts favor above-average temperatures in all of the Rio Grande/Bravo Basin, and above-average precipitation in the southern portion of the Basin, through September.

AT A GLANCE

Rio Grande/Bravo Headwaters

Forecasts predict increased chances for below-average precipitation for July.



Texas

The first five months of the year (January – May) have been the warmest on record.

Lower Rio Grande/Bravo

Upper level lows resulted in widespread rainfall in early March, contributing to above-average precipitation from March – May.

REGIONAL CLIMATE OVERVIEW

MARCH | APRIL | MAY

Over the last three months (March – May) precipitation was 0–50% below average in southern New Mexico and West Texas, 50–90% below average in Central and West New Mexico and Central Texas, and 100–200% above average in Northeast New Mexico, and North, South, and East Texas (Figure 1; left). In South Texas, the above-average precipitation was mostly due to upper level lows that resulted in widespread rainfall on March 4th and March 10th, providing 4 to more than 6 inches of rain, improving drought conditions in the region. Temperatures were 1–5 °F (0.6–2.8 °C) above average for almost all of both states over the same time period (Figure 1; right). The first five months of the year (January – May) have been the warmest on record for Texas, and the second warmest for New Mexico ([NOAA](#)).

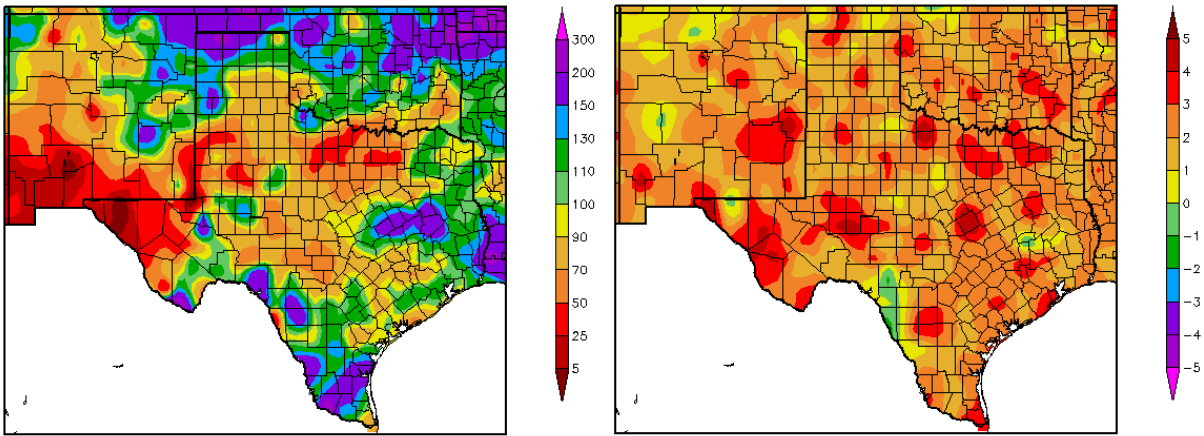


Figure 1: Percent of average precipitation (left) and departure from average temperature in degrees F (right), compared to the 1981–2010 climate average, for 3/1/2017–5/31/2017. Maps from [HPRCC](#).

Temperatures from June 1st– 13th were 0–4 °F (0–2.2 °C) above average in New Mexico, and 0–4 °F (0–2.2 °C) below average for most of Texas, except for North Texas which experienced temperatures similar to New Mexico (figure not shown). Precipitation over the same time period was close to average for both states.

Above-normal temperatures continued in northern Mexico for March–May. Greatest anomalies were more than 9 °F (5 °C) above average, mainly in southern Chihuahua and western Durango (Figure 2, left). Most of the regions above 40 °C (104 °F) for more than 30 days were in southern Sonora and Chihuahua, as well as southern Durango (Figure 2, right).

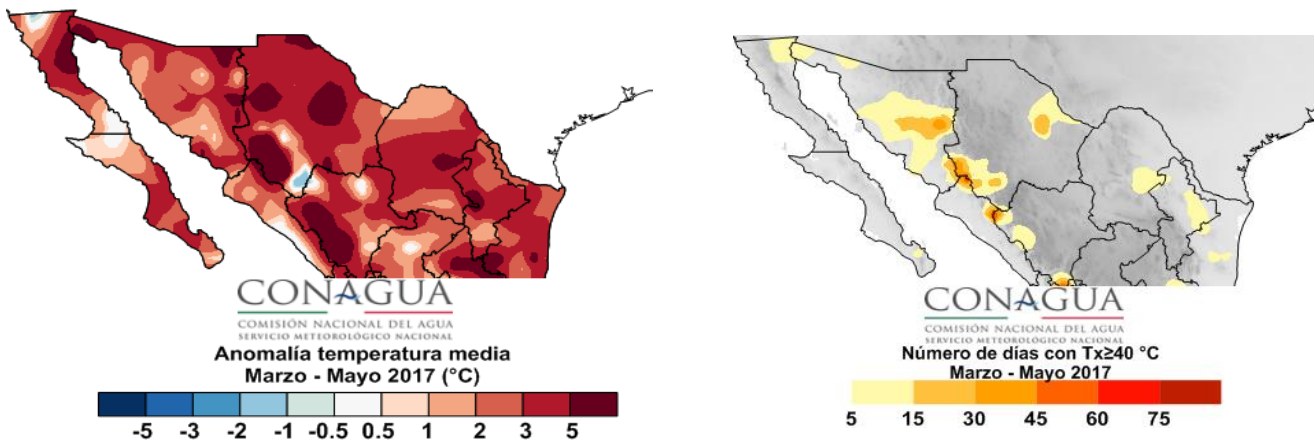


Figure 2: Temperature anomalies in °C (left) and number of days with maximum temperatures at or above 40 °C (104 °F) (right) for March–May. Maps from [SMN](#).

DROUGHT

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)

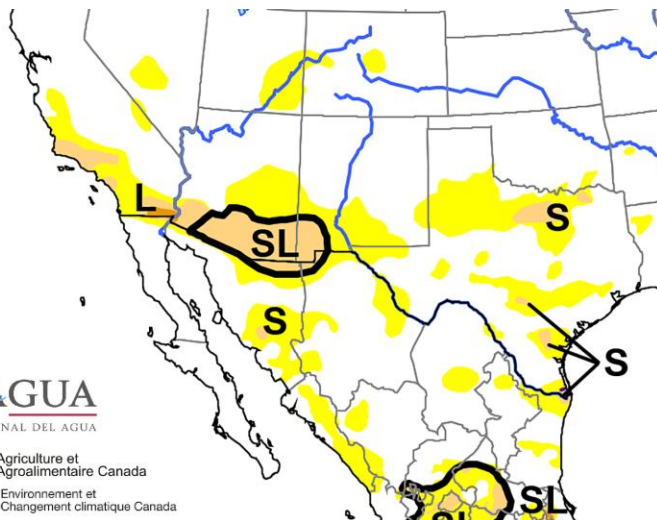


Figure 3 (left): North American Drought Monitor, released June 13, 2017.

According to the [North American Drought Monitor](#) (NADM), by the end of May, most of the Rio Grande/Bravo region was drought-free, with small areas throughout the region experiencing abnormally dry conditions (Figure 3). Southwest New Mexico and small areas in Texas were experiencing moderate drought conditions, but removal is likely in these areas by the end of August, according to the [U.S. Seasonal Drought Outlook](#) (figure not shown).

FORECAST

JULY | AUGUST | SEPTEMBER

TEMPERATURE

The one-month NOAA temperature outlook (Figure 4) favors increased chances for above-average temperatures in all of New Mexico and Texas for July. Chances for above-average temperatures continue through the summer, according to the NOAA three-month temperature outlook (July–September; [figure not shown](#)). The forecast from CONAGUA’s Servicio Meteorológico Nacional (SMN) for July, predicts above-average temperatures in the states of Baja California, Sonora, Chihuahua, Coahuila, Central Nuevo León and Northeast Tamaulipas (Figure 5). For August above-average temperatures are predicted in the same regions, and for all of Tamaulipas and Nuevo León.

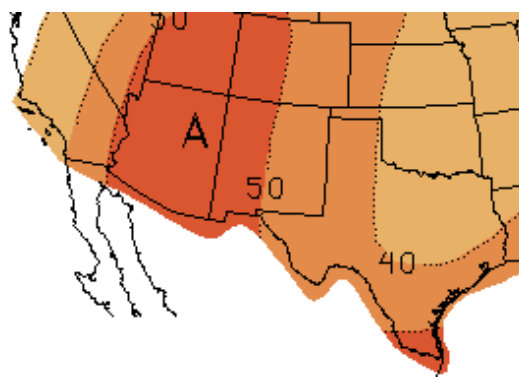


Figure 4 (above): NOAA one-month temperature outlook (July). Forecast made on June 15, 2017 by [CPC](#).

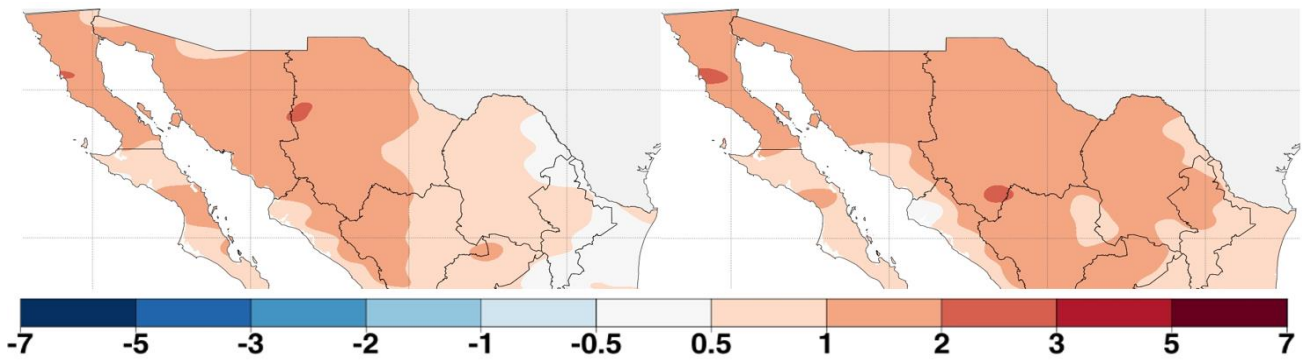


Figure 5 (above): Predicted maximum temperature anomalies for northern Mexico (in °C), July (left) and August (right). Forecast made on June 1, 2017 by [SMN](#).

PRECIPITATION

For July, the NOAA precipitation outlook predicts equal chances of below-, average, or above-average precipitation for most of New Mexico and Texas, and chances for above-average precipitation in Southeast Texas (Figure 6). Forecasts also favor chances for below-average precipitation for the Northwest corner of New Mexico, and the Rio Grande/Bravo headwaters in Colorado, for July. The NOAA three-month precipitation outlook (July–September; [figure not shown](#)) predicts equal chances for all of New Mexico and North and West Texas, and chances for above-average precipitation in Central and Southeast Texas.

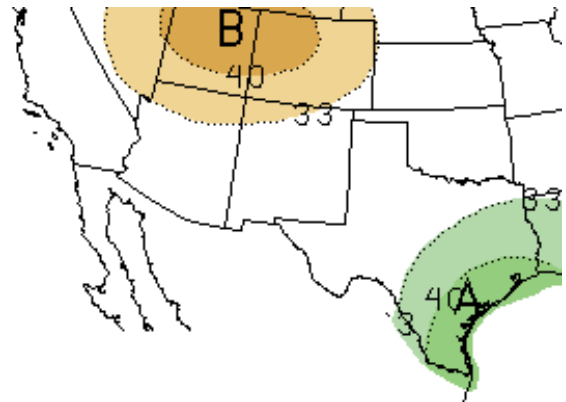


Figure 6 (above) : NOAA one-month precipitation outlook (July). Forecast made on June 15, 2017 by [CPC](#).

For July, the SMN precipitation forecasts indicate below-average precipitation in the states of Tamaulipas, Nuevo León, Coahuila, most of Chihuahua and Baja California, and eastern and northwest Sonora (Figure 7). Above-average precipitation is forecasted for eastern Sonora and southern Baja California Norte. For August, the same conditions are forecasted for Tamaulipas, Nuevo León, Coahuila, and most of Central Chihuahua, eastern Sonora and northern Baja California. Above-average precipitation is forecasted for some regions in Baja California.

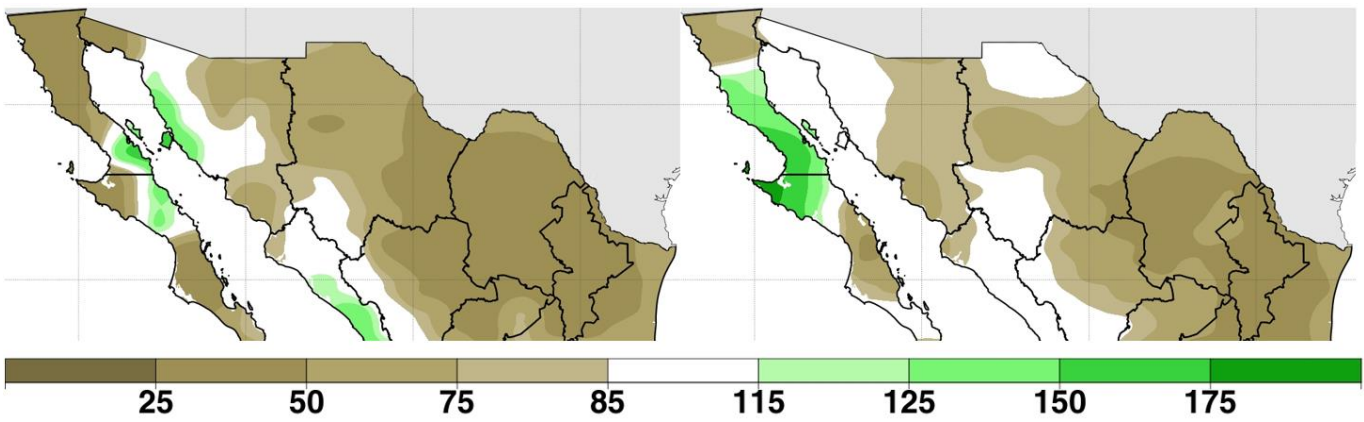


Figure 7 (above): Predicted precipitation anomalies for northern Mexico in (°C), July (left) and August (right). Forecast made on June 1, 2017 by [SMN](#).

FIRE

The National Interagency Fire Center (NIFC) and SMN forecasts, made on June 10th, favor above-average fire potential for the northern mountain ranges of Mexico in July, and average fire potential for the entire Rio Grande/Bravo region in August, as summer monsoon rains move into the region (Figure 8). In August, above-average fire potential is forecasted for northern Sonora and Baja California due to hot, dry conditions and high grass fuel loads.

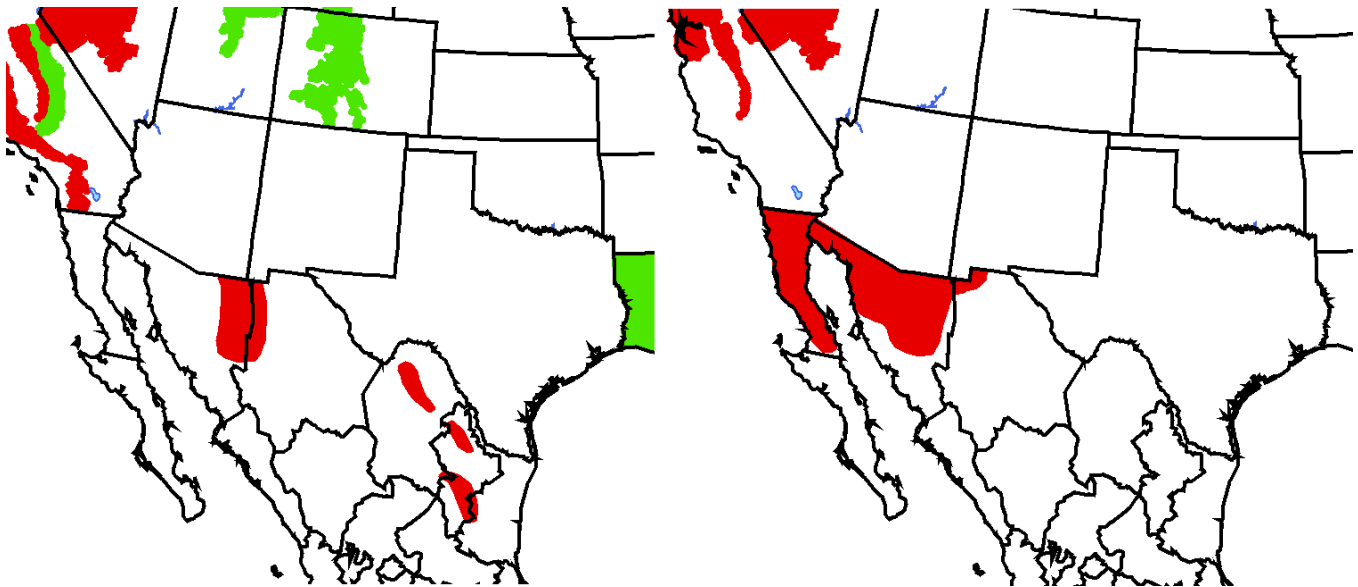


Figure 8 (above): Fire outlook for July (left) and August (right). Red shading indicates conditions that favor increased fire activity. Green shading indicates conditions that favor decreased fire activity. [Forecast](#) made on June 10, 2017 from [NIFC](#) and [SMN](#).

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

Sea surface temperatures (SSTs) and atmospheric conditions in the tropical Pacific Ocean continue to indicate ENSO-neutral conditions (IRI; NOAA). The official ENSO forecast favors ENSO-neutral conditions (50-55% chance) through the fall. Chances for El Niño remain 35-50% relative to the long-term average through the summer and fall of 2017 (Figure 9; NOAA).

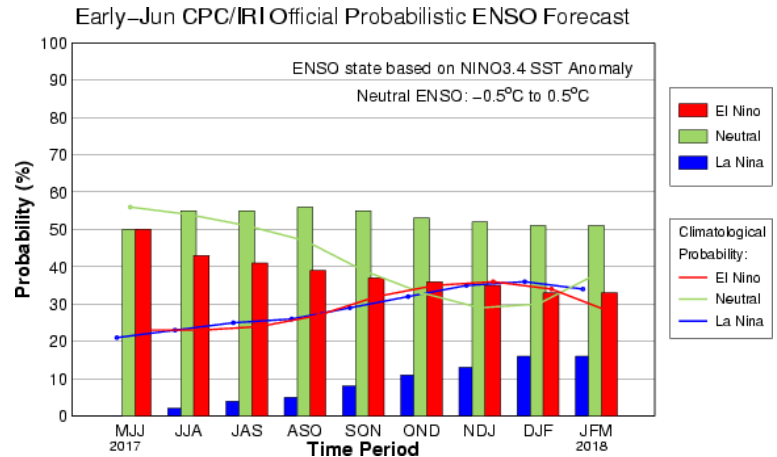


Figure 9 (above): ENSO probabilistic forecast from IRI.

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://www.smn.gov.ar/?mod=biblioteca&id=67> and <http://www.smn.gov.ar/?mod=biblioteca&id=68>

MONSOON 2017

Monsoon season has officially begun in the Southwest U.S and northern Mexico. In 2008, the U.S. National Weather Service (NWS) changed the definition of the start of the North American monsoon from a variable date based on locally measured conditions to a fixed date of June 15. Prior to 2008, the start date reflected the seasonal progression of the monsoon (Figure 10), based on larger seasonal atmospheric patterns.

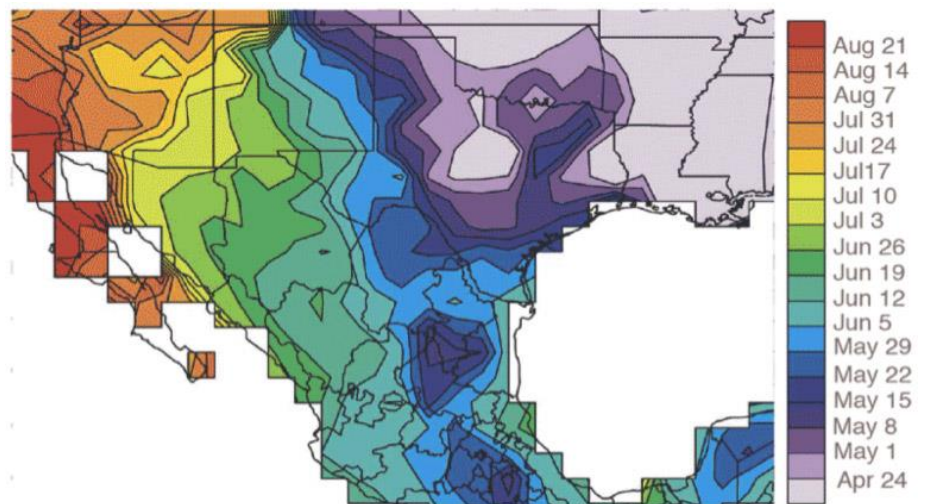


Figure 10: Historical Monsoon Onset Date. Source: [Australian Bureau of Meteorology](#)

In southern Arizona, the start date was based on the average daily dewpoint temperature. Phoenix and Tucson NWS offices used the criteria of three consecutive days of daily average dewpoint temperature

above a threshold (55 degrees in Phoenix, 54 degrees in Tucson) to define the start date of the monsoon. The average daily dewpoint temperature is still a useful tool to track the onset and progression of conditions that favor monsoon events, and the NWS includes a [dewpoint tracker](#) in their suite of monsoon tools.

Thirty-year averages for daily dewpoint and precipitation demonstrate the gradual increase in dewpoint temperatures during the monsoon season, as well as the variability of precipitation observed over the same window (Figure 11).

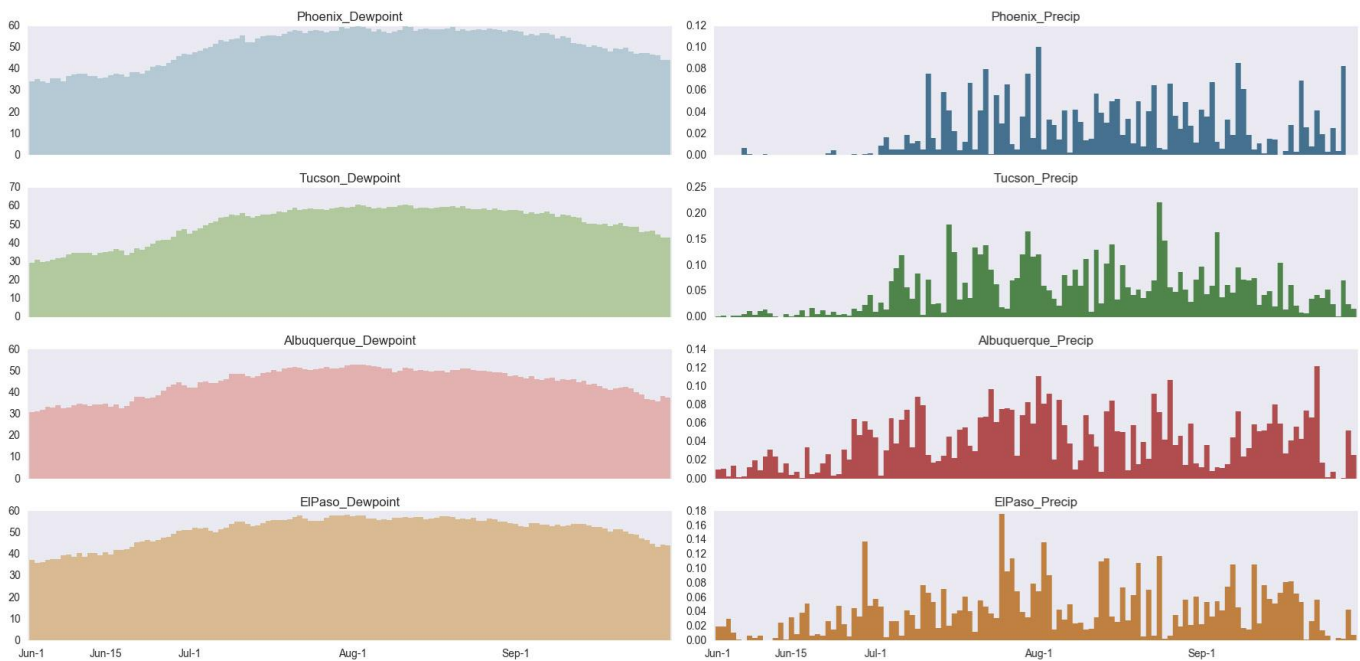
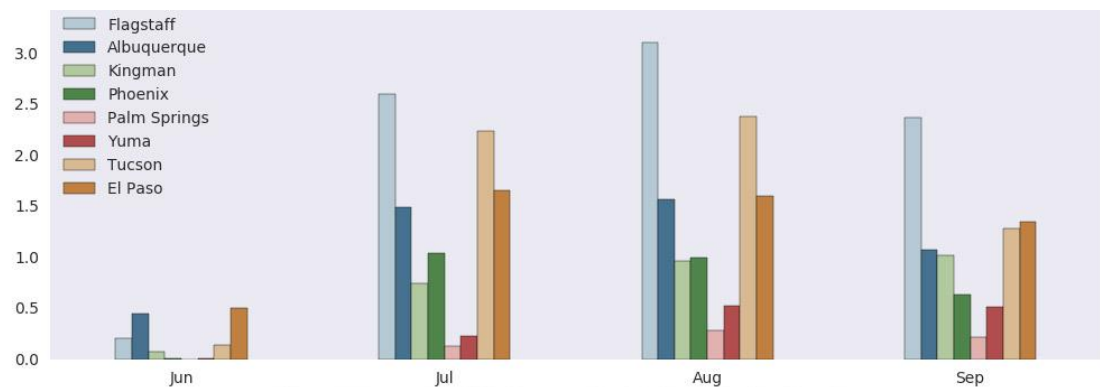


Figure 11: Average daily dewpoint temperature (left) and average daily precipitation (right).

The updated definition of the monsoon identifies a season that lasts for 108 days with defined start and end dates of June 15 and Sept 30. Although monsoon storm activity begins in June for Albuquerque and El Paso, the majority of activity occurs in July and August (Figure 12), with some lingering activity into September (occasionally augmented by eastern Pacific tropical storms). Dewpoint and precipitation may provide a more granular assessment of monsoon activity, but the seasonal designation allows for easier comparisons between years, and focuses planning activities on a discrete monsoon season (see [NWS video about Monsoon Awareness Week](#)).

Figure 12: Average monthly monsoon precipitation in the Southwest U.S.



Additional Monsoon Resources:

- NWS: http://www.wrh.noaa.gov/twc/monsoon/monsoon_info.php
- CLIMAS: <http://www.climas.arizona.edu/sw-climate/monsoon>
- [SMN](#)

UPCOMING FORUMS

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. Registration begins in late March.

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.”

NEWS HEADLINES

Report Outlines New Strategy for Stretching Rio Grande Water Supply May 19, 2017: <https://www.newsdeeply.com/water/articles/2017/05/19/report-outlines-new-strategy-for-stretching-rio-grande-water-supply>

Rio Grande levees in jeopardy after large snow melt June 8, 2017: <http://krqe.com/2017/06/08/rio-grande-levees-in-jeopardy-after-large-snow-melt/>

New Mexico farmers optimistic as snowmelt raises river levels May 25, 2017: <http://www.southwestfarmpress.com/water/new-mexico-farmers-optimistic-snowmelt-raises-river-levels>

Why the Fate of a Tiny Rio Grande Fish is So Important May 22, 2017: <https://www.newsdeeply.com/water/articles/2017/05/22/why-the-fate-of-a-tiny-rio-grande-fish-is-so-important>

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