Rio Grande|Bravo

CLIMATE IMPACTS & OUTLOOK June 2016

SUMMARY

Forecasts through August favor average to below-average precipitation and above-average temperatures in the Rio Grande/Bravo Basin.

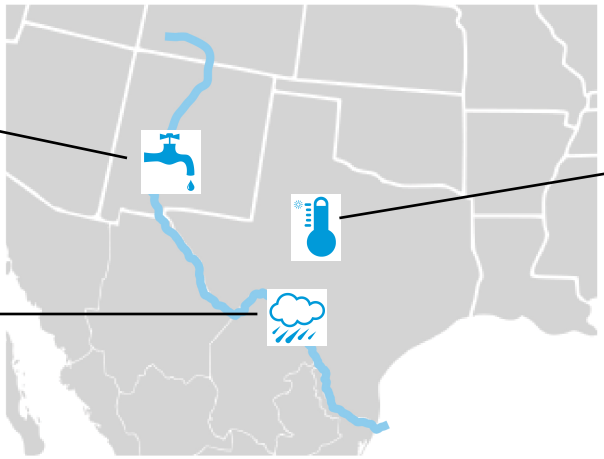
AT A GLANCE

Elephant Butte Reservoir, New Mexico

The Elephant Butte Reservoir was at 14% of capacity at the end of May 2016

Chihuahua/Coahuila/Nuevo Leon

Forecasts favor above-average temperature and below-average precipitation through July



New Mexico/Texas

Forecasts favor above-average temperatures in the U.S. Southwest through August

REGIONAL CLIMATE OVERVIEW — MARCH | APRIL| MAY

From March 1st through May 31st the Rio Grande/Bravo Basin received precipitation ranging from 25-200% of average. Most of New Mexico and West Texas experienced below-average precipitation while the lower Texas/Mexico border region received 130-200% of average precipitation when a mid-April high pressure system kept a low pressure system from advancing eastward—effectively setting up the low as a regional moisture pump (Figure 1, left). Temperatures were close to average for almost all of New Mexico and Texas, with the southernmost U.S.-Mexico border region experiencing temperatures 3°F (1.6 °C) above average (Figure 1, right). Precipitation from June 5-June 18 varied from 5% of average in central New Mexico and southern Texas to 300% of average in areas of western Texas and eastern New Mexico. Temperatures during that period were average to 6°F (3.3°C) above average.

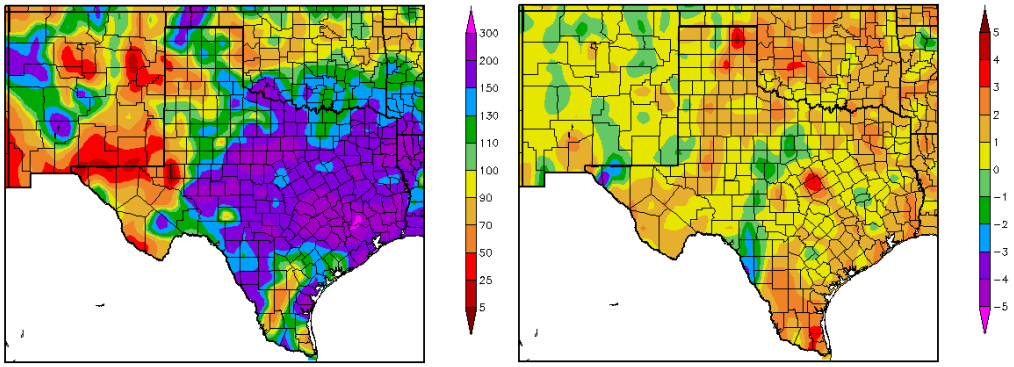


Figure 1: Percent of normal precipitation (left), and departure from normal temperature (right), for 3/1/2016 – 5/31/2016. Maps from HPRCC.

DROUGHT

According to the North American Drought Monitor (NADM), western and central New Mexico and small areas of Chihuahua are experiencing moderate drought conditions as of May 31, 2016 (Figure 2). The NADM shows eastern New Mexico and both eastern and western Chihuahua as experiencing abnormally dry conditions. Drought removal by September in New Mexico is likely due to expected summer monsoon precipitation according to NOAA's Climate Prediction Center (CPC) (figure not shown).

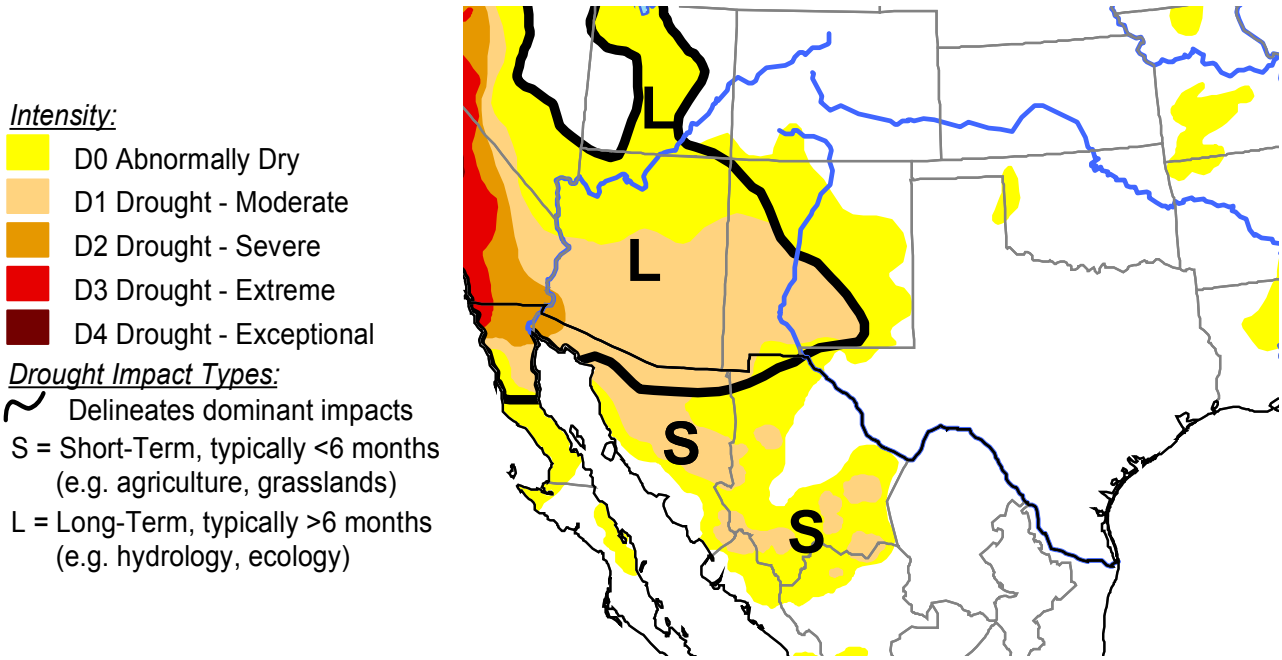


Figure 2 (above): May North American Drought Monitor, released June 14, 2016.

FORECAST — JULY | AUGUST|SEPTEMBER

TEMPERATURE

The three-month NOAA temperature outlook favors increased chances of above-average temperatures in New Mexico and most of Texas (Figure 3). CONAGUA's Servicio Meteorológico Nacional (SMN) predicts above-average maximum temperatures in July for most of the Rio Grande/Bravo region (Figure 4). For August, SMN forecasts above-average maximum temperatures for northwestern Chihuahua and Nuevo Leon, and average to below-average temperatures for northeastern Coahuila.

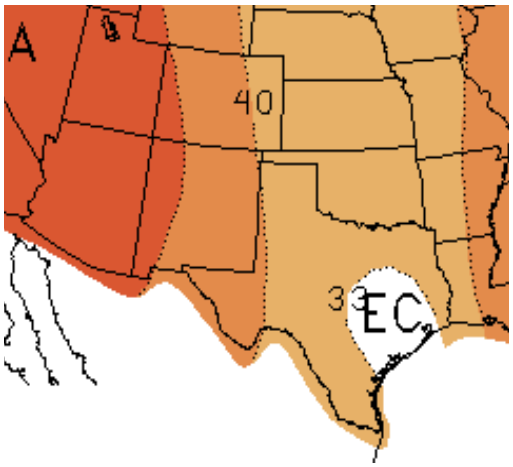


Figure 3 (above right): NOAA July through September seasonal temperature outlook. Forecast made on June 16 by CPC.

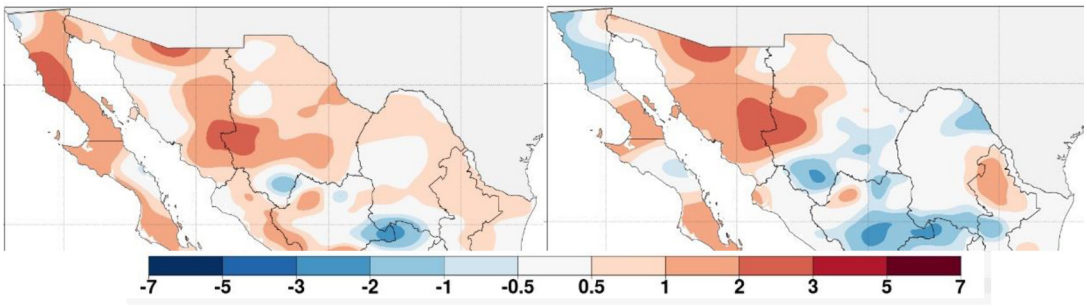


Figure 4 (above): Predicted maximum temperature anomalies for northern Mexico (in °C). July (left) and August (right). Forecast made on May 31, 2016 by SMN.

PRECIPITATION

The NOAA precipitation forecast favors equal chances of above-average, average, and below-average precipitation for New Mexico and most of Texas (Figure 5). A narrow band of increased odds of above-average precipitation in southeast Texas corresponds to a very small area of equal chances for below-, average, and above-average temperatures in Figure 3. Reasons for these forecasts include high soil moisture content and the potential influence of developing La Niña conditions in the equatorial Pacific Ocean, tilting the odds slightly in favor of above-average precipitation along the gulf coast in late summer. In July, SMN forecasts below-average precipitation in northwestern Chihuahua, eastern Coahuila, and northern Nuevo Leon and Tamaulipas (Figure 6). In August, SMN forecasts favor below-average precipitation in eastern Chihuahua, and northern Coahuila, Nuevo Leon, and Tamaulipas, with an area of above-average precipitation in central to southern Nuevo Leon, corresponding to the NOAA forecast above (Figure 6).

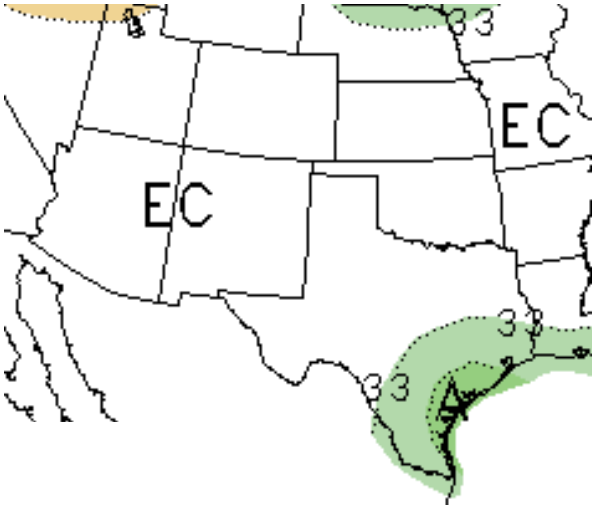


Figure 5 (above): NOAA June through August seasonal precipitation outlook. Forecast made on May 19, 2016 by CPC.

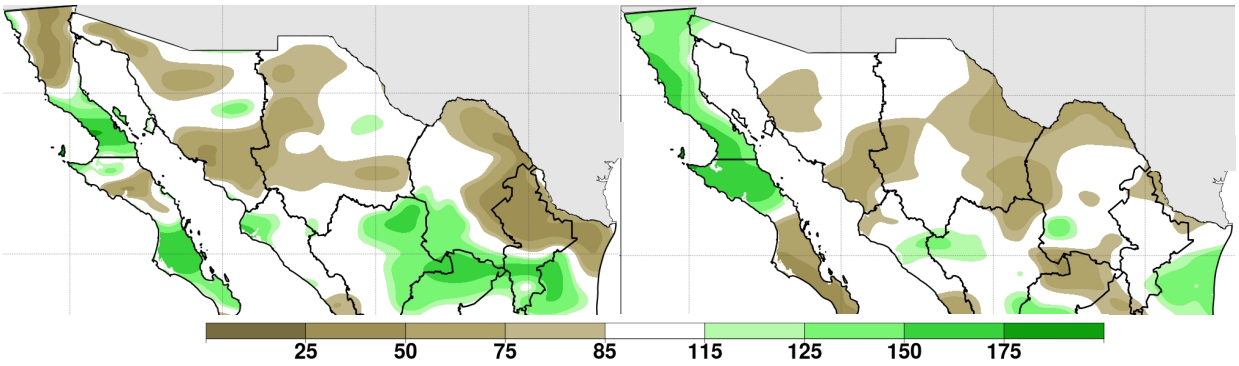


Figure 6 (above): Percent of average precipitation for northern Mexico. July (left) and August (right). Forecast made on June 1, 2016 by SMN using 1983, 1992, 1993, 2004, and 2005 as analogue years.

FIRE

The National Interagency Fire Center (NIFC) forecasts normal fire potential for most of the Rio Grande/Bravo region through August (Figure 7). NIFC forecasts favor above-average fire potential in western Chihuahua and western New Mexico in July. By August, normal fire potential is forecasted in the region due to increased precipitation from the North American monsoon. In Mexico, there were 612 hotspots detected in May, with 267 detected over natural protected areas (Figure 8).

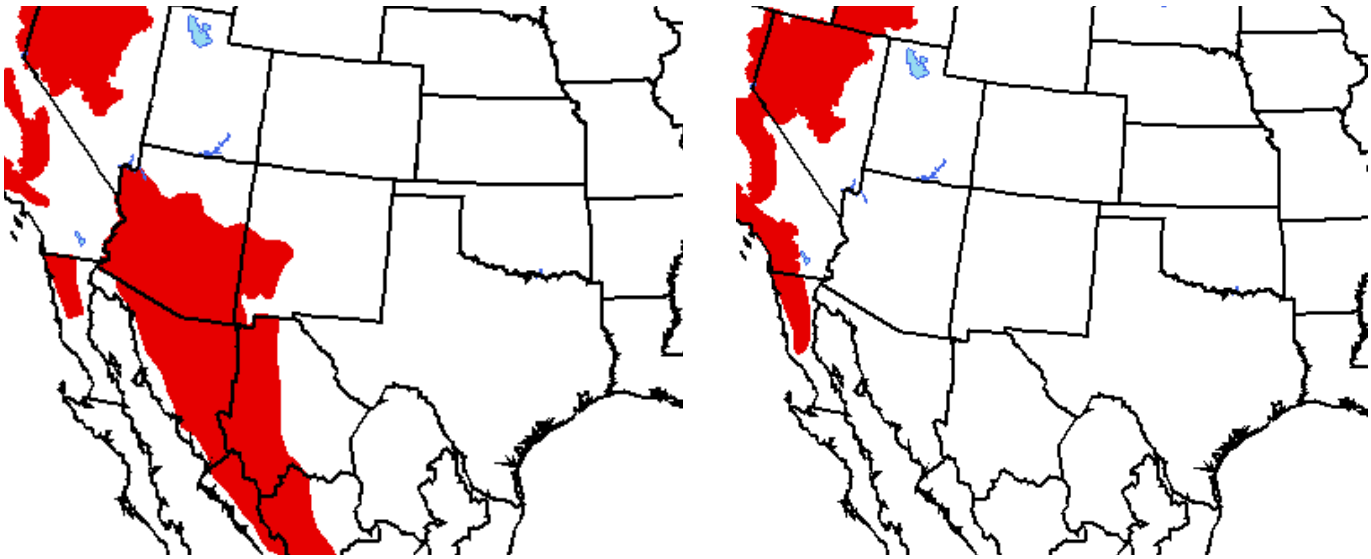


Figure 7 (above): Significant wildfire potential outlook for July (left) and August (right). Red shading indicates conditions that favor above-normal fire activity. Forecast made on June 15, 2016 from NIFC.

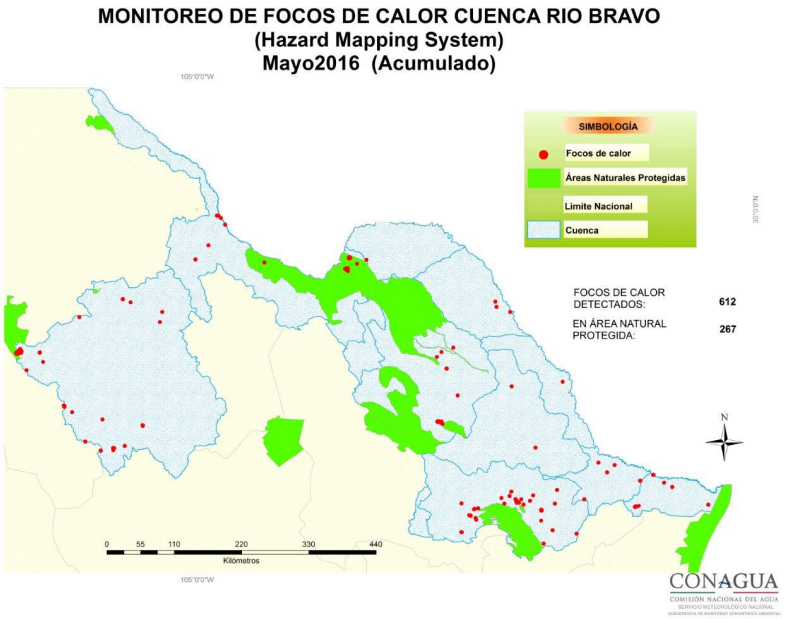
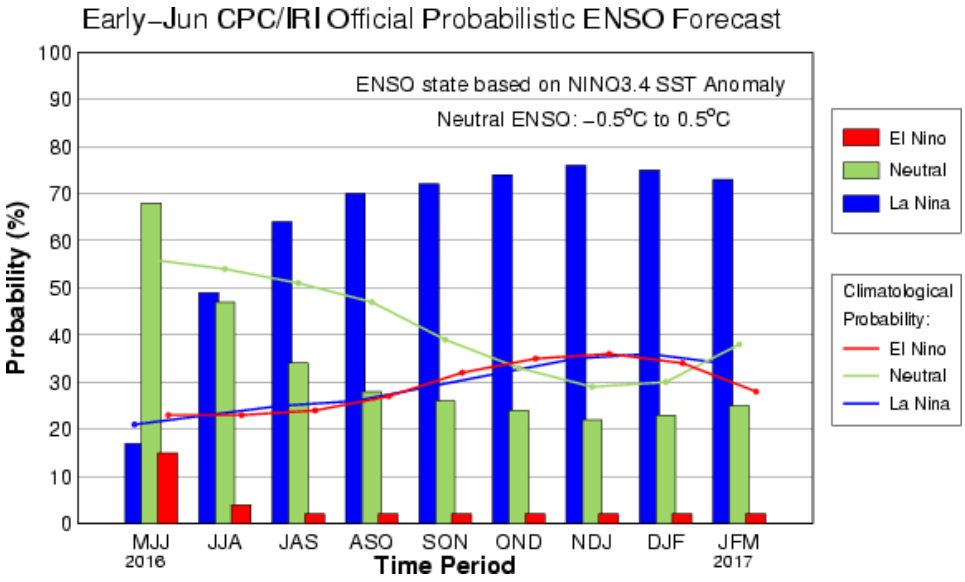


Figure 8 (left): Hotpots detected in the Rio Grande/Bravo Basin in May (left). Forecast made on June 1, 2016 from SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

Average to below-average sea surface temperatures (SSTs) in the equatorial Pacific Ocean in May indicate that El Niño conditions have dissipated and conditions have shifted to ENSO-neutral (NOAA). Preliminary forecasts show approximately a 60-70% chance for La Niña development in the fall (Figure 9). La Niña winters tend to be warm and dry in the Southwest U.S. and northern Mexico, which could amplify drought conditions and impact water supply in the region (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

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

THE NORTH AMERICAN MONSOON

A large portion of the Rio Grande basin region experiences the North American Monsoon during the summer, which accounts for approximately half of total annual precipitation in most areas (CPC). As a result of unequal rates of warming over land and water, wind patterns over northern Mexico and the U.S. Southwest reverse, pulling moisture from the Gulf of Mexico, Gulf of California and the eastern Pacific Ocean. Monsoon season typically begins in mid to late June in northwest Mexico (Sonora, Chihuahua, Sinaloa, and Durango) and early July in the U.S. Southwest (New Mexico and Arizona).

FORUMS: MEXICAN CLIMATE OUTLOOK

The XXX Climate Outlook Forum in Mexico was held on June 8 and 9 in Jiutepec, Morelos. The forum is held twice a year and its location shifts within Mexico. The purpose of the event is to release the six-month Mexican climate outlook, including precipitation, maximum and minimum temperatures, tropical cyclones, and cold fronts. At the forum, three institutions (CICESE, CFE, and SMN) worked to produce a consolidated forecast for two trimesters: May through July and August through October.

NEWS HEADLINES

San Luis Valley Aquifer Refills After Years of Drought, Overuse; June 11, 2016:
http://www.santafenewmexican.com/news/local_news/san-luis-valley-aquifer-refills-after-years-of-drought-overuse/article_6241ea4f-8993-5d71-8d2b-a1d7e6f05388.html

Unabated Global Warming Threatens West's Snowpack; June 7, 2016:
http://insideclimatenews.org/news/07062016/unabated-global-warming-threatens-west-snowpack-water-rocky-mountains-sierra-nevada-drought

Rio Grande Floodway Factsheet,
http://www.spa.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2135/Article/479094/rio-grande-floodway.aspx

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