



NWS Houston, Texas July 2019 Regional Climate Summary

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.. An Abnormally Dry and Warm July across SE TX. . .

Another record breaking month with a total of twenty daily records broken across the primary climate sites. July also brought the arrival of an abnormally early cold front to the region. The City of Galveston set its 6th warmest July on record, while Houston Hobby came in 8th warmest. El Niño conditions also came to an end this month, with ENSO-Neutral conditions taking back over.

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July 2019 by the Numbers

Location (records started)	Average Temp	Ranking	Total Rainfall	Ranking
City of Houston, TX (1888)	84.9°F	26 th Warmest	2.79"	48 th Driest
Houston Hobby, TX (1930)	85.7°F	8 th Warmest	0.38"	5 th Driest
City of Galveston, TX (1871)	86.2°F	6 th Warmest	1.09"	26 th Driest
City of College Station, TX (1882)	85.0°F	37 th Warmest	0.18"	8 th Driest
Conroe, TX (1997)	82.6°F	13 th Warmest	3.86"	7 th Wettest
David Wayne Hooks (Tomball), TX (1998)	83.6°F	11 th Warmest	3.93"	10 th Wettest
Angleton, TX (1998)	83.6°F	8 th Warmest	2.07"	7 th Driest
Clover Field (Pearland), TX (1997)	84.7°F	7 th Warmest	1.23"	4 th Driest
Palacios, TX (1943)	87.0°F	Warmest on Record	0.47	9 th Driest
Sugar Land, TX (2000)	84.5°F	7 th Warmest	1.55"	4 th Driest
Huntsville, TX (1997)	83.8°F	13 th Warmest	0.68"	4 th Driest
League City, TX (1990)	84.3°F	7 th Warmest	1.64"	6 th Driest



Precipitation

July saw below normal monthly rainfall totals for much of the area which lead to the expansion of drought conditions. Some notable locations include Houston Hobby, which recorded its 5th driest July on record, and College Station, which saw its 8th driest. The precipitation that did fall this month originated from localized showers and thunderstorms resulting in very variable precipitation totals throughout the area. Some thunderstorms resulted in the issuance of flash flood products, including a Flash Flood Warning and multiple Flood Advisories.

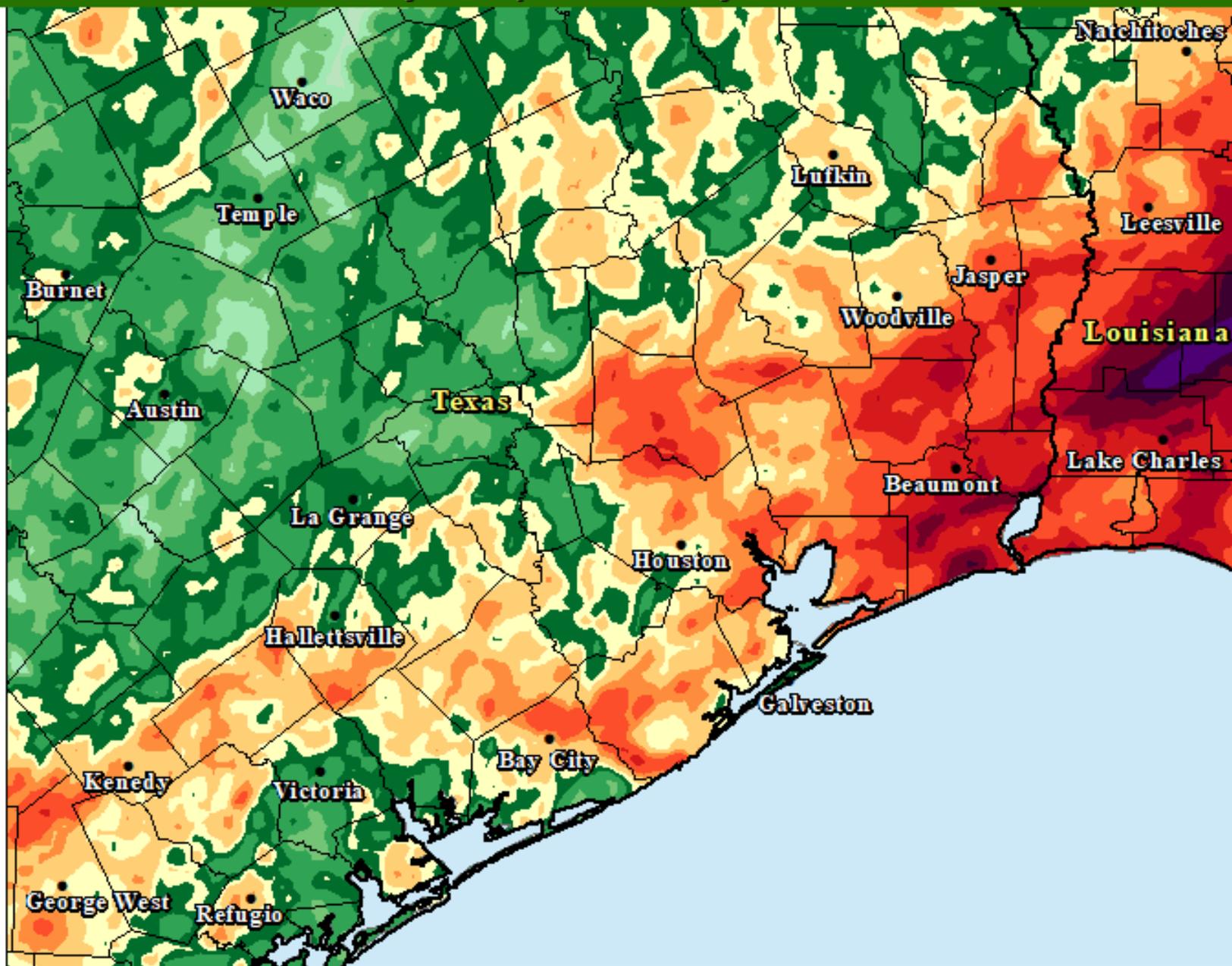
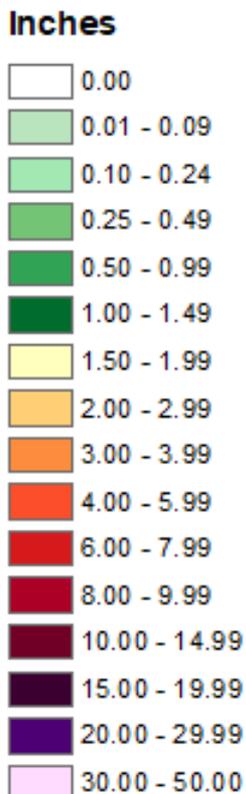
Source: NOAA

Site	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	1.09	-2.71	9	0.23	July 19th
Houston Hobby (HOU)	0.38	-4.28	15	0.28	July 2nd
City of Houston (IAH)	2.79	-1.0	12	1.21	July 4th
College Station (CLL)	0.18	-1.96	6	0.17	July 1st



Precipitation (Continued)

Total Monthly Precipitation - July 2019



Created by the
NWS Forecast Office
Houston/Galveston, TX



0 25 50
Miles

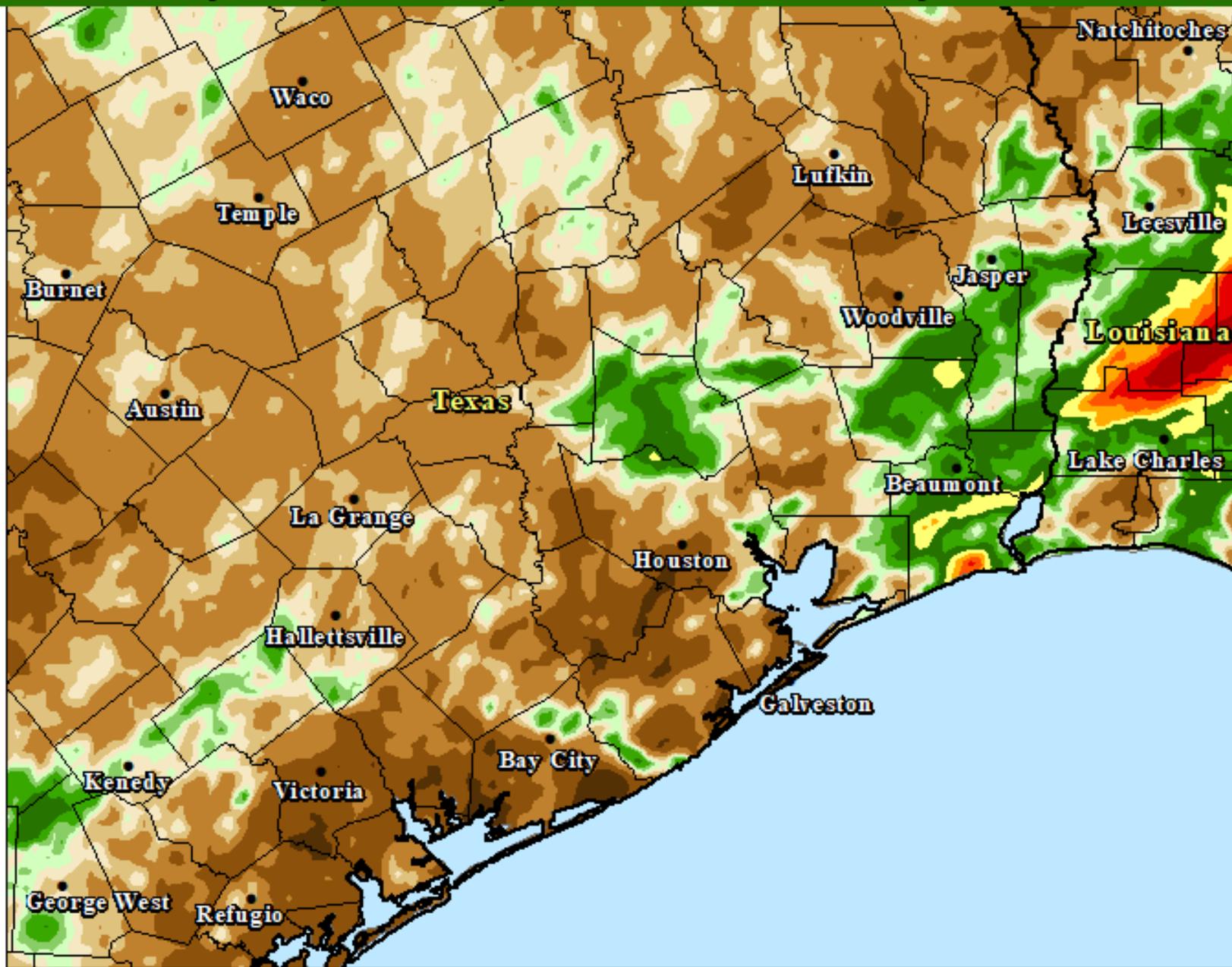
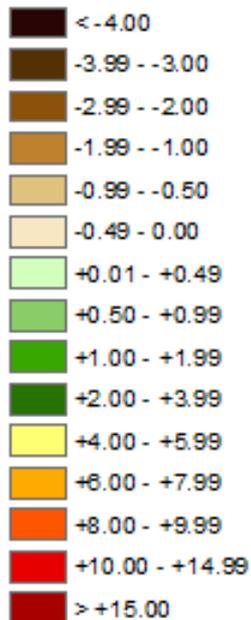
Source: NWS Advanced Hydrologic Prediction Service
Created: 08/01/2019 2000 UTC



Precipitation (Continued)

Total Monthly Precipitation Departure From Normal - July 2019

Inches



Created by the
NWS Forecast Office
Houston/Galveston, TX



0 25 50
Miles

Source: NWS Advanced Hydrologic Prediction Service
Created: 08/01/2019 2000 UTC



Temperatures

Daily average temperatures were above normal for most of the month of July, with high pressure often times dominating the forecast. Tropical Storm Barry stayed to our east the second week of the month, keeping SE TX on the warm and subsident side of the storm. The third week of July also brought the arrival of the first cold front of the season. Daily average temperatures behind this frontal boundary fell to two to six degrees below normal across most of the region. Overall, July 2019 ranked 6th for the City of Galveston and 8th warmest for Houston Hobby on record.

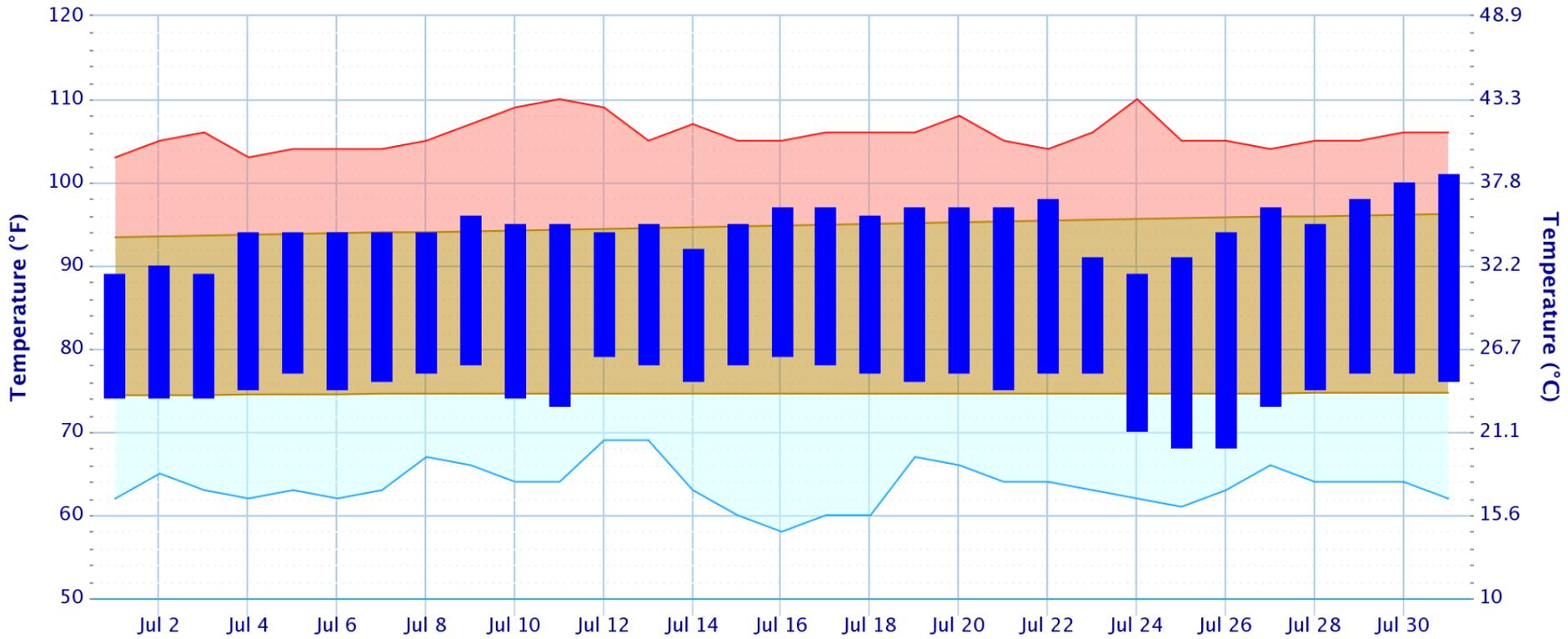
Site	Average Temp (F)	Average High Temp (F)	Average Low Temp (F)	Normal Average Temp (F)	Departure From Normal (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	86.2	91.1	91.4	84.5	+1.7	96 on July 12th	75 on July 24th
Houston Hobby (HOU)	85.7	93.7	77.8	83.9	+1.9	98 on July 12th and 30th	70 on July 25th
City of Houston (IAH)	84.9	94.1	75.7	84.4	+0.5	97 on July 29th and 30th	66 on July 25th
College Station (CLL)	85.1	94.7	75.4	84.8	+0.3	101 on July 31st	68 on July 25th and 26th



Monthly Temperature Charts

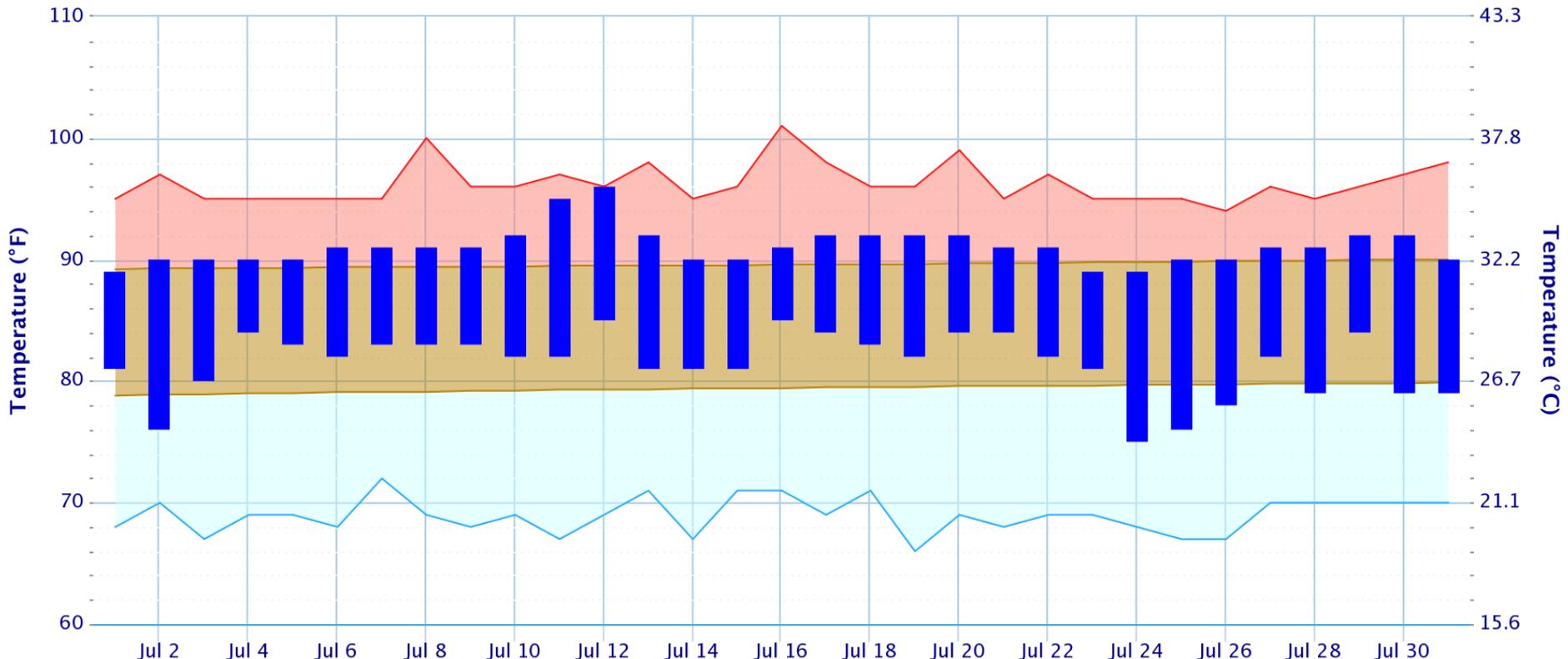
Daily Temperature Data – College Station Area, TX (ThreadEx)

Period of Record – Max temperature: 1888-10-01 to 2019-08-03; Min temperature: 1882-05-15 to 2019-08-03. Normals period: 1981-2010. Click and drag to zoom chart.



Daily Temperature Data – Galveston Area, TX (ThreadEx)

Period of Record – 1874-05-10 to 2019-08-03. Normals period: 1981-2010. Click and drag to zoom chart.



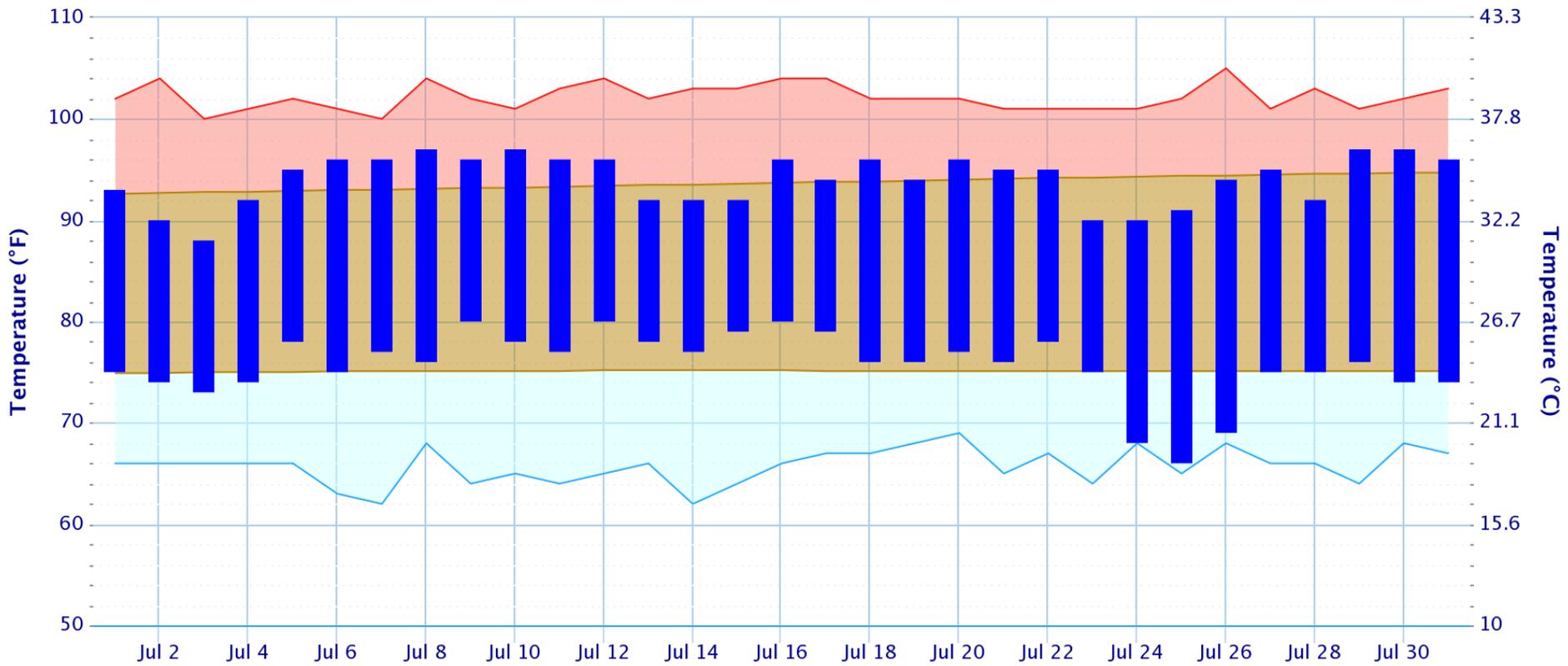
● Observed temperature range (2019) ● Normal temperature range — Record Max — Record Min



Monthly Temperature Charts (continued)

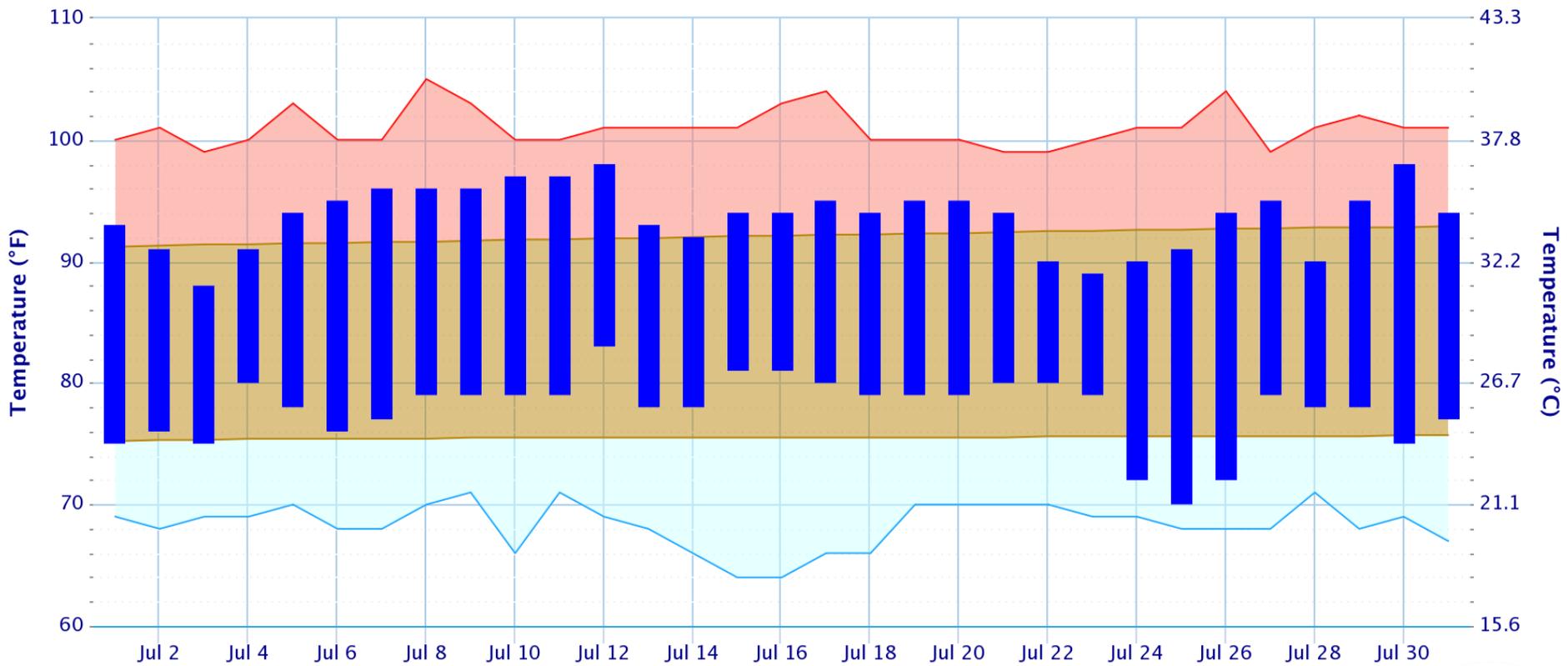
Daily Temperature Data – Houston Area, TX (ThreadEx)

Period of Record – 1889-05-01 to 2019-08-03. Normals period: 1981-2010. Click and drag to zoom chart.



Daily Temperature Data – HOUSTON WILLIAM P HOBBY AP, TX

Period of Record – 1930-08-01 to 2019-08-03. Normals period: 1981-2010. Click and drag to zoom chart.



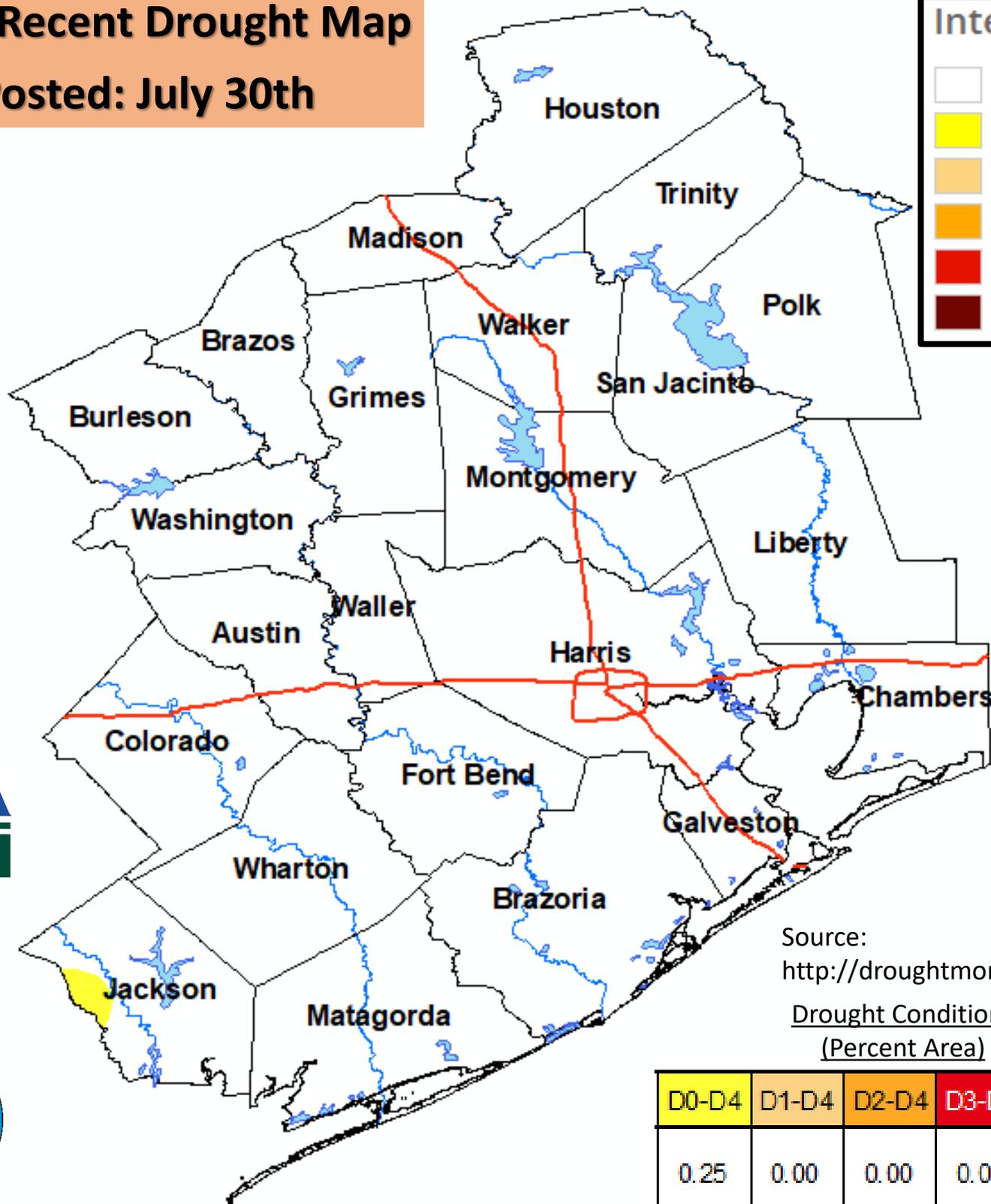
● Observed temperature range (2019)
 ■ Normal temperature range
 — Record Max
 — Record Min



Drought Conditions

A small region of abnormally dry conditions developed in Jackson County by the end of the month of July.

Most Recent Drought Map
Posted: July 30th



Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)

Source:
<http://droughtmonitor.unl.edu>

Drought Conditions
 (Percent Area)

D0-D4	D1-D4	D2-D4	D3-D4	D4
0.25	0.00	0.00	0.00	0.00



July Daily Record Reports

A total of 20 daily records were set across the primary climate sites.

Site	Date	Record Type	New Record	Previous Record
City of Galveston	July 4 th	High Min Temperature	84°	84° in 2016
City of Galveston	July 5 th	High Min Temperature	83°	83° in 2017
City of Galveston	June 7 th	High Min Temperature	83°	83° in 1994
Houston Hobby	July 8 th	High Min Temperature	79°	79° in 2016
City of Houston	July 9 th	High Min Temperature	80°	80° in 2011
City of Galveston	July 12 th	High Min Temperature	85°	83° in 2016
City of Galveston	July 12 th	High Max Temperature	96°	96° in 1876
Houston Hobby	July 12 th	High Min Temperature	83°	79° in 2016
Houston Hobby	July 15 th	High Min Temperature	81°	80° in 2011
Houston Hobby	July 16 th	High Min Temperature	81°	79° in 2010
City of Galveston	July 16 th	High Min Temperature	85°	84° in 1994
City of College Station	July 16 th	High Min Temperature	79°	79° in 2009



July Daily Record Reports Continued

Site	Date	Record Type	New Record	Previous Record
City of Galveston	July 17 th	High Min Temperature	84°	84° in 1987
Houston Hobby	July 17 th	High Min Temperature	80°	79° in 1987
City of Galveston	July 21 st	High Min Temperature	84°	84° in 1995
Houston Hobby	July 21 st	High Min Temperature	80°	80° in 1953
Houston Hobby	July 22 nd	High Min Temperature	80°	80° in 2017
Houston Hobby	July 23 rd	High Min Temperature	79°	79° in 2018
City of Houston	July 24 th	Low Min Temperature	68°	68° in 1972
City of Galveston	July 29 th	High Min Temperature	84°	83° in 2013



August Outlook

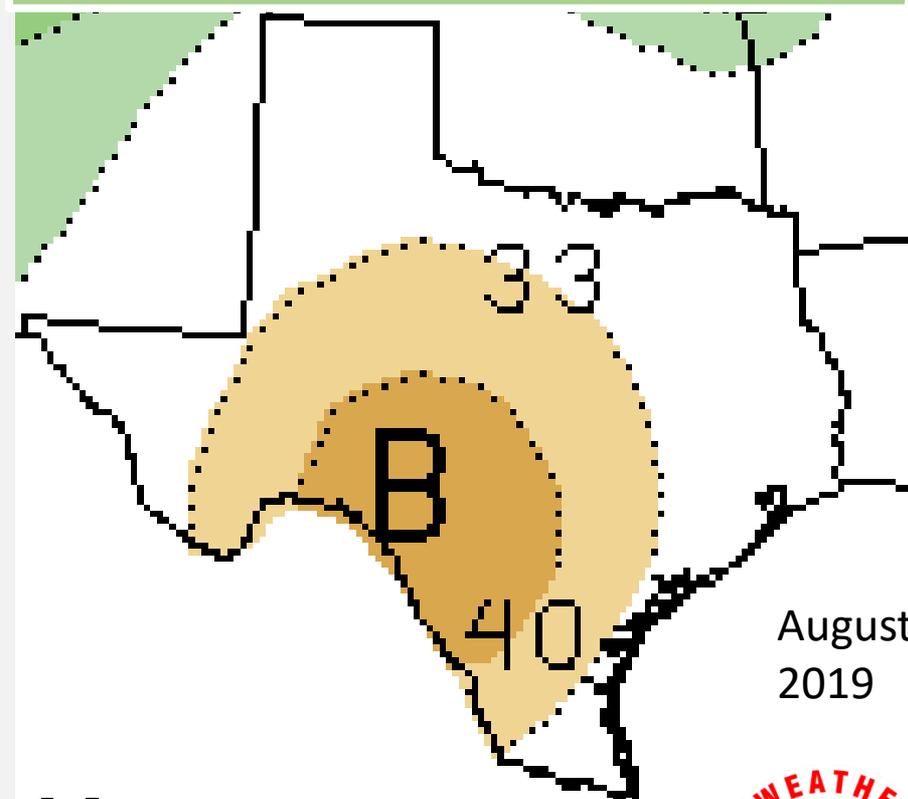
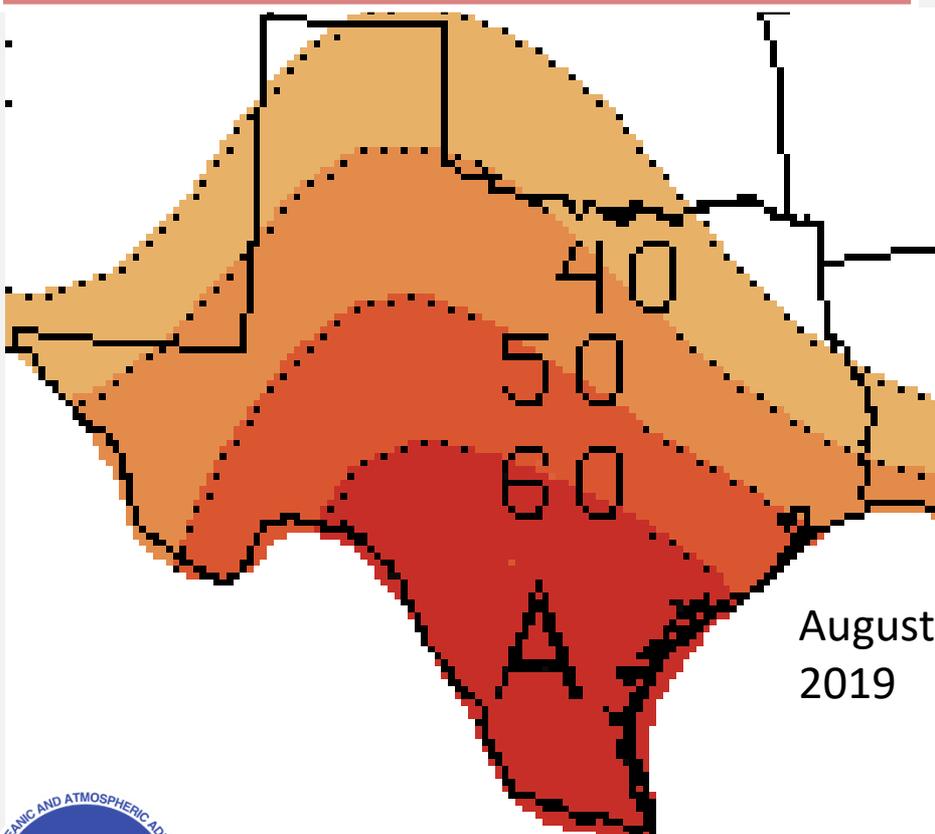
For August, the latest outlook from the Climate Prediction Center (CPC) calls for a 16.7% chance of below normal temperatures, a 33.3% chance of normal temperatures and a 50% chance of above normal temperatures across Southeast Texas. The precipitation outlook also calls for an equal chance for above, below, and normal precipitation.

Site	Average Temp(°F)	Normal High (°F)	Normal Low (°F)
Galveston	85.0	90.3	79.7
Houston Hobby	84.2	92.6	75.7
City of Houston	84.6	94.5	74.8
College Station	85.3	96.2	74.5

Site	Normal Monthly Precipitation (in.)
Galveston (GLS)	4.39
Houston Hobby (HOU)	5.06
City of Houston (IAH)	3.76
College Station (CLL)	2.68

Temperature Outlook

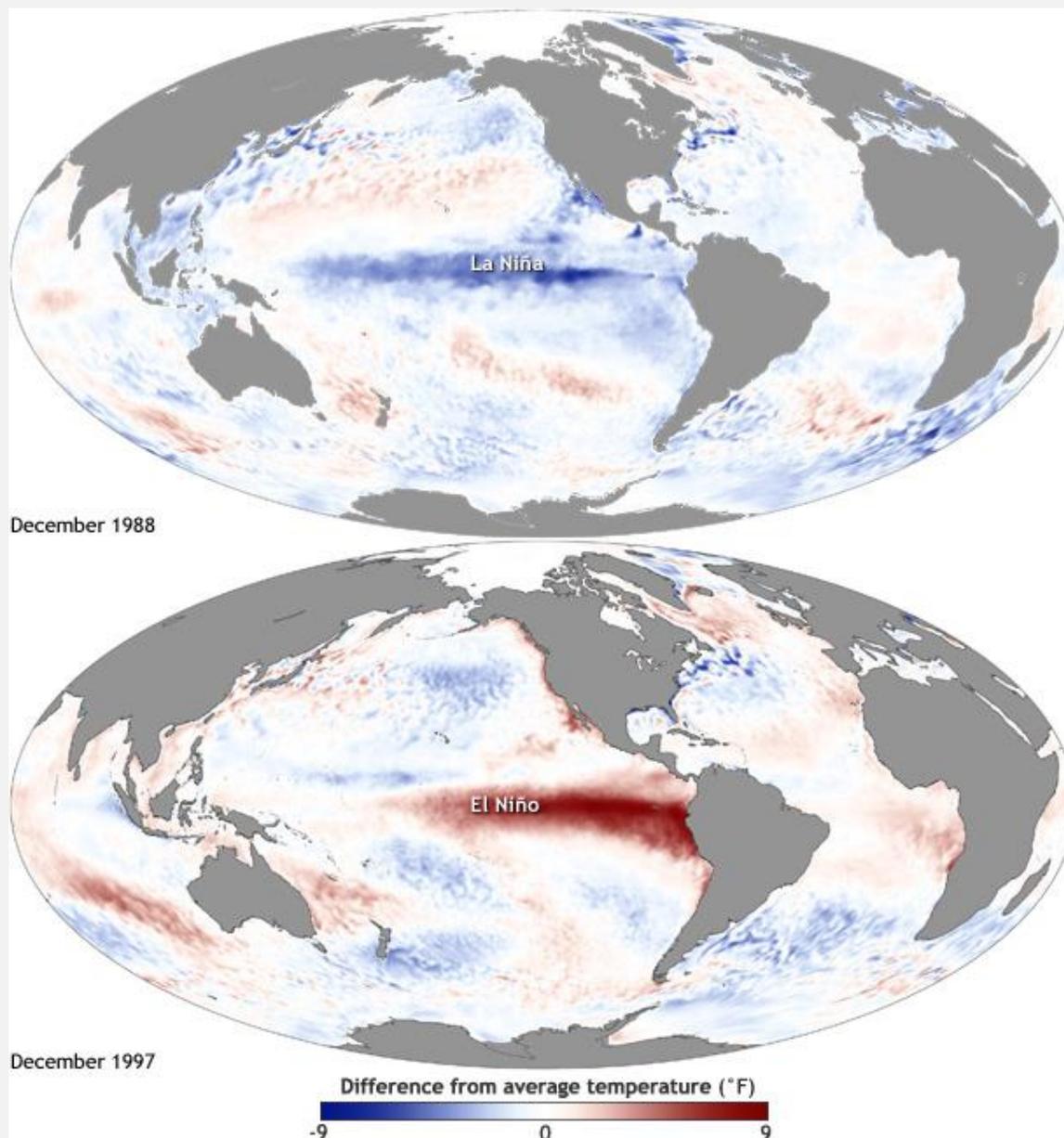
Precipitation Outlook



ENSO

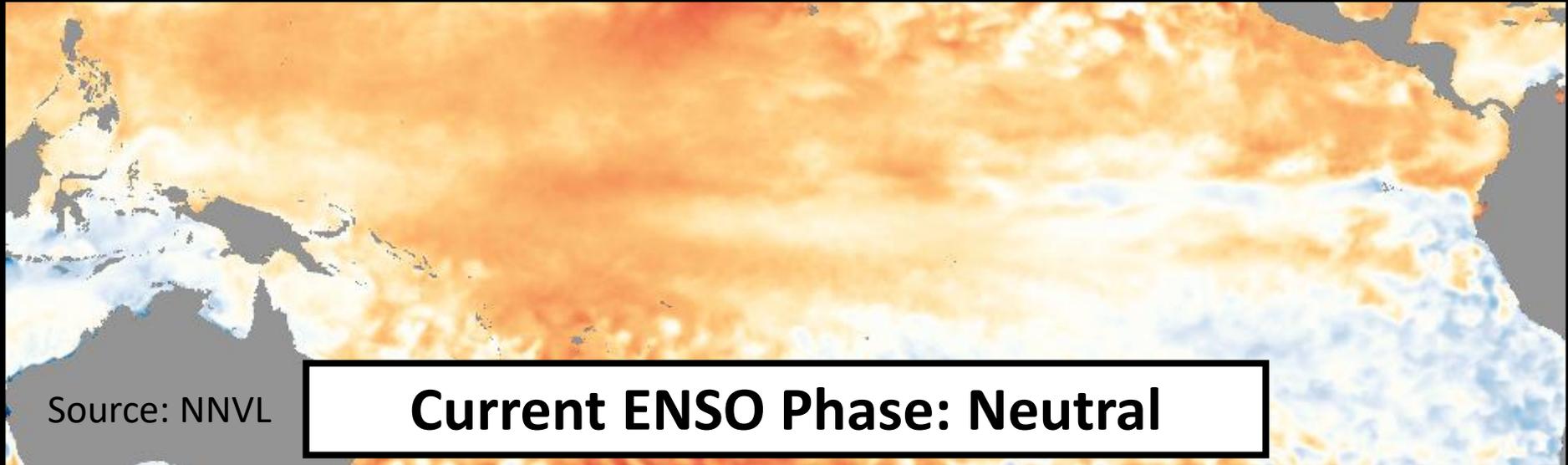
What is ENSO?

The El Niño-Southern Oscillation (ENSO) is a climate oscillation that occurs across the tropical Pacific Ocean that has impacts on weather patterns across the world. As the name alludes to, ENSO has two aspects: the oceanic aspect (El Niño) and atmospheric aspect (Southern Oscillation). The El Niño part refers to the oscillation of the sea surface temperatures (SSTs) across the tropical Pacific, and also includes the strength of the wind field north of the equator in the tropical Pacific (trade winds). The Southern Oscillation, also called the Walker Circulation, refers to atmospheric pressure anomalies across the Pacific Ocean. There are three phases to ENSO: Neutral, El Niño (when the tropical pacific is warmer than normal), and La Niña (when the tropical pacific is cooler than normal). The phase of ENSO can have impacts on the weather across the globe.



ENSO Observations

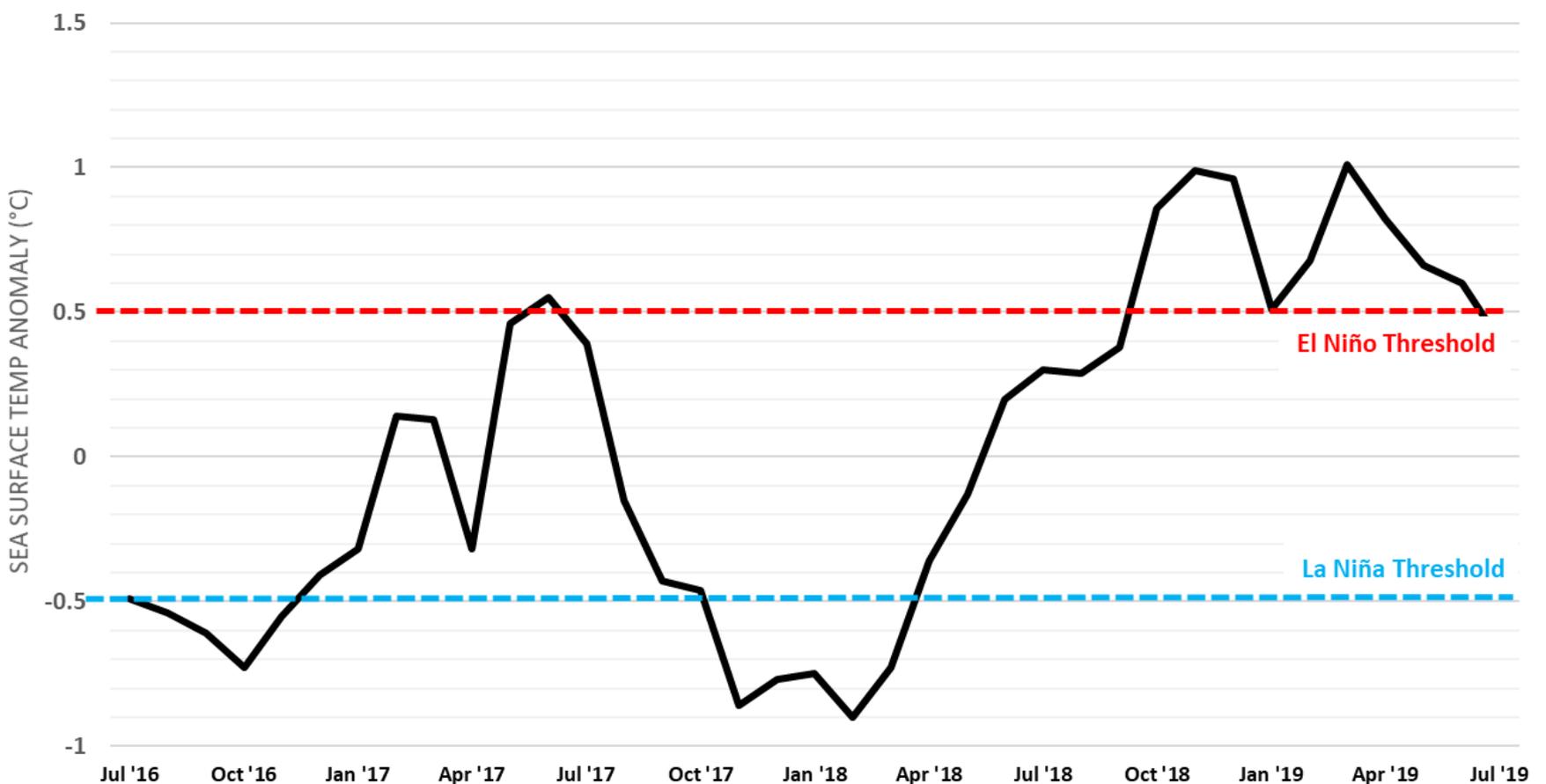
Sea Surface Temperature Anomalies across the Tropical Pacific Ocean from July 20 – 26, 2019



Source: NNVL

Current ENSO Phase: Neutral

Sea Surface Temperature Anomalies (°C) in the Tropical Pacific

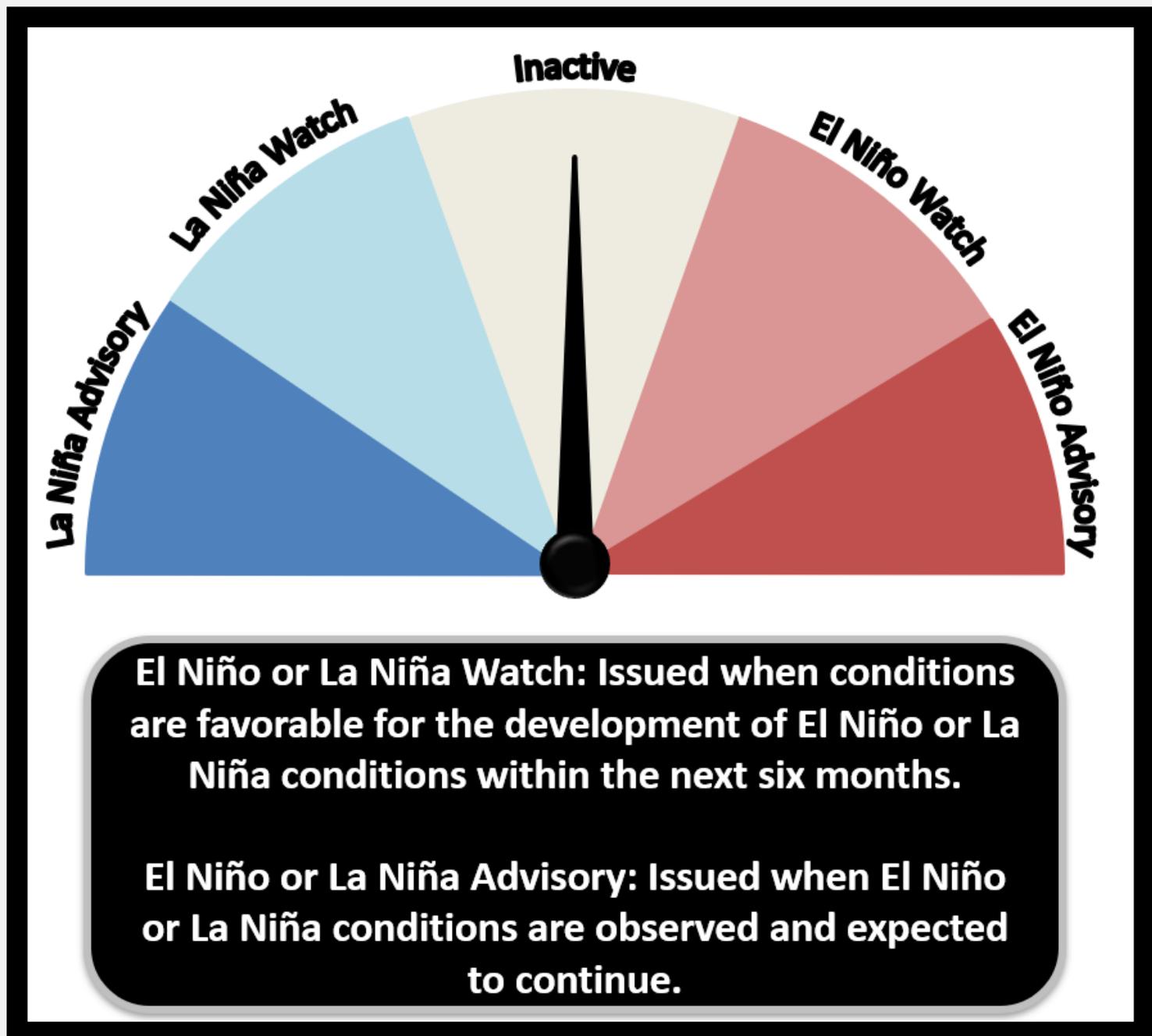


ENSO Forecast

The Climate Prediction Center's ENSO

Forecast: **El Niño has Ended**

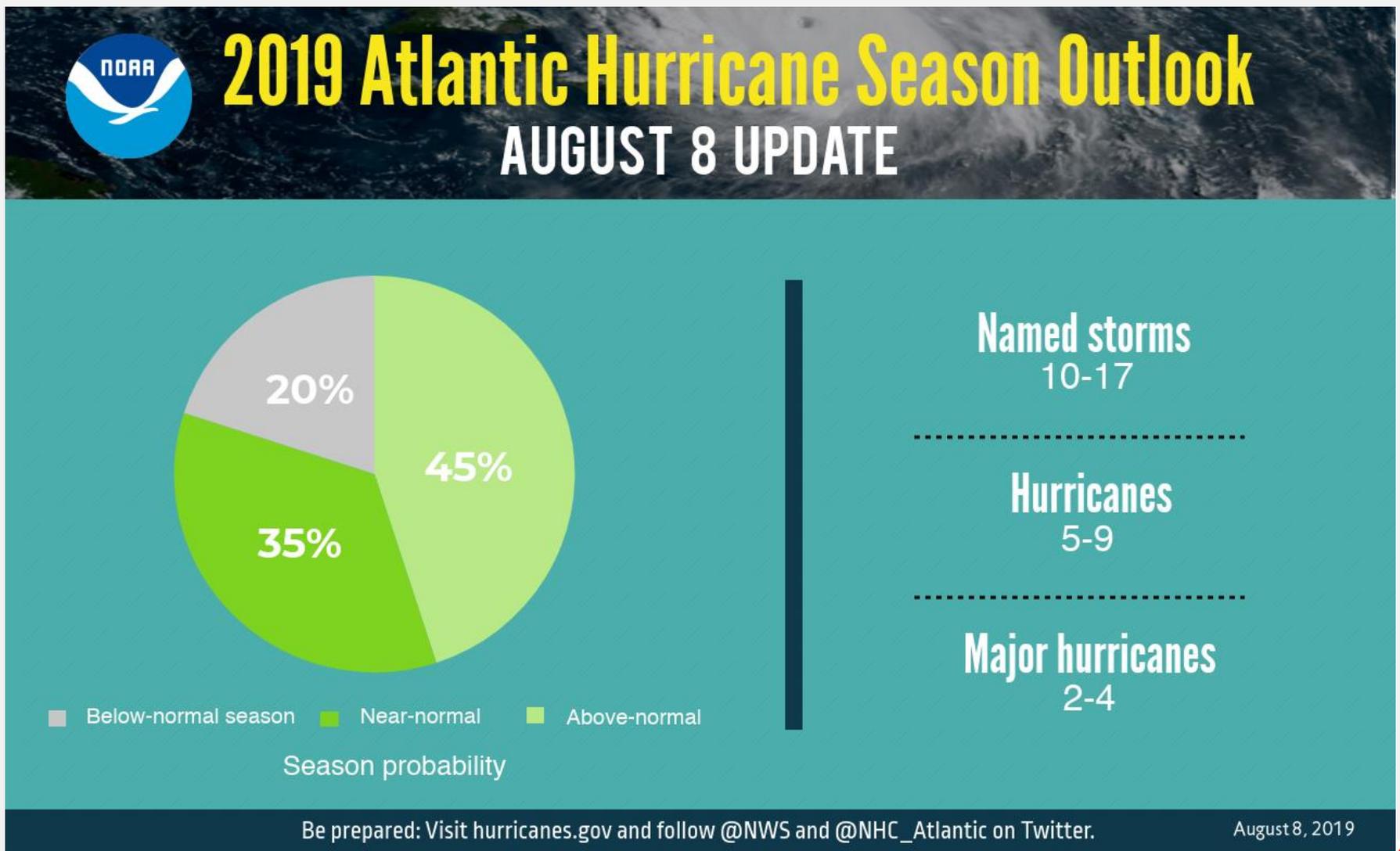
- A transition to ENSO-neutral conditions has occurred
- There is a 50-55% chance of neutral conditions continuing through the winter



Hurricane Season Forecast

Climate Prediction Center Updated Outlook for the Atlantic Hurricane Season:

- Increased the likelihood of an above-normal Atlantic hurricane season to 45% (up from 30% from the outlook issued in May).
- Increased the number of predicted storms



Climate Primary Site History

Galveston (GLS)

Records for Galveston are from observations at the following locations: 67-69 Strand (April 1, 1871 - Aug 31, 1874); 23rd and the Strand (Sep 1, 1874 - July 29, 1878), 1.75 miles WSW of the previous location; the Custom House at Bath Street and the Strand (July 30, 1878 - May 8, 1882); Colorado and Santa Fe Railroad Building at 25th and the Strand (May 9, 1882 - March 14, 1883); back to the Custom House which later became the Cotton Exchange Building (March 15, 1883 - June 24, 1898), about a 1/3 of a mile E of the previous Custom House location; The Levy Building at 2223 Market Street (June 25, 1898 - Nov 26, 1900); the Trust Building at Tremont and Post Office Streets (Nov 27, 1900 - June 24, 1946), one-quarter mile south of the Levy Building; the U.S. Post Office Building at 601 Rosenberg (June 25, 1946 - 1994); Scholes Field (January 1995 to present).

Houston Hobby (HOU)

Records are based upon observations beginning in August 1931.

City of Houston (IAH)

Records for the City of Houston are from observations at the following locations: Cotton Station from July 1881 through September 1909, Stewart Building at Preston and Fannin from September 1909 through February 1926, Shell Building at Texas and Fannin from March 1926 through August 1938, Federal Building at Franklin and Fannin from August 1938 through May 1969, Intercontinental Airport from June 1969 to the present .

College Station (CLL)

Records from 1893 through July 1951 are based on observations taken at the Texas Agriculture Experiment COOP Station main farm located 6 miles southwest of College Station. Records from August 1951 through the present are based on observations taken at Easterwood Field. Normal temperatures are calculated from 1981 to 2000 period.

