Volume 10 June 2017

Texas Weather Wire

AUSTIN / SAN ANTONIO

Extended Hurricane Drought in Texas…

By Jason Runyen

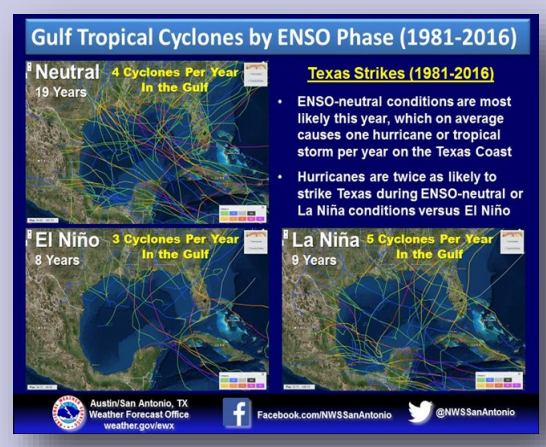
Texas has gone 8 hurricane seasons without a direct hurricane strike. Hurricane Ike striking Galveston in 2008 was the last strike for Texas. This is the second longest hurricane free streak for Texas since the mid 1850s. The longest streak is 9 hurricane seasons from 1990 to 1998.

Longest Hurricane Free Period in Texas

9 Seasons:	1990-1998
8 Seasons:	2009-Present, 1972-1979
7 Seasons:	1922-1928, 1858-1864
5 Seasons:	1950-1954, 1882-1886

On average Texas averages 4 tropical storms and 4 hurricanes per decade, so the current drought in hurricanes is concerning. In particular, the mid Texas coast area around Corpus Christi has gone 45 hurricane seasons without a strike within 50 miles. Hurricane Celia in 1970 was the last hurricane to strike the Corpus Christi area.

So how does the 2017 hurricane season look to shape up? Seasonal hurricane outlooks are tied to a number of atmospheric cycles and anomalies, with the El Niño Southern Oscillation (ENSO) and Atlantic basin sea surface temperatures being two of them. Since 1981 the Gulf of Mexico averages 3 tropical cyclones in a given season during the El Niño phase of the ENSO cycle. In particular the western Gulf of Mexico has historically seen far fewer storms than eastern portions of the Gulf of Mexico during El Niño years.



Conversely, during Neutral and La Niña ENSO conditions the Gulf of Mexico becomes more active, averaging 4 and 5 tropical cyclones per year respectfully. Texas in particular is twice as likely to get a Tropical Storm or Hurricane Strike during the La Niña or Neutral phase versus El Niño.

Sections on this issue:

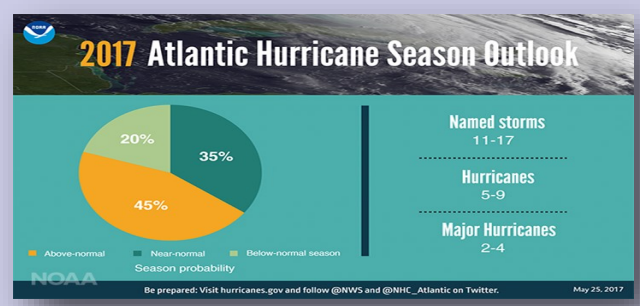
Tropical Outlook continues...

Tropical Outlook

Warm ocean water temperatures is fuel for hurricanes. When ocean water temperatures are warmer than average this can add confidence to an above average number of storms during a tropical season, when taking into account other contributors.

ENSO conditions are currently neutral. Conditions are forecast through the Fall to remain either neutral or move into the weak El Niño phase, with neutral conditions having slightly higher probabilities. Sea surface temperatures anomalies are currently above average across a large region of the Atlantic Ocean and Caribbean Sea that is known for tropical cyclone genesis during the peak of hurricane season.

For the upcoming Atlantic hurricane season, which runs from June 1 through November 30, NOAA forecasters predict a 45 percent chance of an above-normal season, a 35 percent chance of a near-normal season, and only a 20 percent chance of a below-normal season.



Forecasters predict a 70 percent likelihood of 11 to 17 named storms (winds of 39 mph or higher), of which 5 to 9 could become hurricanes (winds of 74 mph or higher), including 2 to 4 major hurricanes (Category 3, 4 or 5; winds of 111 mph or higher). An average season produces 12 named storms of which six become hurricanes, including three major hurricanes.

“The outlook reflects our expectation of a weak or non-existent El Niño, near- or above-average sea-surface temperatures across the tropical Atlantic Ocean and Caribbean Sea, and average or weaker-than-average vertical wind shear in that same region,” said Gerry Bell, Ph.D., lead seasonal hurricane forecaster with NOAA’s Climate Prediction Center.

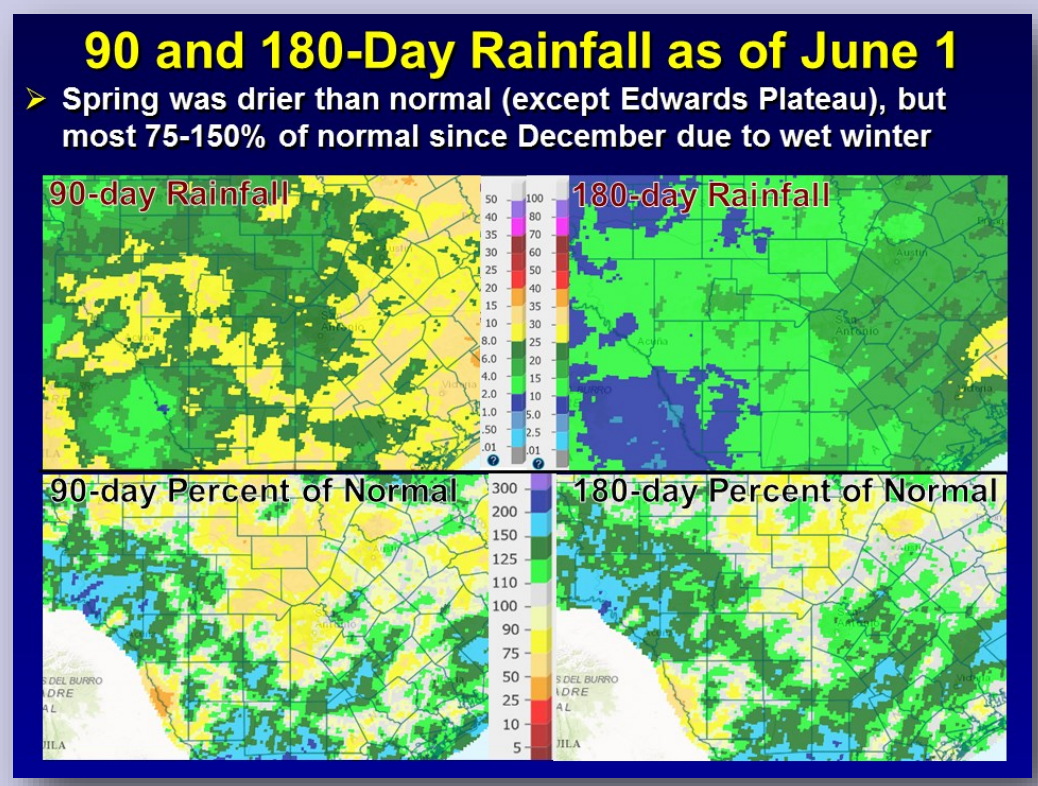
Residents are reminded to prepare the same every hurricane season, regardless of seasonal forecasts. It only takes one tropical cyclone to bring devastating impacts to a community. A perfect case example is Hurricane Alicia in 1983, one of only 6 named storms that season (average is 12). Alicia struck the Upper Texas Coast producing over $6 billion in damage and killing 21 people. Visit hurricane.gov to stay up to date this hurricane season.

Climate is next...

South Central Texas Climate Outlook

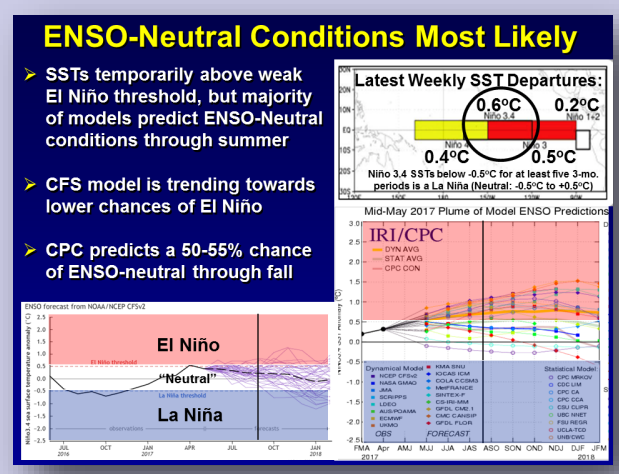
By Larry Hopper

Spring was once again much warmer than normal with the South Central Texas climate division's average temperature of 72.0 degrees ranking as the seventh warmest since 1895. March contributed the most to this anomaly following the warmest winter since 1895 as it was 6.7 degrees above 1981-2010 normals and the second warmest behind 1907. However, April was only 2.4 degrees above normal and May was actually 0.6 degrees below normal. ENSO-neutral conditions replaced the La Niña that officially ended during January to help average rainfall over South Central Texas remain just 10% below normal at 8.13 inches across the climate division. However, portions of the Edwards Plateau and Rio Grande Plains were quite a bit above normal as Del Rio's 10.12 inches of rain was their ninth wettest, with 5.07 inches falling on April 2nd being their earliest 5 inch daily rainfall total on record. Other high-impact heavy rainfall events occurred on March 9th when over 6 inches of rain in southern Guadalupe County led to a flash flood fatality and on April 11th when 3-9 inches of rain over San Marcos caused Texas State to cancel classes for the day. These values all helped bring up our average rainfall that was generally below normal for most locations, leading roughly a quarter of South Central Texas to be placed in abnormally dry (D0) conditions on the latest Drought Monitor.



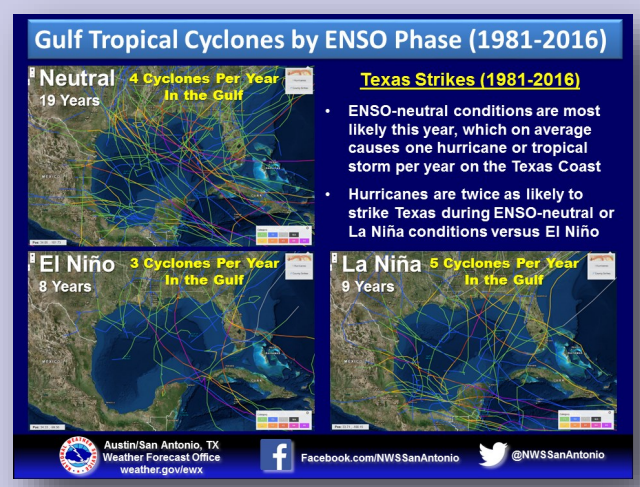
Climate continues...

Climate Outlook...



Considering the general warming trends that South Central Texas has been experiencing since the mid-1970s, CPC is predicting a warmer than normal summer. However, confidence in temperatures ranking in the top third of summers between 1981-2010 is only 40-50%, making it less likely that 2017 will end up being the warmest year on record over South Central Texas despite the first five months of the year being 0.8oF warmer than the previous warmest in 2000. Although sea surface temperatures (SSTs) have temporarily increased above the El Niño threshold, the majority of models are showing that SSTs should gradually decrease later this summer and fall. Therefore, model and CPC forecasts are trending away from El Niño conditions developing this summer, with CPC predicting a 50-55% chance that ENSO-neutral conditions will persist through at least this fall.

Higher confidence in ENSO-neutral conditions combined with weak shear and slightly above average SSTs expected this summer and early fall has led NOAA to predict that odds are slightly tilted towards an above normal Atlantic hurricane season. Although tropical cyclones strike the Gulf Coast most frequently during La Niña, ENSO-neutral conditions produce more landfalling tropical cyclones than El Niño. In addition, hurricanes and tropical storms are twice as likely to strike Texas during ENSO-neutral or La Niña conditions relative to El Niño, with one hurricane or tropical storm occurring on average per year during ENSO-neutral conditions. On average, four hurricanes and four tropical storms per decade make landfall somewhere along the Texas Gulf Coast, but we have only had two tropical storms (Don in 2011 and Bill in 2015) so far this decade! Considering that the Texas Gulf Coast has been hurricane free since Ike in 2008 and the longest such stretch is only nine seasons (1990-1998), it is just a matter of time before the next one occurs somewhere along the Texas Gulf Coast!



NWS at TDEM is next...

NWS Attends to the TDEM Conference

By Yvette Benavides

In May, the Austin/San Antonio National Weather Service office attended the Texas Emergency Management Conference held in downtown San Antonio. The conference was hosted by the Texas Division of Emergency Management (TDEM). According to TDEM, the conference attracts over 2,500 elected officials, first responders, emergency managers, and decision makers from all over Texas. This was a great opportunity to spend some face time with partners that the weather office coordinates with in both routine and critical operations. Exhibitors showcased exciting and new technology and advancements in disaster preparedness. NWS display table was set up outside of the workshop classrooms, where meteorologists were available to answer questions about services, and since it was an active weather week, the team was able to provide updates on current weather all over the state of Texas.

Anniversaries is next...

Historical Events: Where were you back then?

By Jason Runyen

The Jarrell Tornado – A Look Back 20 Years Ago

This year marks the 20 year anniversary of the deadly Jarrell Tornado, which claimed the lives of 27 people.

The Jarrell tornado was part of a severe weather episode that unfolded across portions of Central Texas during the afternoon and evening hours on Tuesday, May 27th, 1997. This event was additionally unusual because of the notable lack of upper-level forcing for ascent (lift), and generally light winds through the troposphere--where our weather occurs. In a sense, this day was distinctly lacking two of the four crucial ingredients we typically look for on big severe weather events (strong lift and wind shear, especially near the surface). Yet, over the course of roughly six hours, 20 tornadoes touched down across Central and South Texas. This day was made infamous by one of the most powerful tornadoes on record: an F5 which tore through a subdivision of Jarrell called Double Creek Estates in extreme northern Williamson County. Some of the most extreme damage on record occurred with this tornado, and one account states that "the earth was scoured bare, pavement was ripped from roadways, [and] homes and other buildings were completely pulverized" (Lon Curtis, Weather Bulletin). Two tornadoes also touched down in the Austin Metro area: an F3-rated tornado in Cedar Park and an F4-rated tornado near Lakeway.

The Jarrell Tornado, developed as a small, rope-shaped tornado, touching down around 3:40 pm CDT inside the Williamson County line northwest of Jarrell. The tornado reached the Double Creek subdivision on the northwest side of Jarrell at 3:48 pm CDT. Here, it widened to it maximum width of three-quarters of a mile. In the Double Creek area, approximately 40 structures were totally destroyed. One of the most striking signs in approaching this area was the distinct lack of debris of any size. It was estimated that several dozen vehicles had been in the subdivision and removed by the tornado. Trees in the subdivision were completely stripped of bark. All 27 deaths associated with the Jarrell tornado occurred in the Double Creek area. Eyewitnesses reported that it appeared to have slowed down as it entered the subdivision, and that may account for the nearly total destruction that took place.

20 years later the Jarrell tornado remains the last F5/EF-5 tornado to strike the state of Texas. For more on the Jarrell Tornado, as well as the Cedar Park and Lakeway/ Perdenales Valley Tornadoes that occurred on this same day, visit: www.weather.gov/ewx/JarrellTornadoAnniversary

Anniversaries continue..

The 1987 Guadalupe River Flood

A Look Back 30 Years Ago

This year marks the 30 year anniversary of the tragic 1987 Guadalupe River Flood which claimed the lives of 10 teenagers just west of Comfort, Texas.
During the evening of July 16th, 1987 and into the early morning of the 17th thunderstorms moved slowly eastward through the Hill Country of South Central Texas. The storms produced a train-effect, one following another, and a large area of 5-10 inches of rain fell in the upper headwaters of the Guadalupe River basin. As much as 11.50 inches of rain occurred 9 miles west of Hunt, Texas. This resulted in a massive flood wave that traveled down the Guadalupe River through Ingram, Kerrville, and eventually Comfort, Texas during morning hours of the 17th.

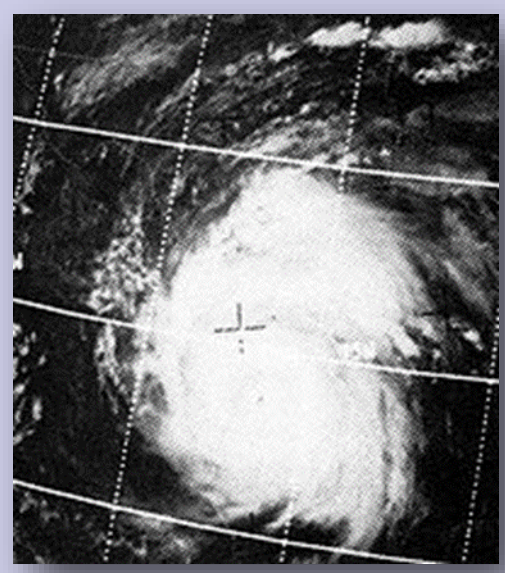
The week preceding the 1987 Guadalupe River Flood more than 300 children from various churches were attending a church camp at the Pot O' Gold Ranch, which is located about two miles southwest of Comfort, Texas. The camp was scheduled to end later in the day on the July 17th, 1987, the day of the Guadalupe River Flood.
Law enforcement officials notified the camp around 2 AM and again around 6 AM of the flood wave coming down the Guadalupe River and to not try and cross the river. A decision was made to evacuate the children early to avoid being trapped at the camp. Around 745 AM a caravan of buses and a van left the camp. The buses and van encountered a flooded low water crossing on the Guadalupe River just outside the camp gate and decided to turn away and try an alternate route. The lead buses in the caravan successfully made the sharp turn to head a different direction. However the rapidly rising water from the river, now out of its banks, and the backwash from the convoy caused the last bus to stall and a van behind it to become stranded.
An attempt was made to evacuate the children off the bus and van, however as they were wading back to dry ground a wall of water, estimated to be as much as half a mile wide, rushed upon the campers. Although they tried to reach safety by forming a human chain, the rushing water scattered them. 39 teenagers and 4 adults were swept into the flood waters. 10 of the teenagers tragically drowned. The remaining 33 children and adults survived as a result of a series of rescues, including dramatic helicopter rescues of several clinging to tree tops, conducted by Texas DPS, the US Army's 507th Medical Division, and a local television news station from San Antonio, Texas.

The Guadalupe River at Comfort rose 29 feet that morning and crested at 31.50 feet, the ninth highest crest in recorded history. At the peak of the flood the river where the buses and van attempted to cross was estimated to be two-thirds of a mile from its normal bank. Hundreds of other people along the Guadalupe River and its tributaries that night and morning had to be evacuated.

Anniversaries continue...

Hurricane Beulah—A Look Back 50 Years Ago

This year marks the 50 year anniversary of Hurricane Beulah.



Beulah was the 2nd storm of the 1967 hurricane season in which there were only 6 named storms. However Beulah left its mark on Texas history as her slow storm motion produced record flooding and a prolific number of tornadoes. Beulah was a long track storm, developing just east of the Leeward Islands in the Caribbean on September 5th, 1967, intensifying rapidly into a hurricane the next day. Beulah passed south of Hispaniola as a Category 4 hurricane with wind speeds of 150 mph. As she churned across the Caribbean, she weakened to a tropical storm while skirting south of Jamaica. But by the eleventh day she made her first direct impact on the northern tip of the Yucatan Peninsula as Category 3 storm. She reemerged in the warm waters of the Gulf of Mexico, becoming a powerful Category 5 storm, with sustained winds of 160 mph. Beulah finally moved ashore in Mexico, just south of Brownsville Texas on September 20, 1967.

Maximum sustained wind gusts were measured at 136 mph in Brownsville producing a storm surge of 18-20 feet north of where the center of the storm crossed the coast.
Over 114 tornadoes were produced by the storm, mainly over the Coastal Bend and South Texas region. Beulah held the record for the most tornadoes spawned by a hurricane until Hurricane Ivan in 2003 (120 tornadoes).
After landfall Beulah moved slowly northward into the Coastal Bend and stalled. Rainfall totals of 15 to 25 inches were observed across much of the region. The Nueces and Frio Rivers peaked at levels never seen before, and many of those river crest records still stand today.
Beulah killed 58 people and produced $217 million (1967 USD, $1.59 billion 2017 USD) dollars in damage. Beulah was retired from the list of Atlantic basin storm names.

NWS information is next...

Texas Weather Wire

National Weather Service
Austin/San Antonio
Weather Forecast Office (WFO)
2090 Airport Road
New Braunfels, Texas
Phone: 830-606-3617

National Weather Service Mission Statement

"The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community."

Facebook: https://www.facebook.com/NWSSanAntonio

Twitter: https://twitter.com/NWSSanAntonio

YouTube: https://www.youtube.com/user/NWSSanAntonio

Austin/San Antonio National Weather Service Home Page

http://www.weather.gov/austin

Thank you for reading our newsletter!

Have a happy summer season and enjoy South-Central Texas weather!