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CLIMATE IMPACTS & OUTLOOK

May 2018

Summary

Forecasts favor above-average temperatures and equal chances for below-, average, and above-average precipitation for the Rio Grande/Bravo Basin through August.

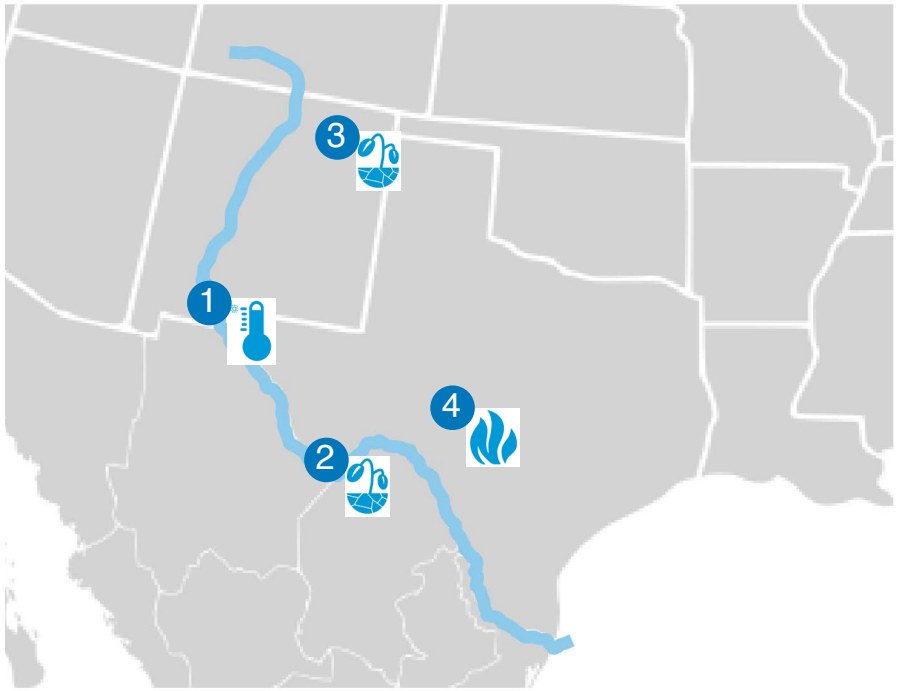
AT A GLANCE

1. **Las Cruces, NM and El Paso, TX**
A heat wave on May 9-11 set maximum temperature records in both cities, with El Paso reaching 101 °F on May 10th.

2. **Mexico-Texas Border**
Moderate to severe drought conditions are present in the northern portion of all Mexico states along the Río Bravo. Exceptional drought conditions have developed along the Chihuahua-Texas border.

3. **Northern New Mexico and Texas**
Extreme to exceptional drought conditions are present in the northern part of both states, due to above-average temperatures and below-average precipitation through the winter and spring.

4. **Rio Grande/Bravo Region**
Fire risk for May is above normal for western New Mexico and along the Sierra Madre Occidental in Mexico. Fire risk is predicted to return to normal throughout the entire region in June and July, as monsoon rains move into the region.



REGIONAL CLIMATE OVERVIEW
FEBRUARY I MARCH I APRIL

Temperatures over the past three months (February-April) were 2-5 °F (1.1-2.8 °C) above average for most of New Mexico and the southern half of Texas (Figure 1; left). Temperatures were 0-3 °F (0-1.7 °C) below average for North-Central Texas. Precipitation over the same time period was 0-50% of average for most of New Mexico and the western half of Texas, and 90-130% of average for Southwest New Mexico and East Texas (Figure 1; right). Weakening La Niña conditions in the tropical Pacific are likely responsible for the precipitation gradient from west-to-east.

Temperatures from May 1-14 were 8-10 °F (4.4-5.5 °C) above average in most of western New Mexico and North Texas, and 4-6 °F (2.2-3.3 °C) above average throughout the rest of New Mexico. Small pockets along the southern Rio Grande border in Texas experienced temperatures 0-2 °F (1.1-2.2 °C) below average (figure not shown). Precipitation over the same time period was 0–50% of average for most of New Mexico and West Texas. Some areas in Central and southern Texas received precipitation 150-400% of average.

The beginning of the year continues to be warmer than normal for most of northern Mexico. Colder than normal regions were concentrated in the middle part of the Baja California Peninsula, Sonora and in pockets of Southwest Chihuahua. The most extreme positive anomalies, greater than 9°F (5°C), were over North-central Chihuahua and western Durango (Figure 2, left). Greater number of days with minimum temperature lower than 0°C, more than 50 days, were located in northern Durango and western Chihuahua. The footprint between 1 and 10 days at or below 0°C was reduced compared to previous months, mainly in northern Sonora, Chihuahua and Coahuila (Figure 2, right).

There was a recovery of moisture in northwestern Mexico in the past three months. The largest amounts of rainfall exceeded 100 mm in most of southern Tamaulipas and northern Sonora (Figure 3, left). Northern Sonora, Sonora-Chihuahua-Sinaloa border, and a wide region from the Central Basins to the Northeast observed above normal precipitation during this last three-month period (Figure 3, right).

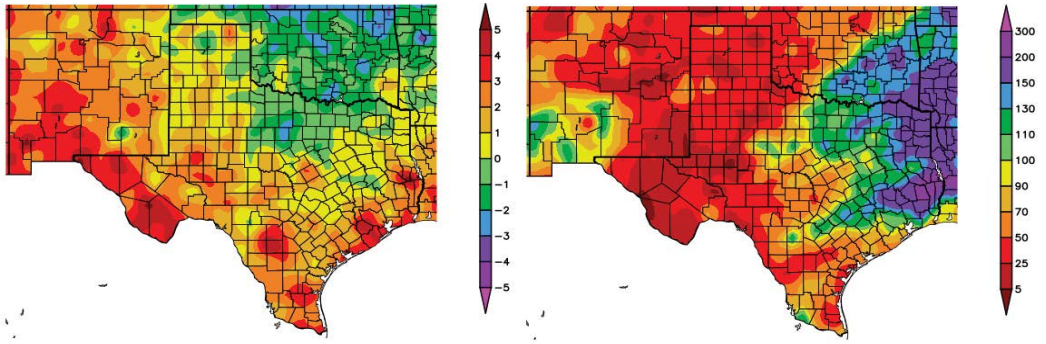


Figure 1 (above): Departure from average temperature in degrees F (left) and percent of average precipitation (right), compared to the 1981–2010 climate average, for 2/1/2018–4/30/2018. Maps from HPRCC

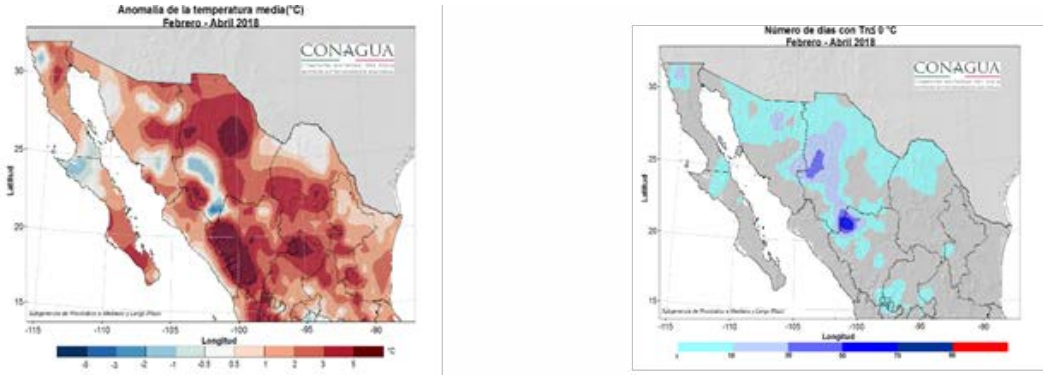


Figure 2 (above): Temperature anomalies in °C (left) and number of days with minimum temperatures at or below 0 °C (32 °F) (right) for February–April. Maps from SMN.

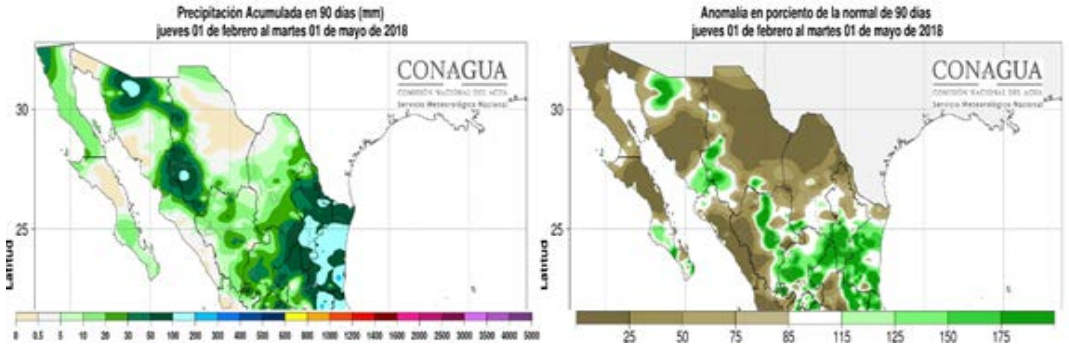


Figure 3 (above): Accumulated precipitation in mm (left) and percent of normal (right) for February–April. Maps from SMN.

DROUGHT

Drought conditions intensified across the region over the past month, as below-average precipitation and above-average temperatures persisted, according to the North American Drought Monitor (NADM) (Figure 4). Exceptional drought conditions have developed in northern New Mexico and expanded in North Texas. Extreme drought conditions developed along the Texas-Coahuila border, and moderate to severe drought conditions remain in southern New Mexico, West Texas, and the northern areas of the Mexico border states. Conditions are predicted to persist through August in most of New Mexico and areas in western and southern Texas, and drought development is likely in South-Central Texas. Drought conditions are predicted to remain, but improve, in northern Texas and eastern New Mexico, according to the U.S. Seasonal Drought Outlook.

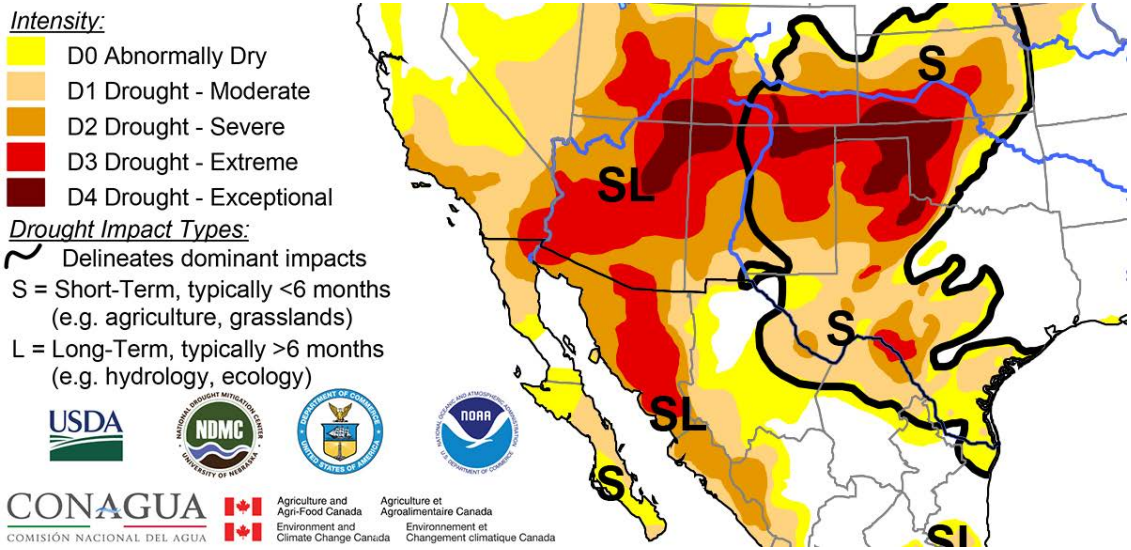


Figure 4 (above): North American Drought Monitor, released May 10, 2018.

FORECAST
JUNE I JULY IAUGUST

TEMPERATURE

The three-month NOAA temperature outlook (June-August; Figure 5) favors chances for above-average temperatures in all of New Mexico and Texas through August.

The forecast from CONAGUA´s Servicio Meteorológico Nacional (SMN) for June predicts maximum temperature conditions with above-average anomalies in Baja California, Sonora, Nuevo León and northern Tamaulipas. In contrast, below-average anomalies are predicted in Central and Southeast Chihuahua. For July, SMN predicts above-average anomalies in Tamaulipas, Nuevo León, Coahuila, and Baja California, while below-average anomalies are predicted in Sonora and Southwest Chihuahua (Figure 6).

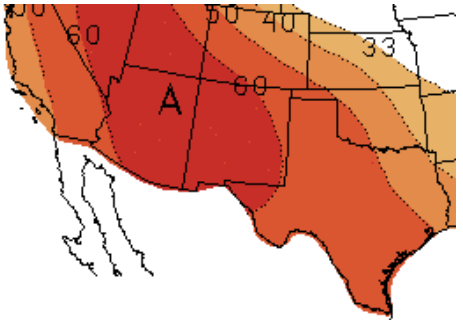
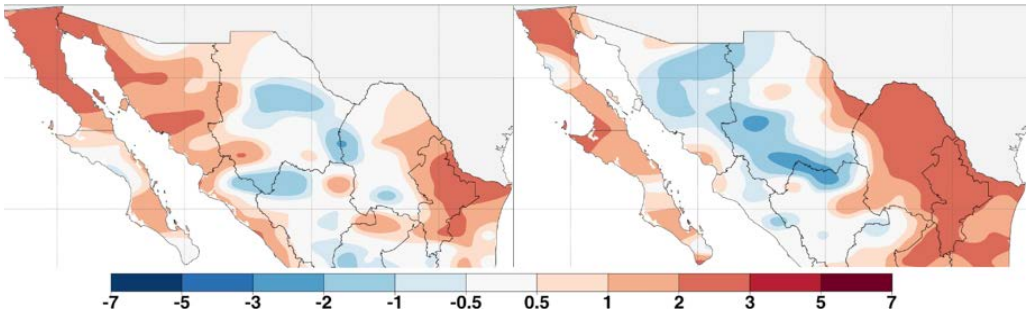


Figure 5 (left): NOAA three-month temperature outlook (June-August). Forecast made on May 17, 2018 by CPC.

Figure 6 (below): Predicted minimum temperature anomalies for northern of Mexico in (°C), June 2018 (left) and July 2018 (right). Forecast made on May 1, 2018 by SMN.



PRECIPITATION

The NOAA three-month precipitation outlook predicts equal chances for below-average, average, or above-average precipitation for most of New Mexico and all of Texas through August (June-August; Figure 7). Chances for above-average precipitation is predicted for Northwest New Mexico during the same time period, due to the predicted transition to El Niño later in the summer to fall season.

For June, the SMN precipitation outlook predicts above-average conditions in Southwest Sonora and Chihuahua, and below-average conditions in Tamaulipas, Nuevo León, Coahuila, Sonora and Baja California. The precipitation forecast for July shows above-average conditions in Northeast Baja California, Sonora and Chihuahua, and below-average conditions in Tamaulipas, Nuevo León, Coahuila and Baja California (Figure 8).

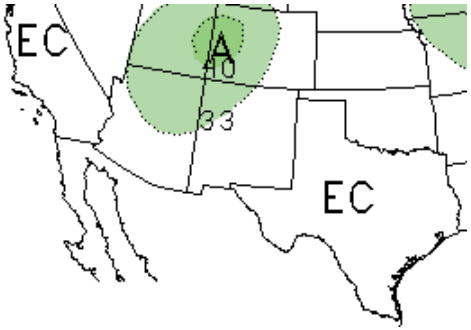
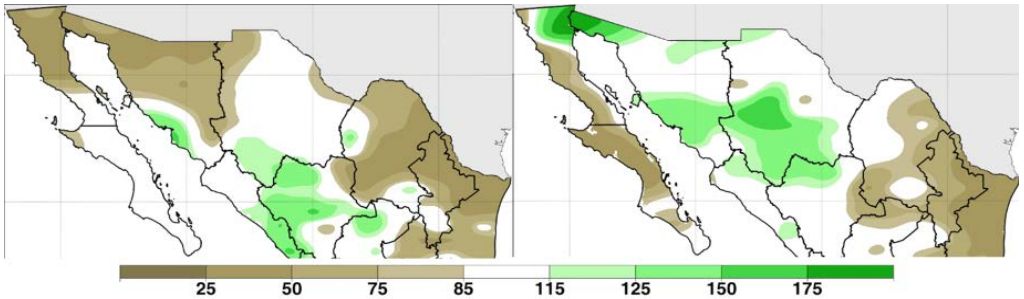


Figure 7 (left): NOAA three-month precipitation outlook (June-August). Forecast made on May 17, 2018 by CPC.

Figure 8 (below): Predicted precipitation anomalies for northern Mexico (in %), June 2018 (left) and July 2018 (right). Forecast made on May 1, 2018 by SMN.



FIRE

According to the North American Seasonal Fire Assessment and Outlook, hot, dry, and windy conditions in New Mexico and Texas resulted in high fire activity for both states over the past month. So far this year, Mexico has experienced 4,626 fires, with an area burned of 365,716 acres (just over 148,000 hectares). Forecasts for June indicate a westward movement in fire activity, with elevated fire potential in most of New Mexico and only the western tip of Texas (Figure 9; left). In Mexico, elevated fire potential is expected along the Sierra Madre Occidental and in northern Chihuahua. As the North American monsoon moves into the region towards the end of June and early July, fire potential decreases. For July, forecasts indicate normal fire potential for New Mexico, Texas, and most of Mexico except for the Sonora-Chihuahua border.

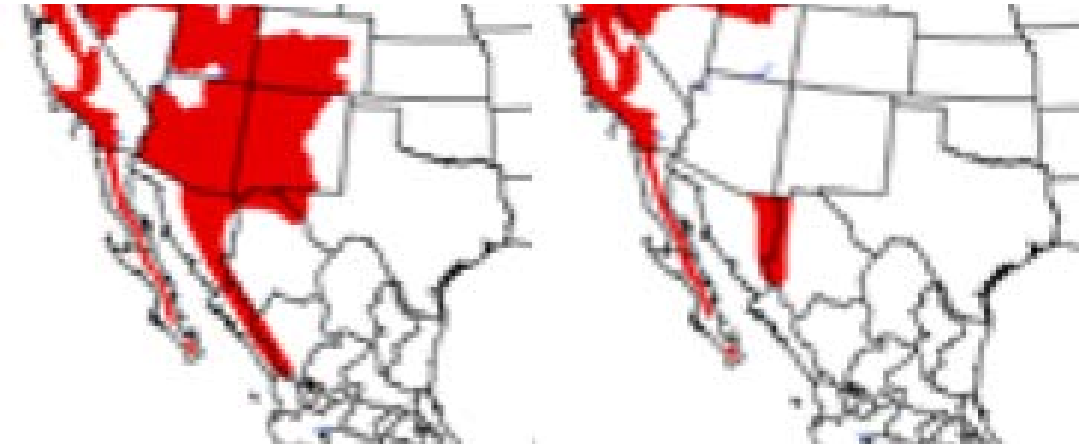


Figure 9 (above): Fire outlook for June (left) and July (right). Red shading indicates conditions that favor increased fire potential. Green shading indicates conditions that favor decreased fire potential. Forecast made on May 12, 2018 from NIFC and SMN.

EL NIÑO-SOUTHERN OSCILLATION (ENSO)

Sea-surface temperatures and atmospheric conditions in the tropical Pacific Ocean were indicative of ENSO-neutral conditions, as of early May (IRI; NOAA). Neutral conditions are forecasted to persist through summer and fall, with chances of El Niño nearing 50% by the winter (Figure 10). There is considerable uncertainty in ENSO forecasts made at this time of year; however, if forecasts are correct, it could mean a wet winter for the Southwest U.S. and northern Mexico.

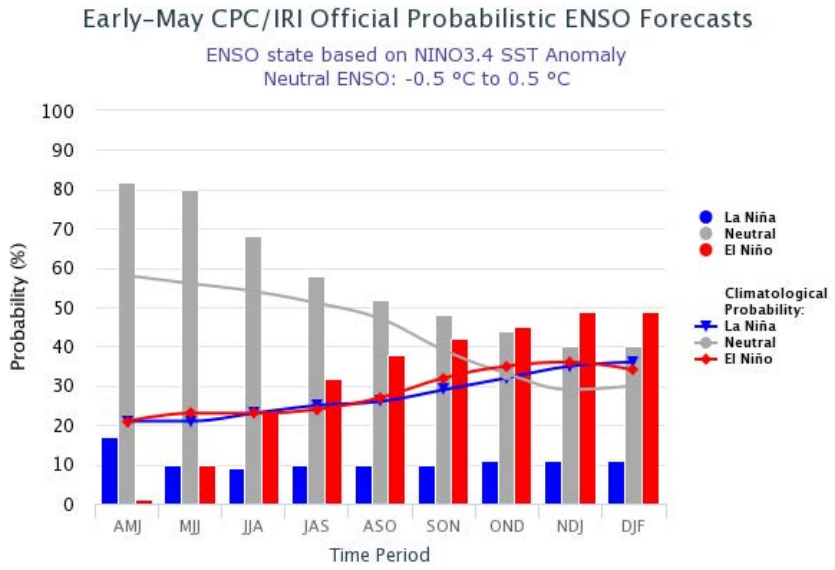


Figure10 (above): Probabilistic ENSO Forecast from IRI.

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

May is normally when temperatures begin to ramp up across the Southwest U.S. and northern Mexico, and that has been the case this year. Several cities along the Rio Grande have set high temperature records, and El Paso and Laredo, TX have already surpassed 100 °F. In early May, Laredo set records with temperatures of 97 °F and 102 °F on May 2nd and 3rd, respectively. A heat wave from May 9-11 set records in Las Cruces, New Mexico (99 °F on May 10th, and 98 °F on May 11th) and El Paso, Texas (100 °F on May 9th, and 101 °F on May 10th). Laredo set another record on May 15th with a high of 100 °F. Looking forward, forecasts indicate that temperatures will be above-average over the next month (Figure 11).

Another heat forecasting tool is now available, produced by the U.S. National Weather Service, that can provide additional insight into near future temperatures in the Southwest U.S. HeatRisk is an experimental forecasting tool that visualizes heat risk potential one-week in advance (Figure 12). It is designed to provide guidance to decision makers and heat-sensitive populations (such as outdoor workers and those with young children) on when to take action in preparation of a heat event. The map is portrayed on a color scale, with each color category representing a different population that is at risk. For example, yellow is a low-level of risk and means that those who are extremely sensitive to heat should take action to prevent illness. When the highest level (magenta) is forecasted, the entire population is at risk due to long-duration heat with little to no relief overnight. HeatRisk can be accessed from the National Weather Service page for most cities (https://www.wrh.noaa.gov/wrh/heatrisk/?wfo=epz).

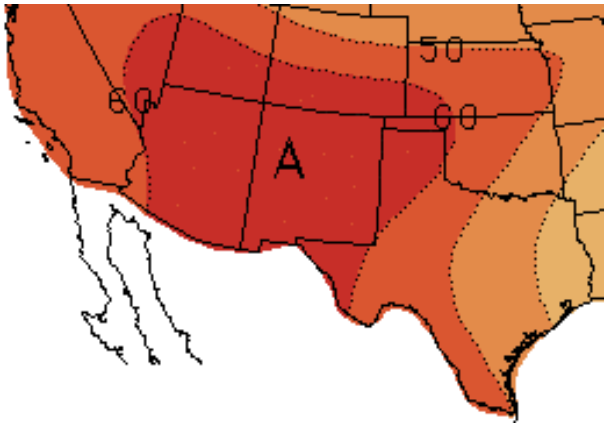
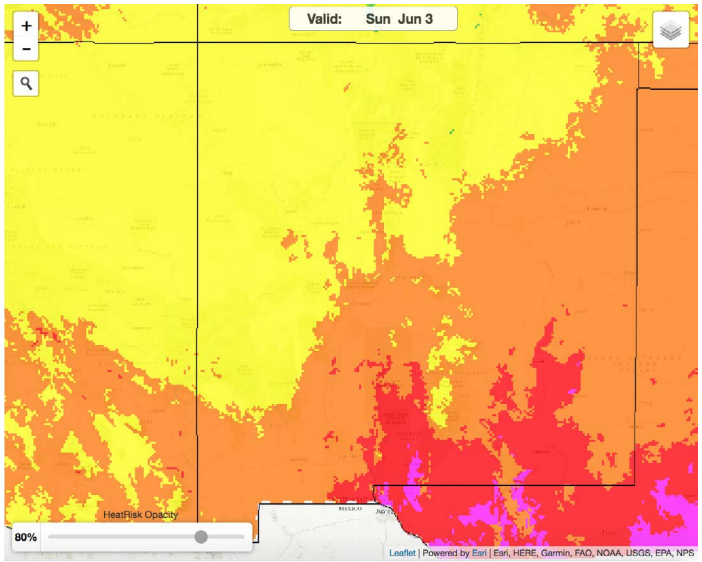


Figure 11 (left): NOAA one-month temperature outlook (June). Forecast made on May 17, 2018 by CPC.



Category	Level	Meaning
Green	0	No Elevated Risk
Yellow	1	Low Risk for those extremely sensitive to heat, especially those without effective cooling and/or adequate hydration
Orange	2	Moderate Risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration
Red	3	High Risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration
Magenta	4	Very High Risk for entire population due to long duration heat, with little to no relief overnight

Figure 12 (right): Screenshot of NWS HeatRisk for Sunday, June 3. The table (right) describes the meaning of each color.

HEAT WATCH CONT'D

Extreme heat causes the most deaths in the U.S. of any weather-related disaster. During this time of year in the Southwest U.S. and northern Mexico, prior to the start of the North American monsoon, it is particularly important to be prepared for the unrelenting heat. Populations at increased risk of heat-related illness include children, pregnant women, elderly, those taking medications, those working outdoors, those with disabilities, those without adequate cooling, and the socially isolated. Be sure to check on loved ones and neighbors and call 911 if anyone is experiencing symptoms of heat stroke (e.g., headache, fast pulse, confusion, nausea, loss of consciousness). For more information on vulnerable populations, the symptoms of heat-related illness, and what to do to prepare, visit the CDC extreme heat webpage (en Espanol: https://www.cdc.gov/es/disasters/extremeheat/index.html).

According to the National Meteorological Service (SMN), in Chihuahua, Mexico, they have reached maximum temperatures of 115 °F (46 °C) at the Urique and San Ignacio stations so far in May 2018, still not reaching historical extreme values.

Positive geopotential height anomalies are correlated with an increase in surface temperature. The high temperatures in Chihuahua are related to the positive anomalies of geopotential height so far in May. In addition, this pattern has prevailed due to La Niña conditions in the winter of 2017-2018.

As mentioned in the seasonal perspective, maximum temperatures may gradually decrease as the start date of the North American monsoon approaches in the northern part of the country.

For June it is expected that on some days maximum temperatures will be higher than 104 °F (40 °C) in all northern Mexico states.

ANNOUNCEMENTS

XXXII FORUM ON CLIMATE PERSPECTIVES IN THE MEXICAN REPUBLIC

From June 7 to 8, 2018, the XXXII Forum on Climate Perspectives in the Mexican Republic will be held in the National Meteorological Service in order to inform about the climatic perspectives for the summer 2018 in support of the decision making of diverse sectors, in the Global Framework for Climate Services (GFCS) promoted by the World Meteorological Organization.

ANNUAL CONFERENCE & EXPOSITION: INNOVATING THE FUTURE OF WATER

ACE18 is connecting the water sector with innovative solutions and new insights to help solve the global water challenges. Taking place on June 11-14, in Las Vegas, the AWWA (American Water Works Association) will be co-partnering with the California/Nevada Section to produce an outstanding conference. Hundreds of water industry thought leaders will provide guidance on the future of our water.

COMMISSION FOR ENVIRONMENTAL COOPERATION (CEC) XXV COUNCIL SESSION

The CEC Council, composed of the environment ministers of Canada, Mexico, and the U.S., will meet in Oklahoma City, OK, June 26-27, for the XXV Council Session. The one-day public forum will be focused on environment and economic growth, focusing on private sector engagement and examples of successful indigenous community and private sector collaborations. Participation is open to the public and free of charge.

2018 ONE WATER SUMMIT

This national summit will focus on how we value and manage water to foster economic prosperity and environmental sustainability, and what it will take to secure a sustainable water future for everyone. The summit will be in Minneapolis, MN from July 10-12, 2018.

NEWS

As warming continues, 'hot drought' becomes the norm, not an exception, May 13, 2018
A dry Rio Grande in springtime isn't normal. But it will be. May 7, 2018
New Report Documents Water Conservation and Efficiency Solutions for Deming, May 2, 2018
Intel announces support for water conservation work, May 6, 2018