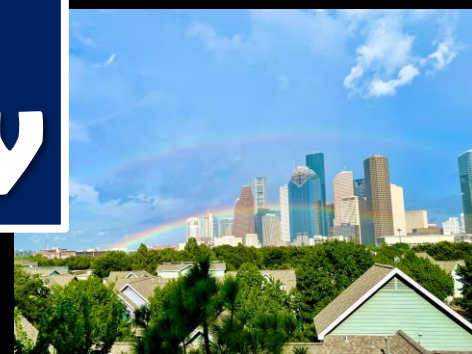


NWS Houston, Texas Annual 2021 Regional Climate Summary

Produced by Jimmy Fowler



Cover Page Photo Credit

The photographs used on the cover of this Annual SE TX Regional Climate Summary, were all taken within the HGX County Warning area during each month of the year. The top left picture on row one starts January and then from left to right we move through the calendar year with the last photograph on the bottom right representing December. NWS Houston Galveston was given permission by the following photographers to use these pictures.

<u>Month</u>	<u>Photographer</u>
January	Dan Kuciemba
February	Marcie Gray
March	Jimmy Fowler
April	Jimmy Fowler
May	Jimmy Fowler
June	Jimmy Fowler
July	Jimmy Fowler
August	Jimmy Fowler
September	Jimmy Fowler
October	Jimmy Fowler
November	Dan Reilly
December	Jeffry Evans

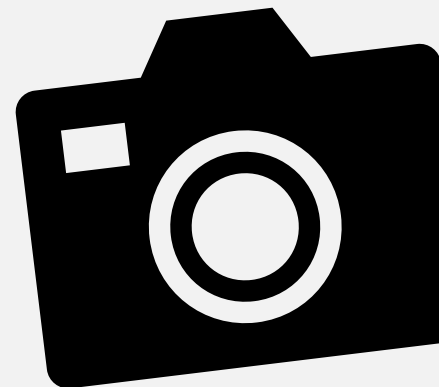


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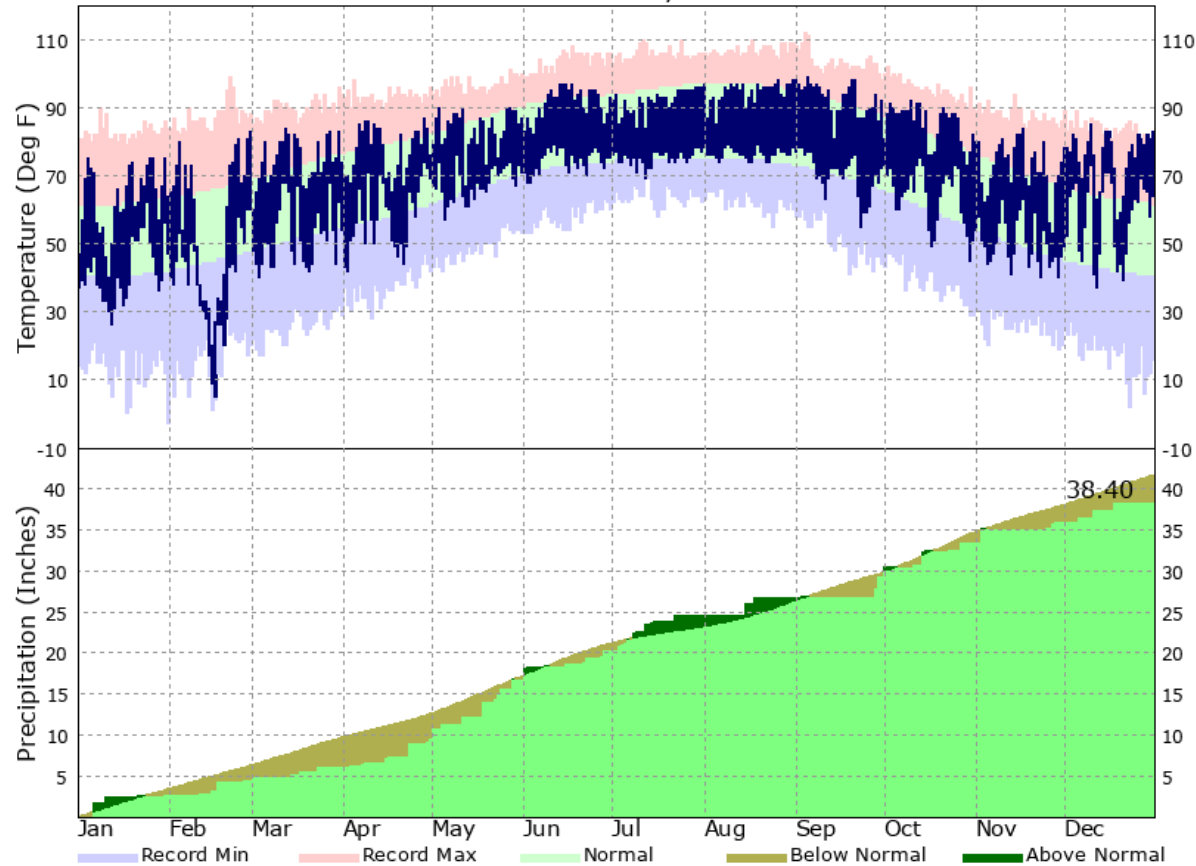
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8	2021 Daily Records
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12 – 15	February (Weather Event: February Freeze)
16 – 17	March
18 – 20	April (Weather Event: Large Hail Storm)
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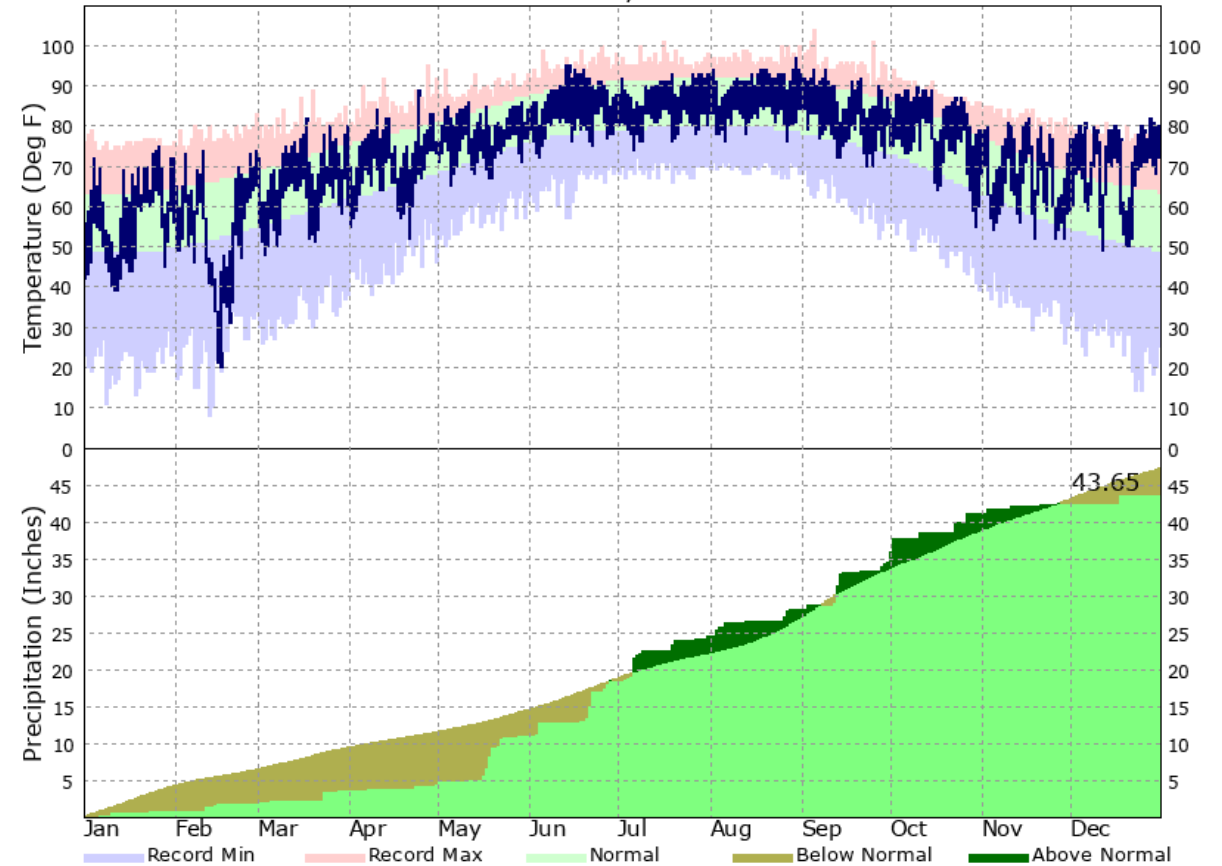
Yearly Temperature and Precipitation Graphs

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COLLEGE STATION, TX - 2021

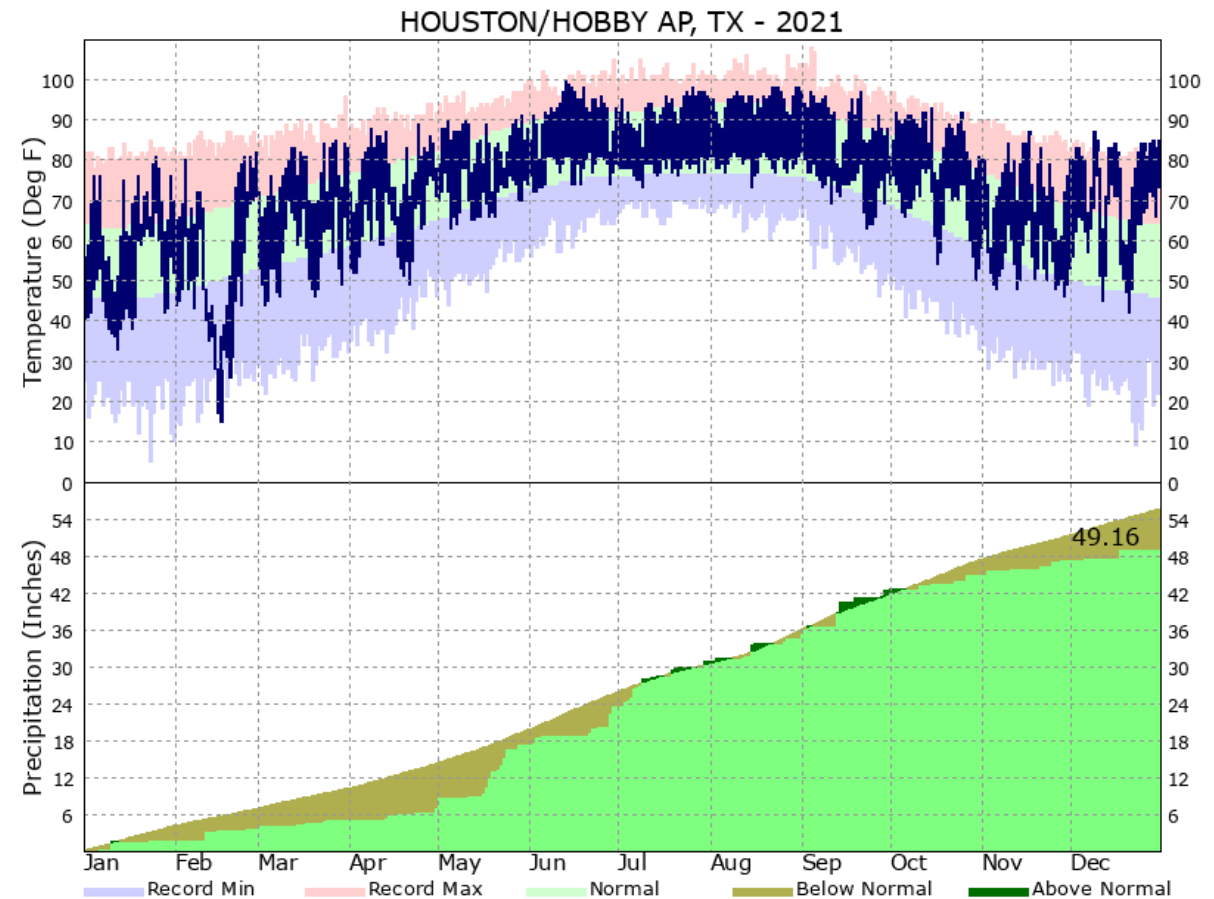
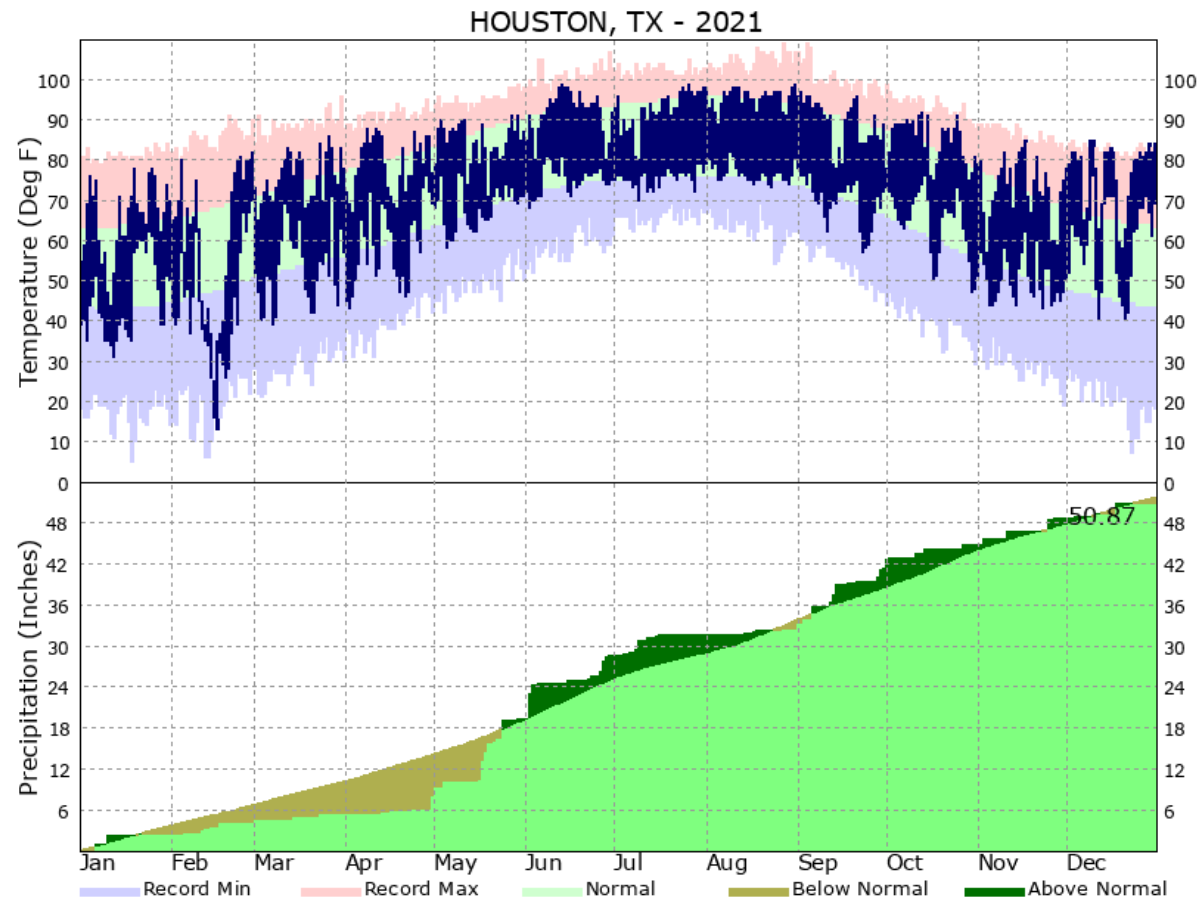


GALVESTON, TX - 2021



Observed temperatures are shown by the dark blue areas, normals with the light green areas, record highs in the light red areas, and record lows in the light blue areas. The bottom portion of the graph indicates the precipitation for the year to date. Periods that have year to date totals above the climatological normals are depicted by dark green areas. Periods that are below normal are represented by the brown areas.

Yearly Temperature and Precipitation Graphs 5



Observed temperatures are shown by the dark blue areas, normals with the light green areas, record highs in the light red areas, and record lows in the light blue areas. The bottom portion of the graph indicates the precipitation for the year to date. Periods that have year to date totals above the climatological normals are depicted by dark green areas. Periods that are below normal are represented by the brown areas.

Significant Annual Statistics – Temperature

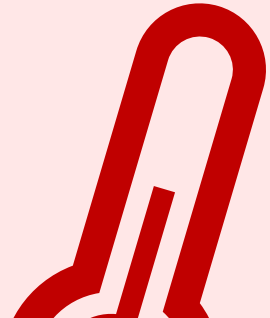


Highest Max Temperatures		
City of College Station	99°F	September 5 th
City of Houston	99°F	6/13, 7/26, 8/31
Houston-Hobby	100°F	June 13 th
City of Galveston	97°F	August 30 th

Lowest Max Temperatures		
City of College Station	20°F	February 15 th
City of Houston	25°F	February 15 th
Houston-Hobby	28°F	February 15 th
City of Galveston	34°F	February 15 th



Annual Average Temperatures		
City of College Station	70.4°F	9 th Warmest on Record
City of Houston	71.2°F	11 th Warmest on Record
Houston-Hobby	73.1°F	3 rd Warmest Year on Record
City of Galveston	73.4°F	4 th Warmest Year on Record



Highest Min Temperatures		
City of College Station	79°F	6/11, 8/9, 8/19
City of Houston	82°F	8/9
Houston-Hobby	82°F	6/21, 8/9, 8/19, 9/1
City of Galveston	85°F	6/25, 8/18, 8/20, 8/21

Lowest Min Temperatures		
City of College Station	5°F	February 16 th
City of Houston	13°F	February 16 th
Houston-Hobby	15°F	February 16 th
City of Galveston	20°F	February 16 th

Significant Annual Statistics – Precipitation

Annual Total Precipitation		
City of College Station	38.40"	66 th Wettest
City of Houston	50.87"	45 th Wettest
Houston-Hobby	49.43"	41 st Wettest
City of Galveston	43.65"	65 th Wettest

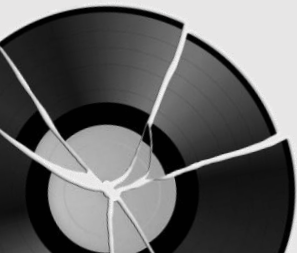
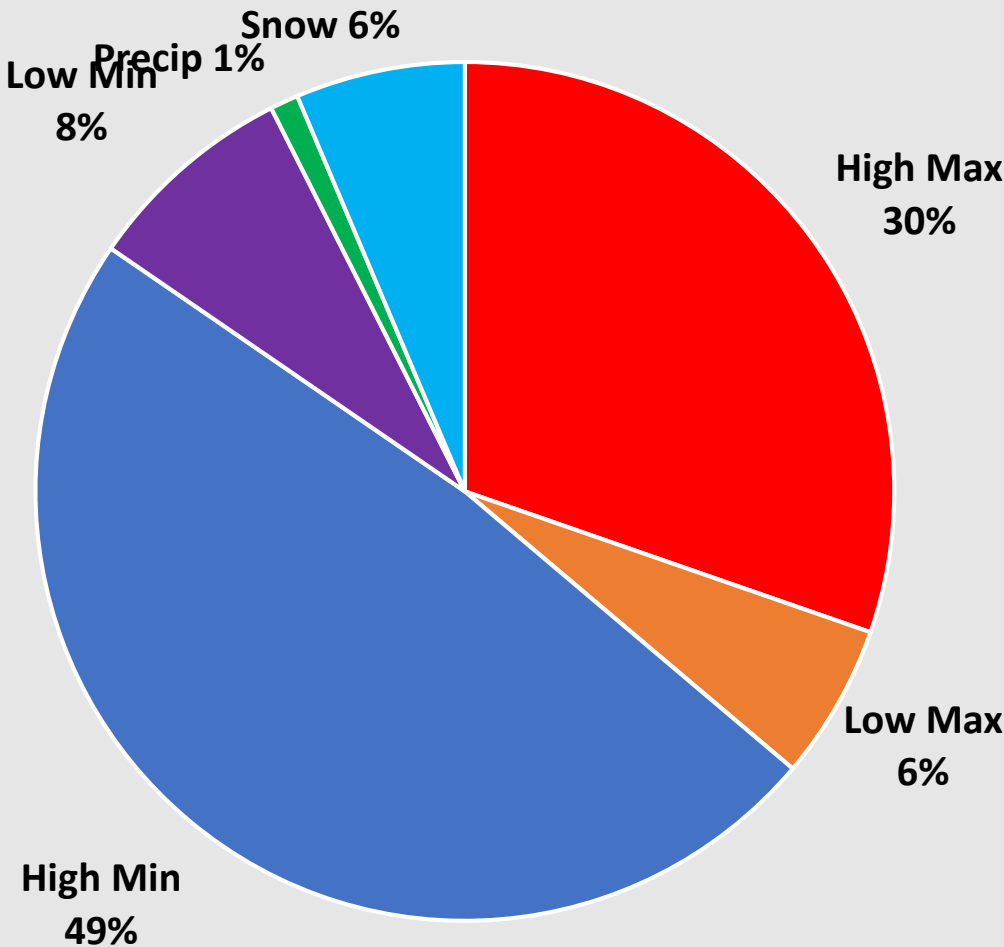
Greatest One Day Total		
City of College Station	1.84"	May 18 th
City of Houston	3.77"	June 2 nd
Houston-Hobby	2.17"	June 28 th
City of Galveston	2.41"	July 6 th

Wettest Month		
City of College Station	7.20"	May
City of Houston	11.17"	May
Houston-Hobby	10.38"	May
City of Galveston	7.39"	June

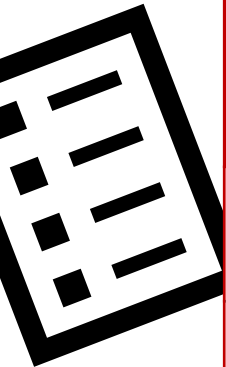
2021 Daily Records

Record	High Max Temperature	Low Max Temperature	High Min Temperature	Low Min Temperature	Precipitation	Snowfall	Total
City of College Station	6	3	8	5	0	7	29
City of Houston	10	1	13	2	1	2	29
Houston-Hobby	19	7	45	4	0	3	78
City of Galveston	22	0	25	4	1	0	52
Total	57	11	91	15	2	12	188

Percentage of Types of Records



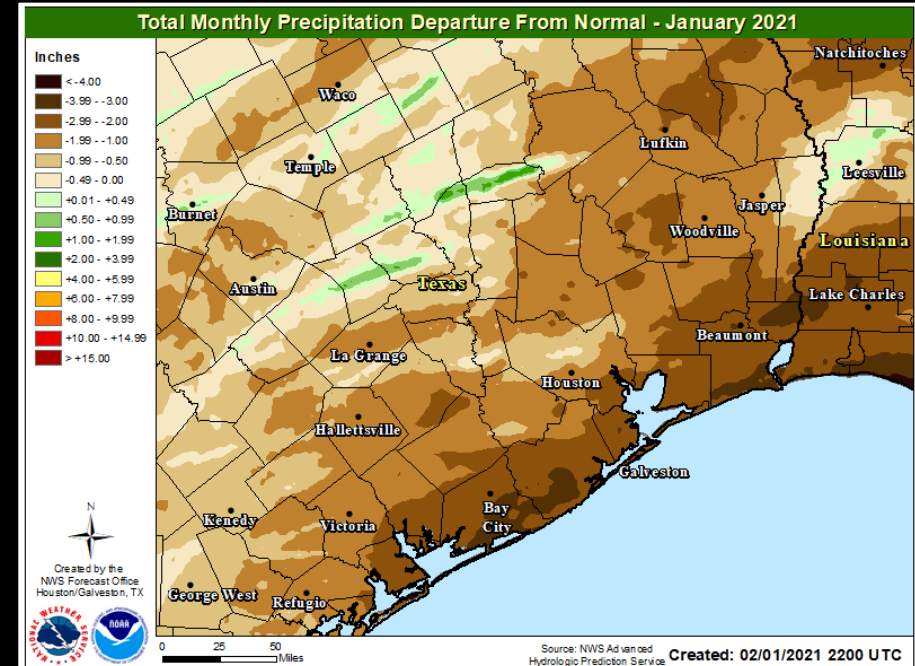
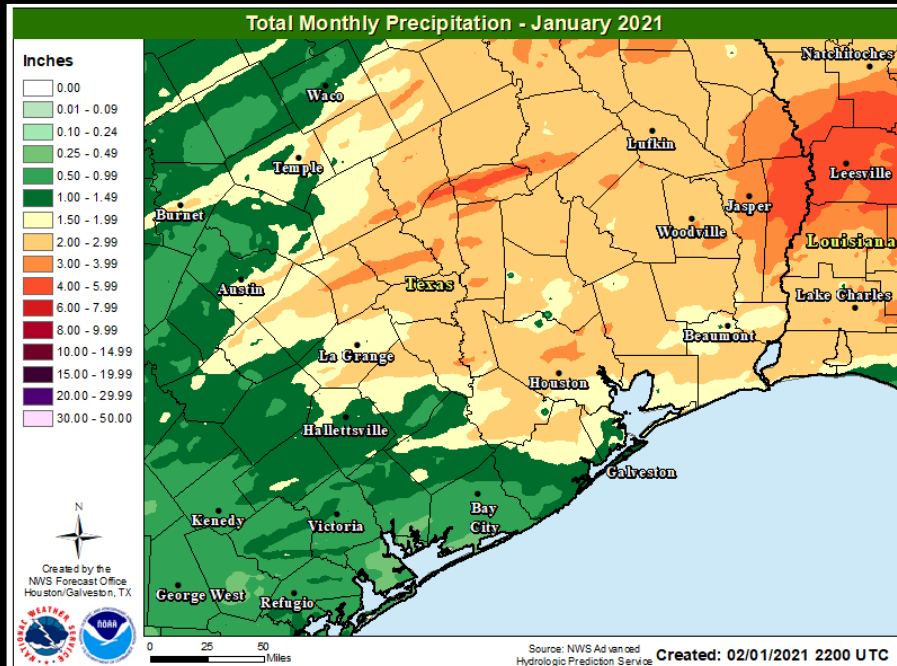
The new year started out a lot like how 2020 was: warmer and drier than normal. Precipitation totals across the area were about one to three inches below normal, while temperatures were about one to two degrees above normal. However, the month didn't see any temperature extremes as there were zero daily temperature records set. There were three other daily records set: daily snowfall records from a winter storm that hit the area on January 10th. This storm produced 4.5" of snow at College Station, and traces of winter precipitation (snow and sleet) for the City of Houston and at Houston-Hobby. All of these amounts were daily snowfall records.



Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	63.7	50.9	57.3	55.2	+2.1	75 on the 26 th	39 on the 11 th & 12 th
Houston Hobby (HOU)	66.3	47.8	57.0	54.1	+2.9	81 on the 25 th	33 on the 12 th
City of Houston (IAH)	65.4	44.9	55.2	53.1	+2.1	78 on the 19 th & 25 th	31 on the 12 th
College Station (CLL)	63.3	41.8	52.5	51.1	+1.4	75 on the 25 th , 26 th , & 30 th	26 on the 12 th



Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	0.81	-3.39	1	0.44	10 th
Houston Hobby (HOU)	1.71	-2.16	1	1.14	10 th
City of Houston (IAH)	2.51	-0.87	1	1.19	10 th
College Station (CLL)	2.71	-0.53	1	1.64	6 th



January 10th Winter Storm

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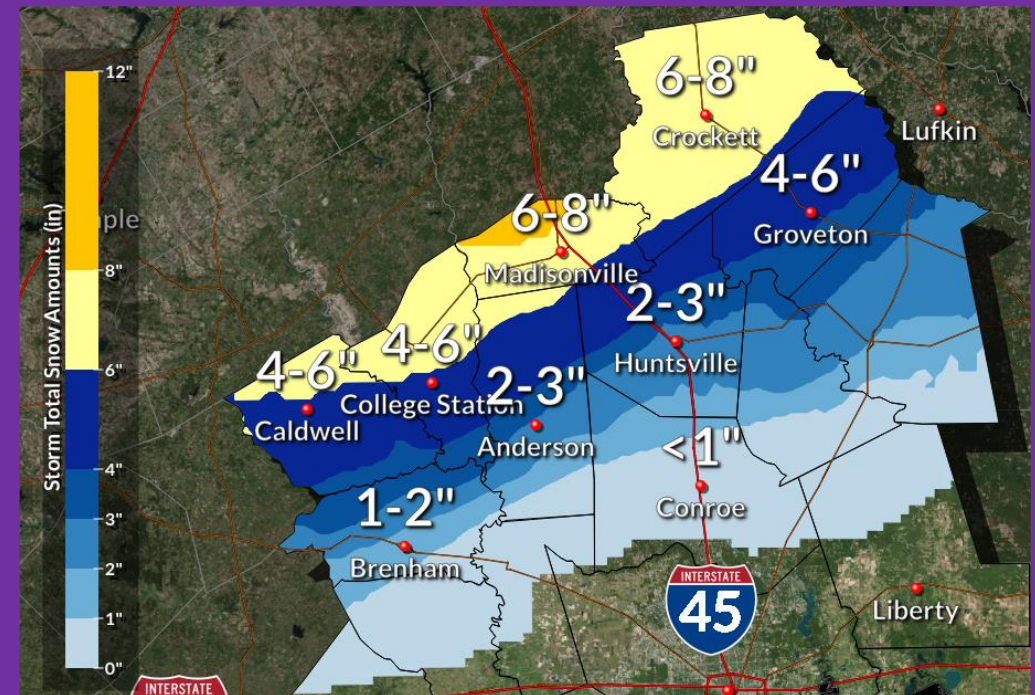
A complex low pressure system moved across Southeast Texas on Sunday, January 10th bringing the first measurable snow to parts of the region in over three years. Generally around 4 to 6 inches of snow fell in portions of Burleson, Brazos, Madison, and Houston counties. A trace to 3 inches fell in portions of Washington, Grimes, Walker, and Trinity Counties. The highest snow report received was 8.5 inches in northern Madison County just south of Normangee. A wintry mix of rain and sleet was reported as far south as the City of Houston and Sugar Land.

Visit <https://www.weather.gov/hgx/Jan2021WinterStorm> for more information.

Hazardous Road Conditions in Bryan/College Station (via neff on Twitter)



Storm Total Snow




Snowy Barn Scene in Caldwell (via Dan Kuciamba on Facebook)



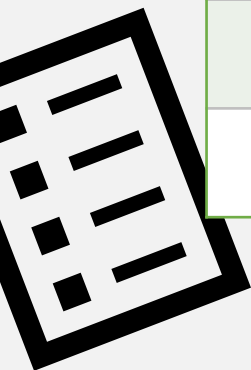
Snowy Roads in Madisonville (via Kyle Sikes on Twitter)

February 2021

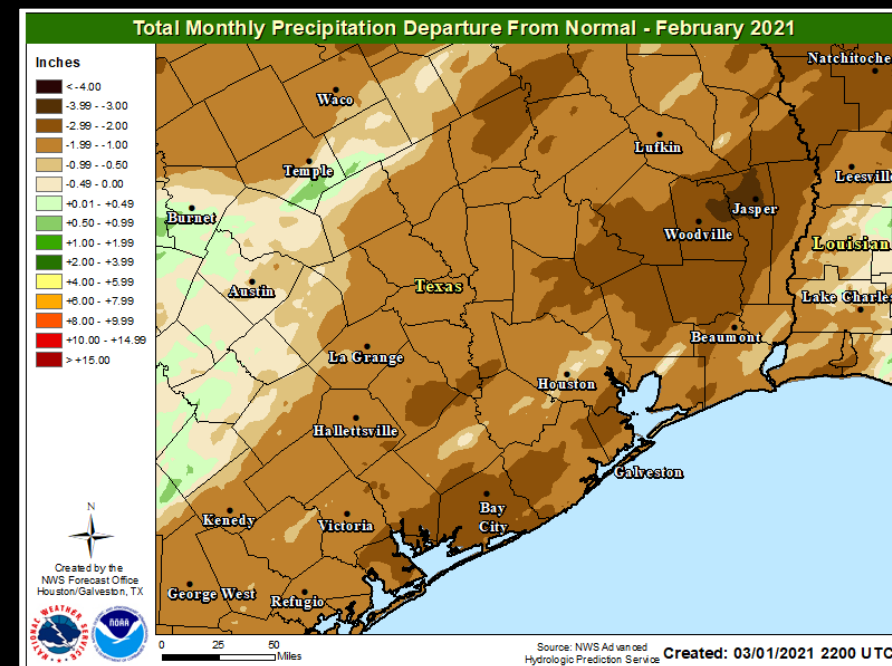
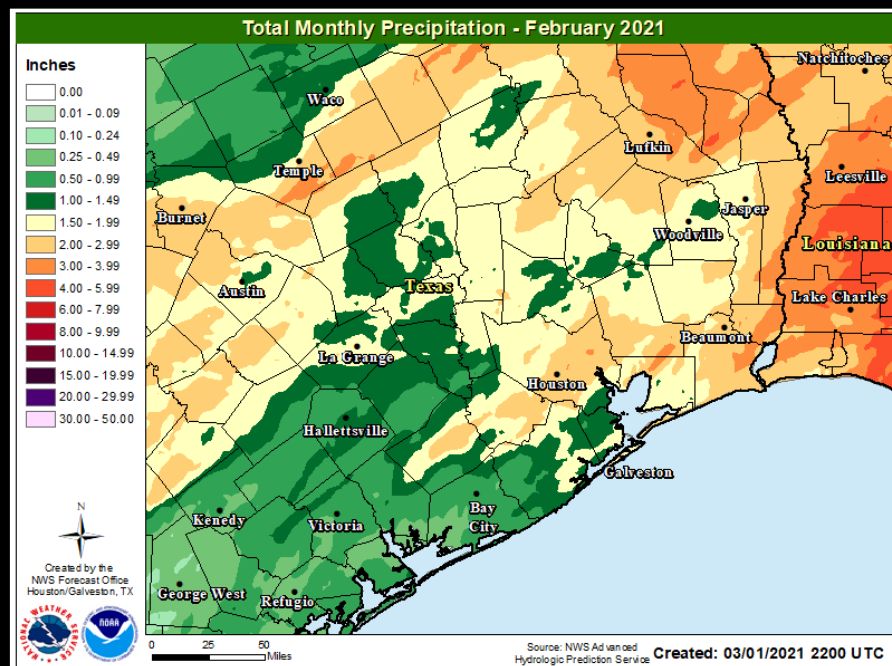
This past February will be one many of us remember for a long time. An arctic cold front that moved through the area Valentine's Day Weekend brought a prolonged period of extremely cold temperatures, multiple days of wintry precipitation, and a multitude of impacts to the region. There were a total of 30 daily records set this month with most of them being either daily snowfall records or low maximum or minimum temperatures. Although, the region quickly warmed up in the week following the cold air outbreak – in fact, Houston-Hobby experienced a record high minimum temperature just six days after a record low minimum temperature. The region also continued to be unseasonably dry expanding the drought conditions across the western and northern portions of the region.



Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	60.1	47.7	53.9	57.6	-3.7	74 on the 10 th & 28 th	20 on the 16 th
Houston Hobby (HOU)	62.2	45.2	53.7	57.3	-3.6	82 on the 28 th	15 on the 16 th
City of Houston (IAH)	61.2	42.3	51.7	56.4	-4.7	82 on the 28 th	13 on the 16 th
College Station (CLL)	58.0	38.4	48.2	54.6	-6.4	83 on the 28 th	5 on the 16 th



Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	1.07	-1.50	3	0.68	11 th
Houston Hobby (HOU)	1.90	-1.31	1	1.41	11 th
City of Houston (IAH)	1.66	-1.54	2	0.54	17 th
College Station (CLL)	1.85	-1.00	1	1.09	17 th



Winter Outbreak

The Winter Outbreak that occurred on Valentine's Week 2021 brought not only snow, sleet, and freezing rain to Southeast Texas, but also extreme cold temperatures that lasted for several days. This was one of the most impactful winter events in recent history that brought multiday road closures, power outages, loss of heat, broken pipes, and other societal impacts for the region. While the damage is still being assessed, this will likely go down as the first billion dollar disaster of 2021 globally, and potentially the most costly weather disaster for the state of Texas in history, surpassing even Hurricane Harvey from 2017.

Visit

www.weather.gov/hgx/2021ValentineStorm
for more information.



Frozen Fountain
via Brett Coomer – Houston Chronicle



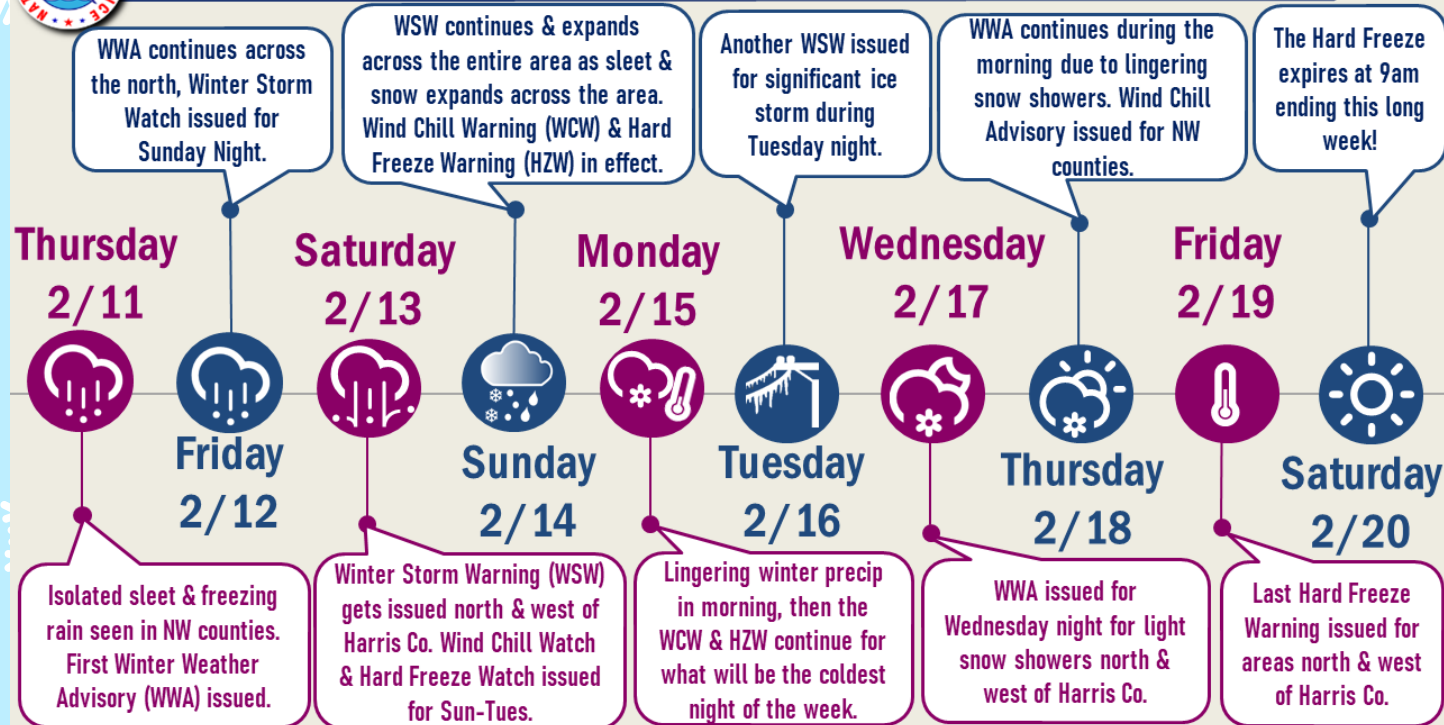
Snow Covered Beach in Galveston
via Michael Garske

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February Winter Outbreak Timeline

NATIONAL WEATHER SERVICE
OCEANIC AND ATMOSPHERIC ADMINISTRATION
Houston, TX



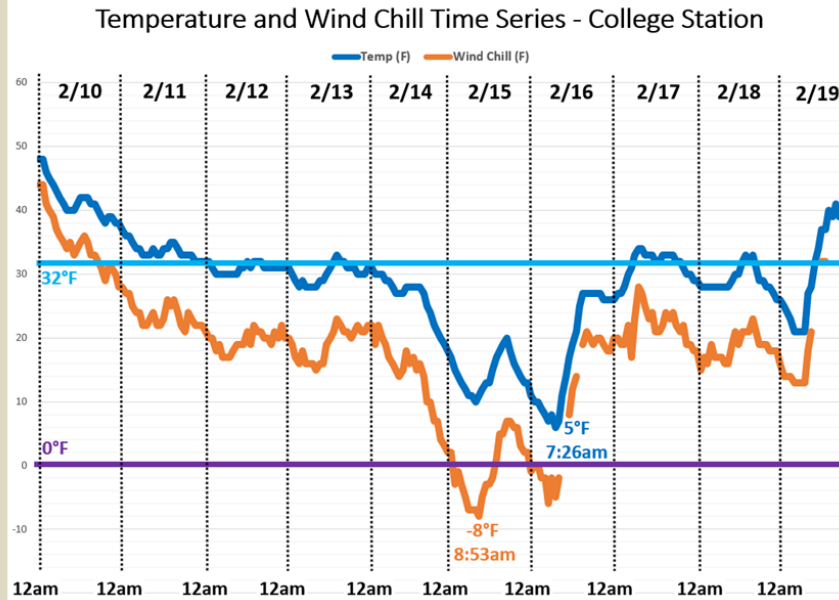
Frigid Temperatures

College Station

Coldest Temperature:
5°F at 7:26am on the 16th

Coldest Wind Chill:
-8°F at 8:53am on the 15th

Longest Stretch of Freezing Temperatures:
86 consecutive hours from 3:53pm on 2/13 to 5:53am on 2/17

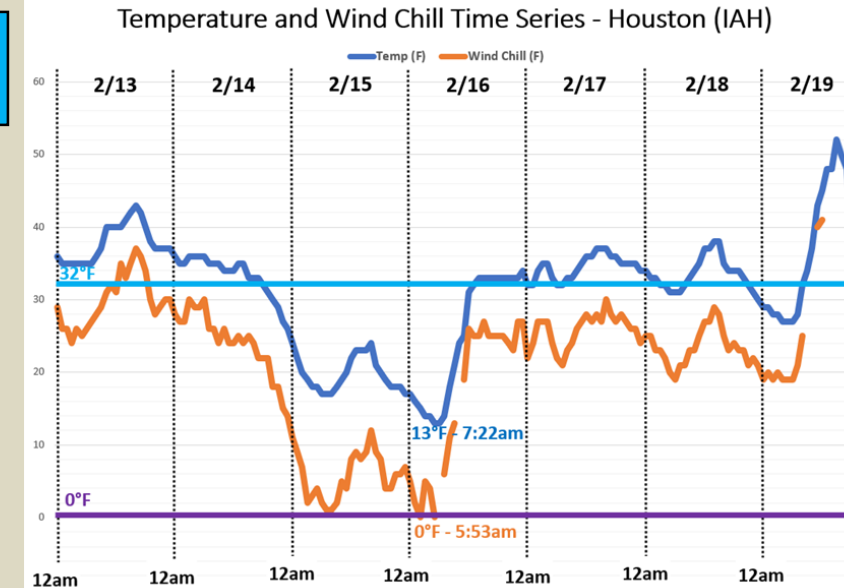


Houston

Coldest Temperature:
13°F at 7:22am on the 16th

Coldest Wind Chill:
0°F at 5:53am on the 16th

Longest Stretch of Freezing Temperatures:
44 consecutive hours from 6:53pm on 2/14 to 1:53pm on 2/16

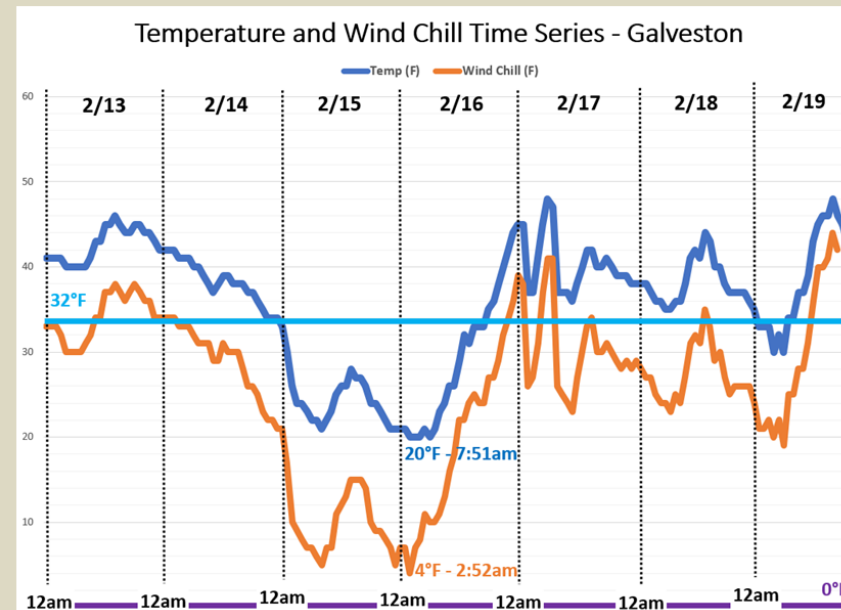


Galveston

Coldest Temperature:
20°F at 7:51am on the 16th

Coldest Wind Chill:
4°F at 2:52am on the 16th

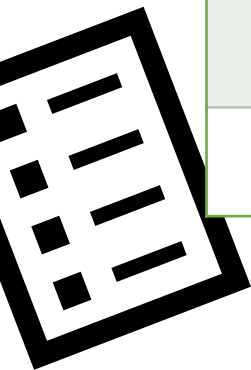
Longest Stretch of Freezing Temperatures:
37 consecutive hours from 1:52am on 2/15 to 2:52pm on 2/16



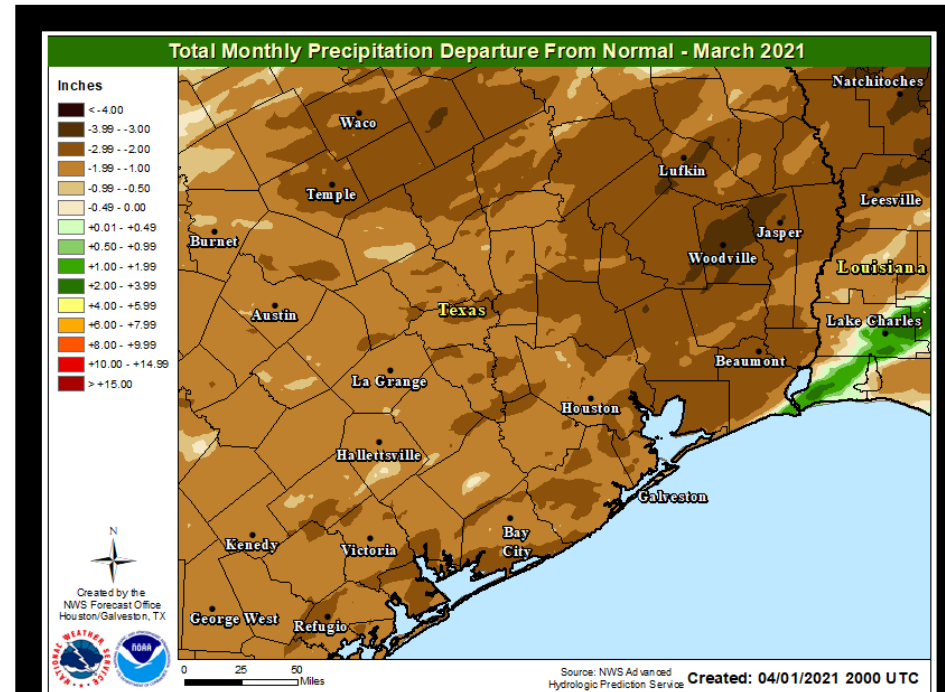
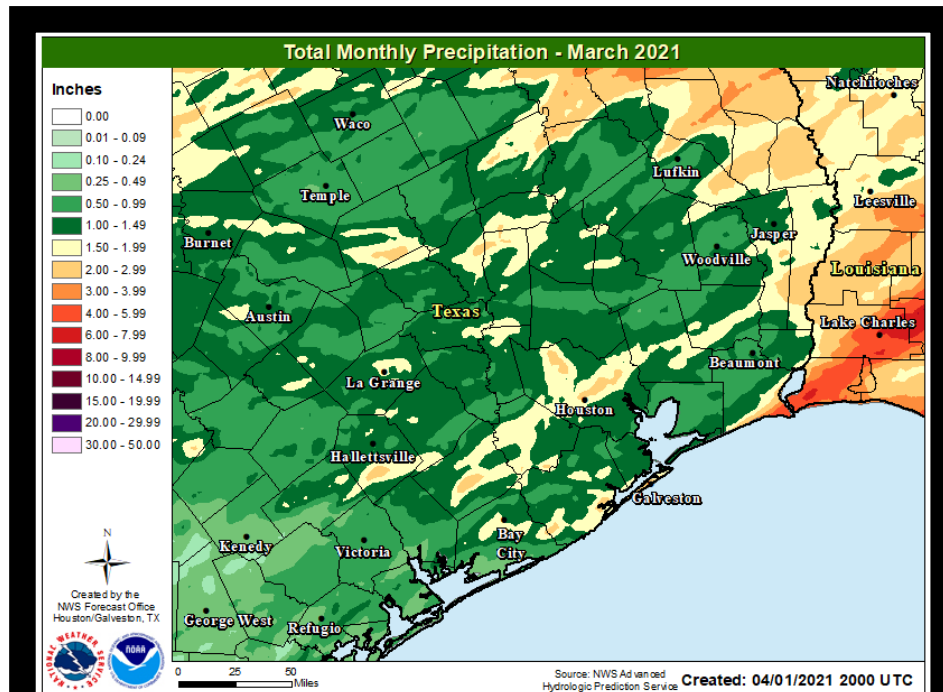
March 2021

High pressure dominated the weather across Southeast Texas with only a few weak cold fronts moving through the region during March. This month was quite different than February in terms of temperatures – the average temperature for the month of March was around 10 to 15 degrees warmer than February (which skewed colder due to the mid-month extreme freeze). Continued dry conditions of around one to three inches below normal led to expanding and worsening drought conditions. Moderate Drought (D1) is being experienced in at least parts of every county in our region. Extreme Drought (D3) emerged in coastal Brazoria and Matagorda counties. Unfortunately, the drier than normal pattern is expected to persist through April and the rest of Spring.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	72.1	59.2	65.7	63.4	+2.3	82 on the 17 th	48 on the 3 rd
Houston Hobby (HOU)	76.2	56.5	66.3	63.3	+3.0	85 on the 27 th	44 on the 3 rd
City of Houston (IAH)	76.0	52.8	64.4	62.7	+1.7	86 on the 26 th	39 on the 7 th
College Station (CLL)	74.6	52.2	63.4	61.4	+2.0	84 on the 12 th	40 on the 3 rd



Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	1.86	-1.30	2	1.11	23 rd
Houston Hobby (HOU)	1.51	-1.69	2	0.53	1 st
City of Houston (IAH)	1.38	-2.03	2	0.47	14 th
College Station (CLL)	1.73	-1.44	3	0.55	23 rd

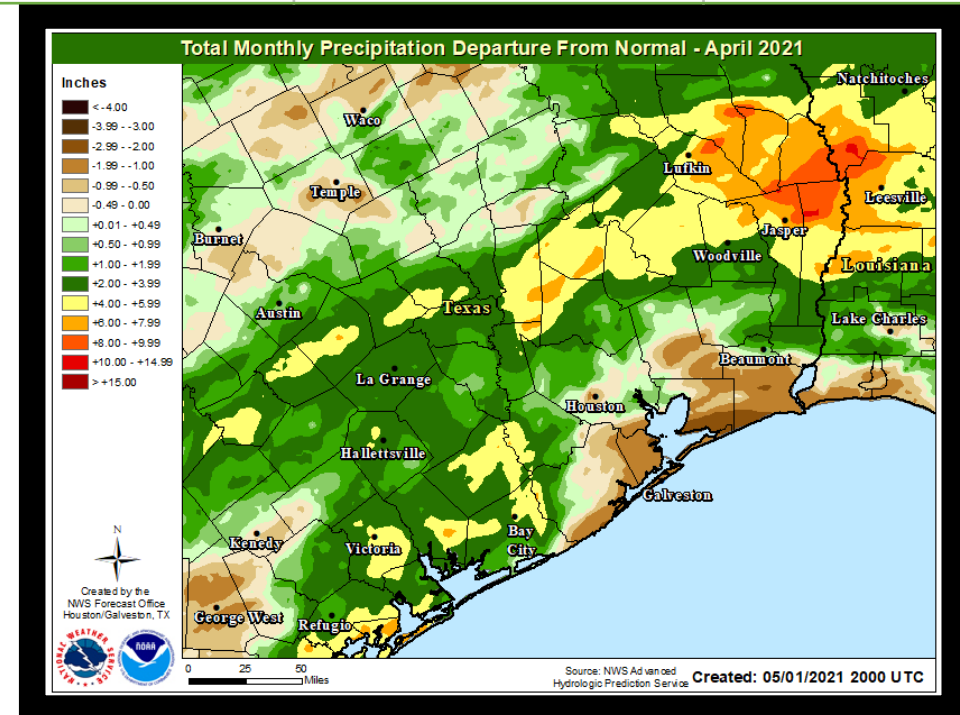
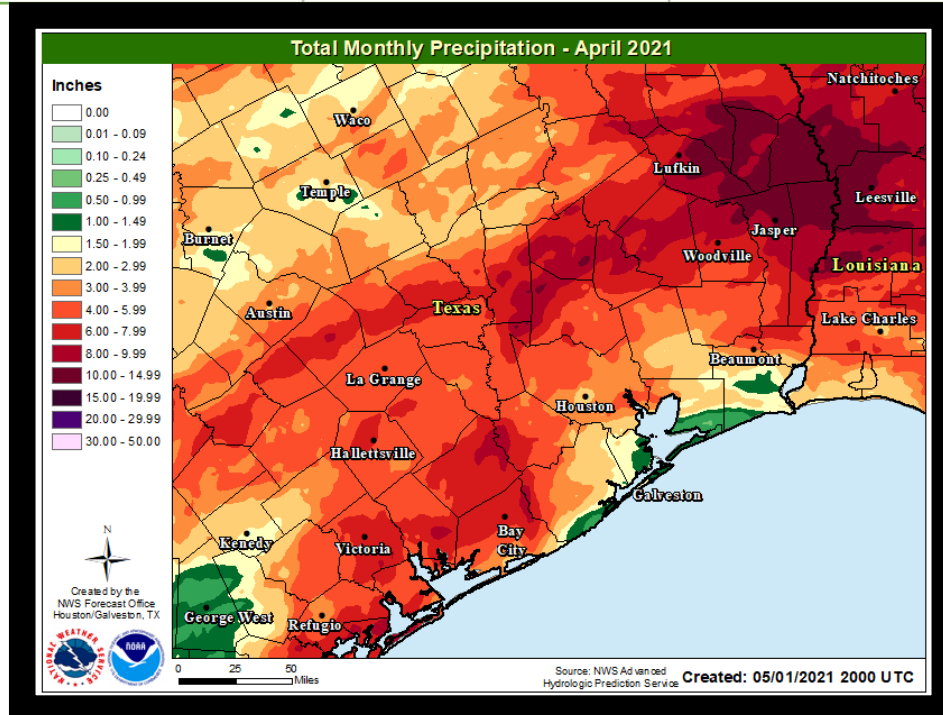


Multiple low pressure systems moved through the area bringing locally heavy rainfall across the northern half of the area. The increased rainfall kept temperatures fairly close to normal to slightly below normal. The rainfall helped alleviate the drought conditions across the area and D3 – Extreme Drought no longer being reported. The CPC has ended the La Nina Advisory with ENSO-Neutral conditions expected to continue through the summer.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	76.2	65.2	70.7	70.1	+0.6	89 on the 24 th	52 on the 21 st
Houston Hobby (HOU)	78.8	62.4	70.6	69.8	+0.8	89 on the 24 th	49 on the 21 st
City of Houston (IAH)	79.1	58.2	68.6	69.5	-0.9	88 on the 8 th & 11 th	43 on the 2 nd
College Station (CLL)	77.6	57.8	67.7	68.5	-0.8	87 on the 28 th	42 on the 2 nd

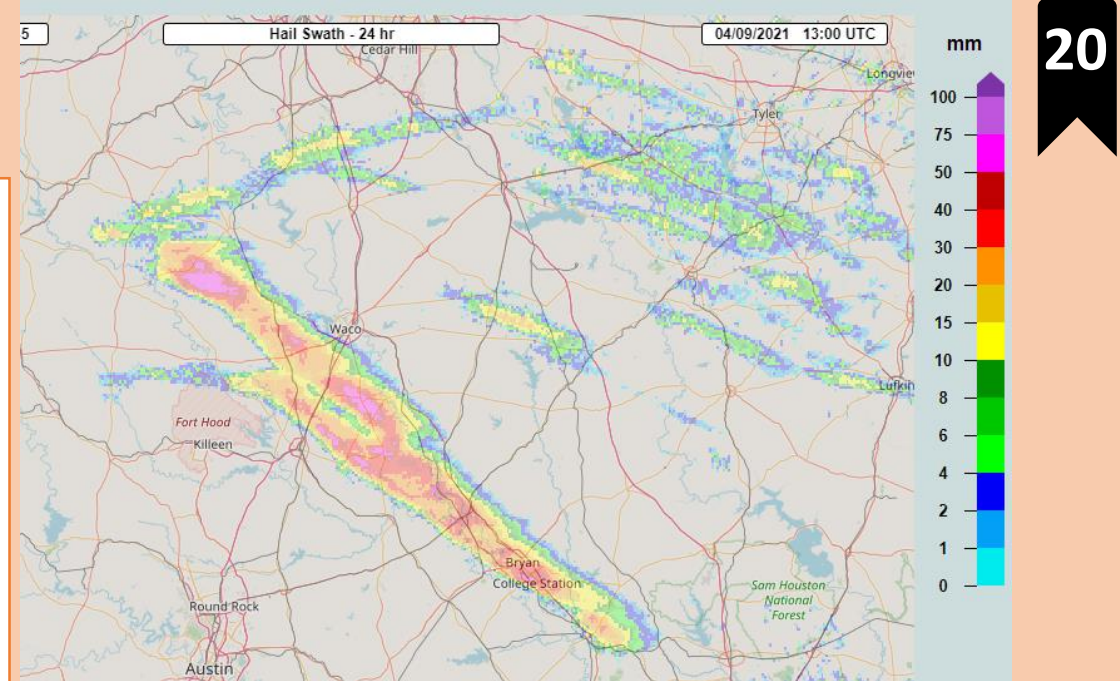


Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	0.86	-2.19	2	0.33	23 rd
Houston Hobby (HOU)	2.01	-1.24	3	0.76	30 th
City of Houston (IAH)	2.54	-0.77	3	1.90	30 th
College Station (CLL)	3.29	+0.63	7	1.68	23 rd



Severe Hail Event – April 8th

In the afternoon of April 8th, 2021, a singular thunderstorm developed in Comanche County, but quickly gained strength and began to produce large hail in northern Comanche County by 5pm. The thunderstorm split over Erath County at around 5:30pm as it progressed eastward. The weaker cell split to the north of the town of Hico and then eventually just south of Dallas before dying. The other cell moved south towards the Town of Waco strengthening into a long-lived Severe Thunderstorm dropping large hail as it went. It continued on this trajectory approaching the Burleson/Brazos County border around 8:30pm. The first Severe Thunderstorm Warning was issued at 8:39pm CDT for portions of Burleson, Brazos, and Grimes counties with the first report of hail falling in Brazos County at 8:50pm. The most significant hail in our area fell in Bryan-College Station area between 9:00 - 9:30pm CST where 1" to 2.75" (the size from a quarter to a baseball) fell. A Tornado Warning was issued as the storm moved over the College Station area due to radar-indicated circulation, though no tornado has been confirmed for this storm at the writing of this summary. The storm continued its southeastward motion into southern Grimes County before eventually dissipating in western Montgomery County at around 10:30pm CDT.

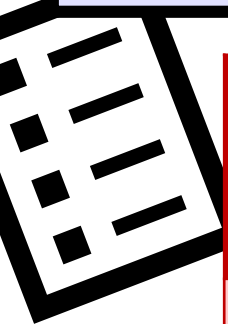


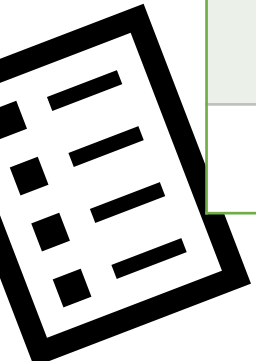
Large hail in Bryan (via Twitter - Miriam & Anna Sanders)



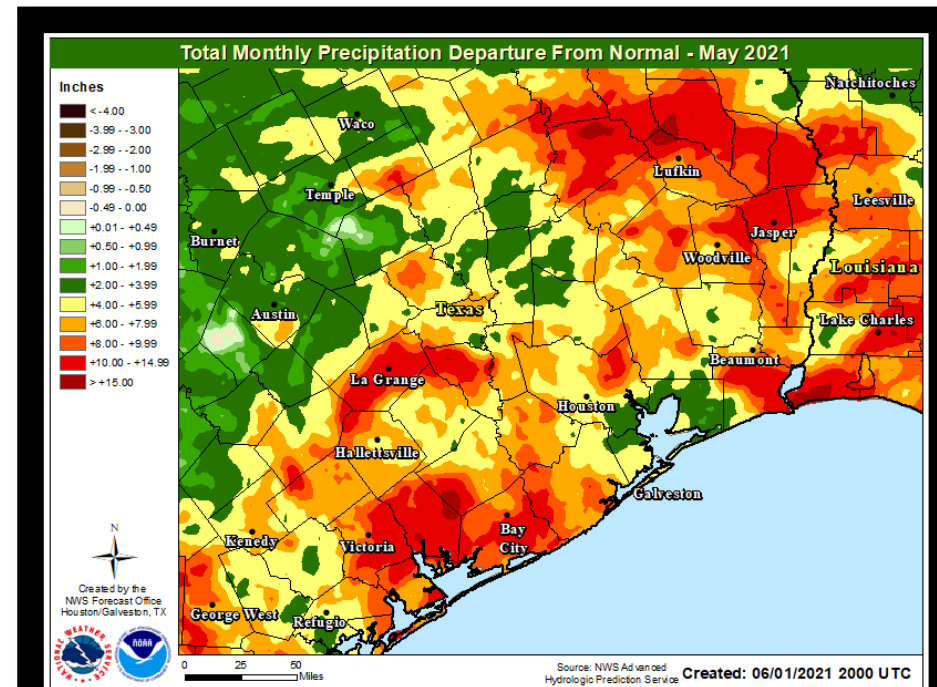
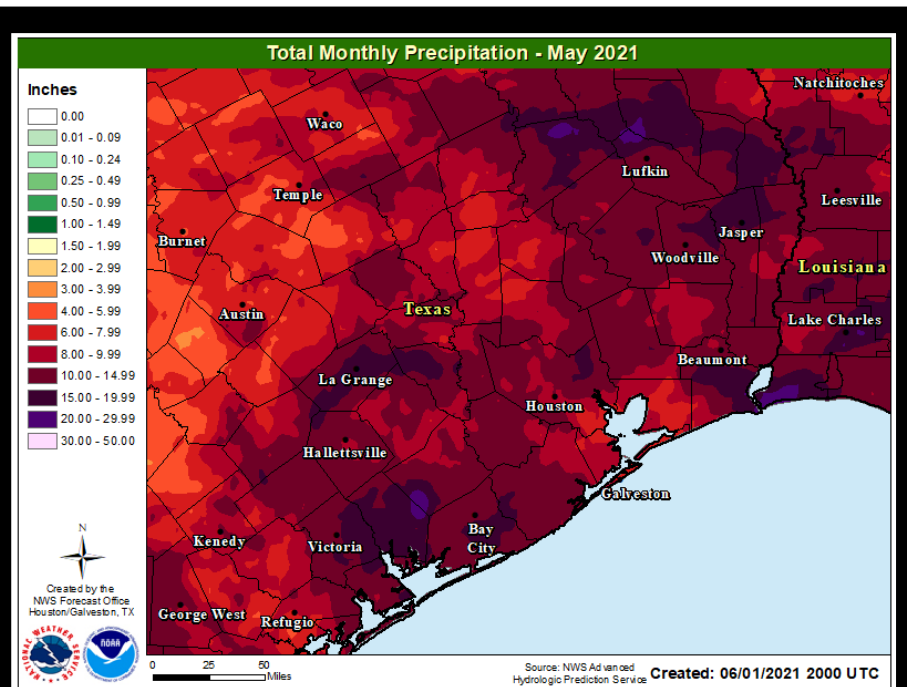
Numerous passing disturbances through the month and a stalled upper level low over Texas at the end of the month brought multiple days of heavy rainfall across the region. Between 6 and 17 inches of rain fell across the area through the month. Localized river and flash flooding occurred during the month. The drought is no more with the entire region having a surplus of moisture now. The overcast skies led to below normal temperatures for much of the region.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	81.9	72.8	77.4	78.2	-0.8	86 on the 11 th & 29 th	65 on the 5 th
Houston Hobby (HOU)	85.0	70.5	77.7	77.6	+0.1	91 on the 29 th	63 on the 5 th
City of Houston (IAH)	76.3	84.7	67.8	77.4	-1.1	91 on the 27 th & 29 th	58 on the 5 th
College Station (CLL)	83.8	67.5	75.7	76.4	-0.7	90 on the 11 th & 26 th	57 on the 5 th





Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	6.57	+3.53	8	1.76	18 th
Houston Hobby (HOU)	10.38	+4.96	11	1.63	1 st
City of Houston (IAH)	11.17	+6.16	10	2.65	17 th
College Station (CLL)	7.20	+2.60	12	1.84	18 th



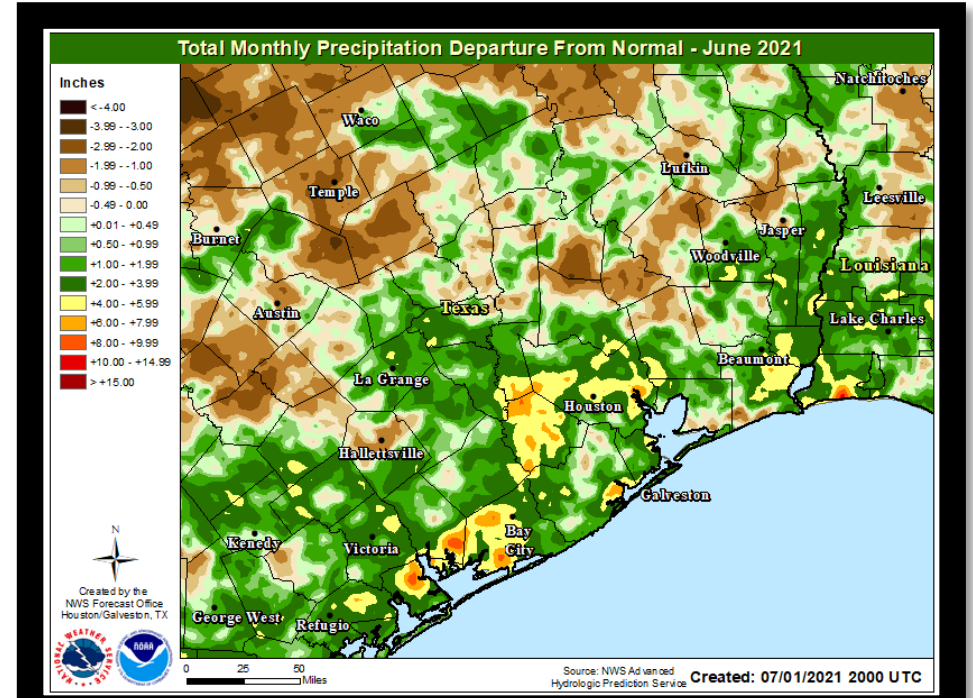
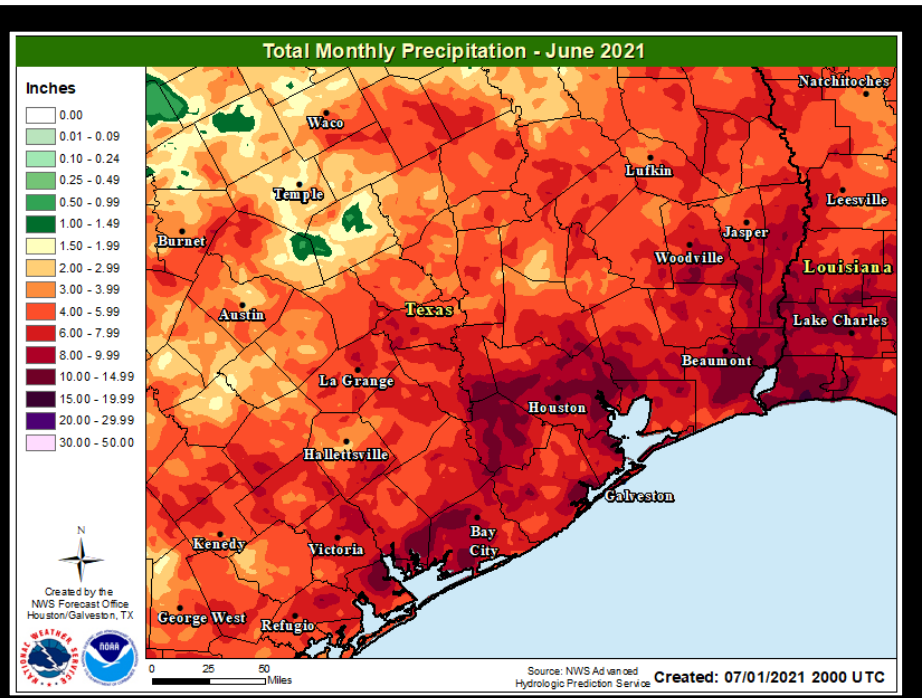
Between June 3rd and 22nd, there was not much precipitation across the region. This continued stretch of dry weather lead to some slightly warmer than normal temperatures across the region. The end of the month ended on a cooler note as multiple rounds of showers and thunderstorms brought between 4 and 8 inches of rain. The heaviest rain fell around the Matagorda Bay area and near Katy.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	89.4	79.1	84.3	83.8	+0.5	95 on the 13 th & 14 th	72 on the 4 th
Houston Hobby (HOU)	92.7	77.6	85.1	82.9	+2.2	100 on the 13 th	72 on the 2 nd & 3 rd
City of Houston (IAH)	92.2	74.9	83.6	83.0	+0.6	99 on the 13 th	68 on the 2 nd
College Station (CLL)	91.4	74.1	82.8	82.6	+0.2	97 on the 14 th , 15 th & 17 th	68 on the 2 nd & 3 rd



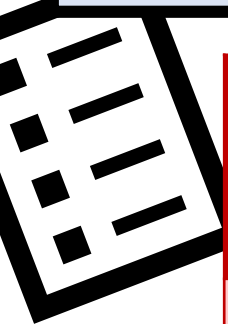


Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	7.39	+3.16	10	2.01	22 nd
Houston Hobby (HOU)	6.12	+0.03	12	2.17	28 th
City of Houston (IAH)	9.33	+3.33	13	3.77	2 nd
College Station (CLL)	3.70	-0.31	13	1.29	1 st



Generally between two and eight inches of rain fell across the area through the month of July with the most rain falling across the southwestern areas around Matagorda Bay which received over a foot of rain. Palacios received their third wettest July on record with 13.6" of rain, and Huntsville had their wettest July since 1997 with 7.14". The continued wet and cloudy conditions led to a month with either near average or below average temperatures.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	89.7	80.3	85.0	85.5	+0.5	93 on the 31 st , 29 th , & 28 th	74 on the 6 th
Houston Hobby (HOU)	92.9	77.8	85.4	84.8	+0.6	98 on the 26 th	73 on the 9 th
City of Houston (IAH)	92.7	75.3	84.0	85.1	-1.3	99 on the 26 th	70 on the 9 th
College Station (CLL)	91.9	75.0	83.4	85.1	-1.7	96 on the 29 th , 30 th & 31 st	69 on the 12 th

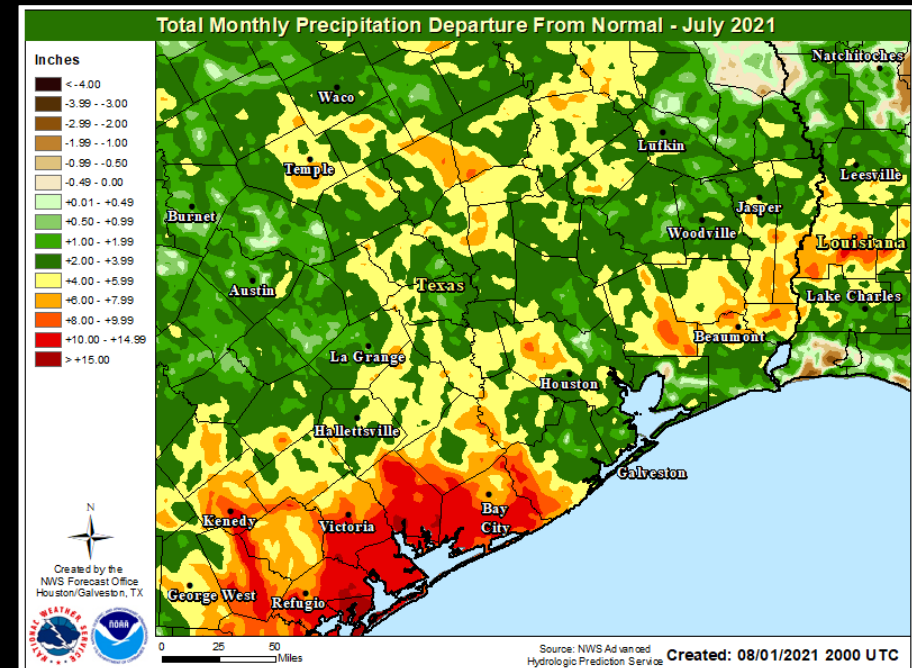
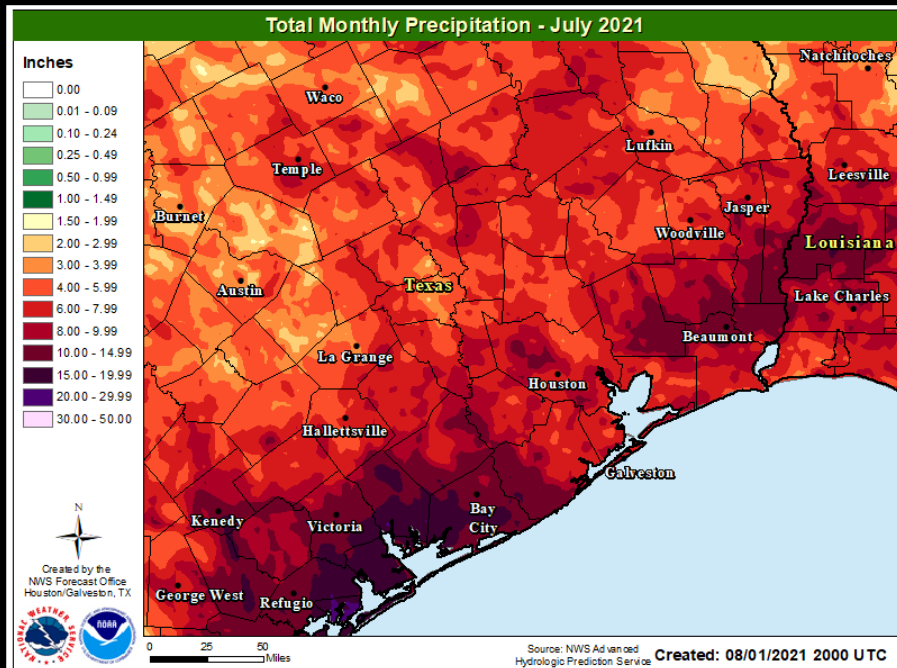


July 2021

26

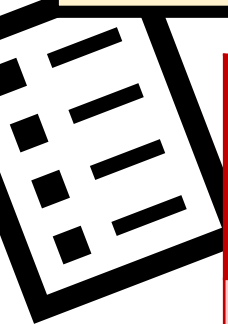


Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	5.97	+2.56	12	2.41	6 th
Houston Hobby (HOU)	7.23	+2.64	15	1.55	6 th
City of Houston (IAH)	3.13	-0.64	14	1.24	9 th
College Station (CLL)	4.01	+2.03	13	1.02	12 th



The month of August was around one to two degrees above normal with overnight temperatures south of I-10 being exceptionally warm. The warm overnight temperatures meant that Galveston and Houston-Hobby both ended up in the top 5 warmest Augusts on record despite daytime temperatures staying relatively near normal. Much of the area received below normal precipitation amounts, but sea breeze precipitation brought some pockets of above normal precipitation near the coast.

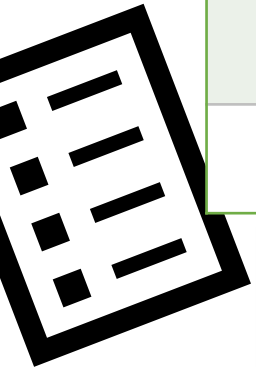
Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	91.7	81.6	86.6	85.9	+0.7	97 on the 30 th	76 on the 27 th & 6 th
Houston Hobby (HOU)	94.8	79.2	87.0	85.1	+1.9	98 on the 24 th , 30 th & 31 st	73 on the 15 th
City of Houston (IAH)	95.5	76.5	86.0	85.2	+0.8	99 on the 31 st	73 on the 23 rd
College Station (CLL)	94.5	76.3	85.4	85.7	-0.3	98 on the 26 th & 31 st	74 on the 17 th , 22 nd & 23 rd



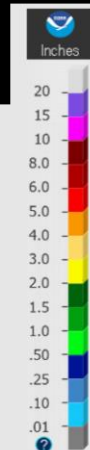
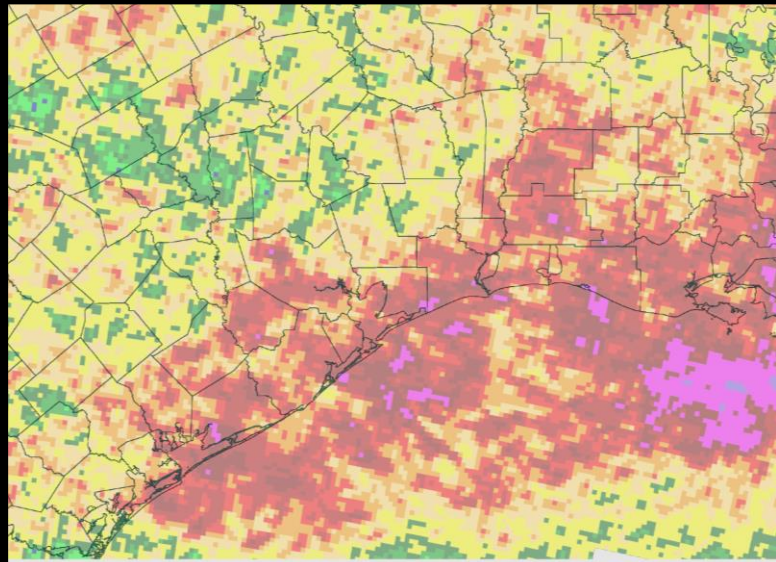
August 2021

28

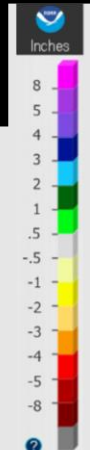
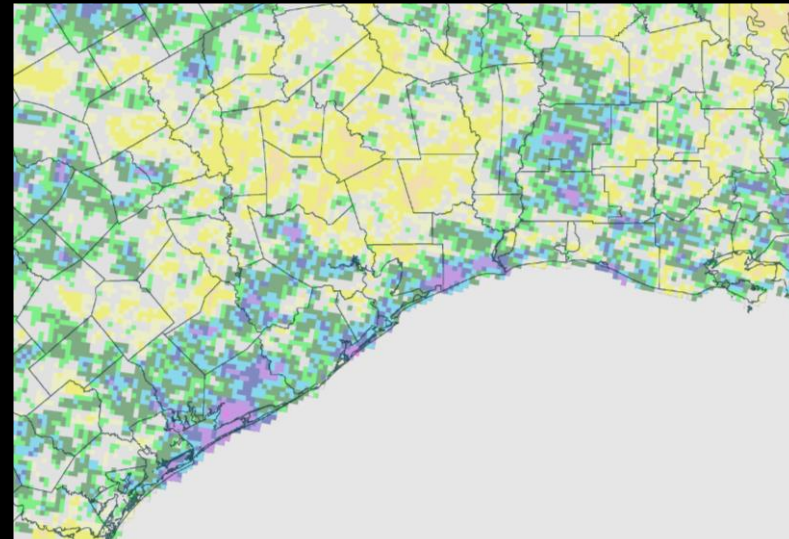
Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	3.50	-1.21	13	0.82	27 th
Houston Hobby (HOU)	3.86	-1.58	16	1.88	15 th
City of Houston (IAH)	0.83	-4.01	12	0.29	18 th
College Station (CLL)	2.19	-0.91	9	1.43	15 th



Monthly Total Precipitation (inches)



Monthly Departure from Normal Precipitation (inches)



September was truly a transition month with a tropical system, Hurricane Nicolas, making landfall in the region in the first half of the month then our first significant front of the season arrives at the end of the month. Nicolas brought heavy rain, gusty winds, and coastal flooding to parts of the region. Most of Nicolas's rain fell along and south of I-10. Because of this, DO-Abnormally Dry conditions started to spread into the northern third of the area. The fall season's first significant cold front arrived on the 22nd bringing overnight lows into the 50-60s for most of the area.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	88.5	77.4	83.0	82.4	+0.6	94 on the 5 th & 9 th	70 on the 23 rd & 25 th
Houston Hobby (HOU)	90.3	73.4	81.9	81.1	+0.8	97 on the 1 st , 4 th , & 21 st	63 on the 23 rd
City of Houston (IAH)	89.5	69.5	79.5	80.5	-1.0	97 on the 2 nd	57 on the 23 rd
College Station (CLL)	92.8	70.1	81.4	80.6	+0.8	99 on the 5 th	55 on the 23 rd

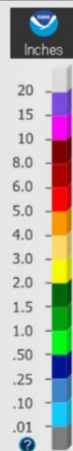
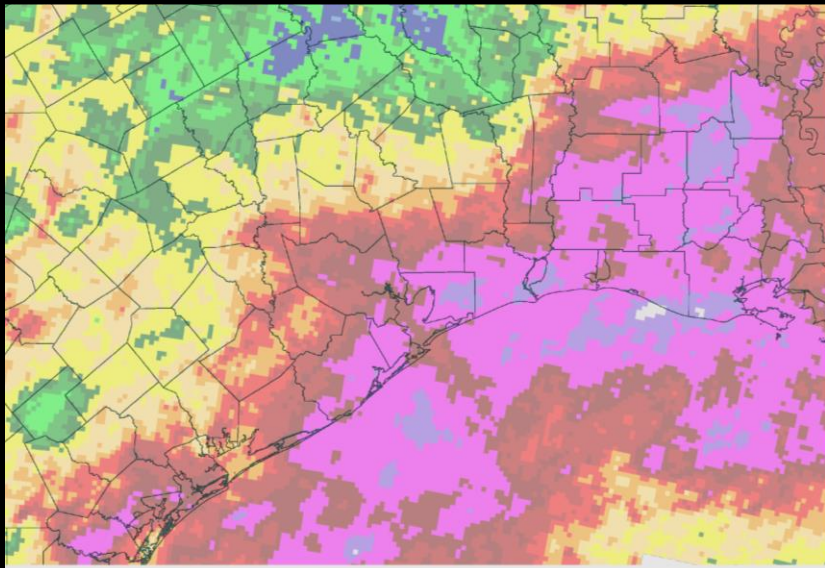


September 2021

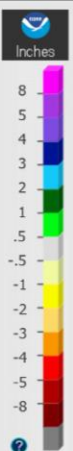
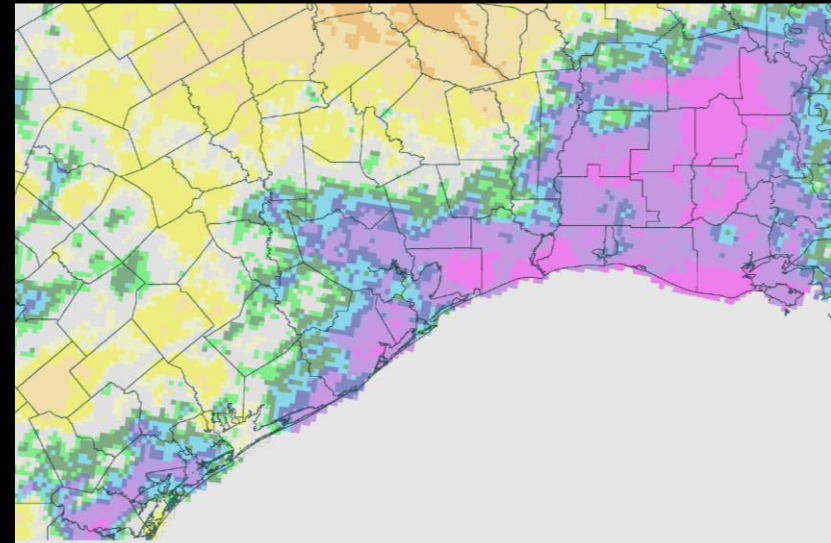
30

Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	6.40	-0.25	9	2.28	13 th
Houston Hobby (HOU)	7.61	+1.85	6	2.11	13 th
City of Houston (IAH)	8.73	+4.02	9	1.53	14 th
College Station (CLL)	2.75	-0.75	5	1.49	29 th

Monthly Total Precipitation (inches)



Monthly Departure from Normal Precipitation (inches)



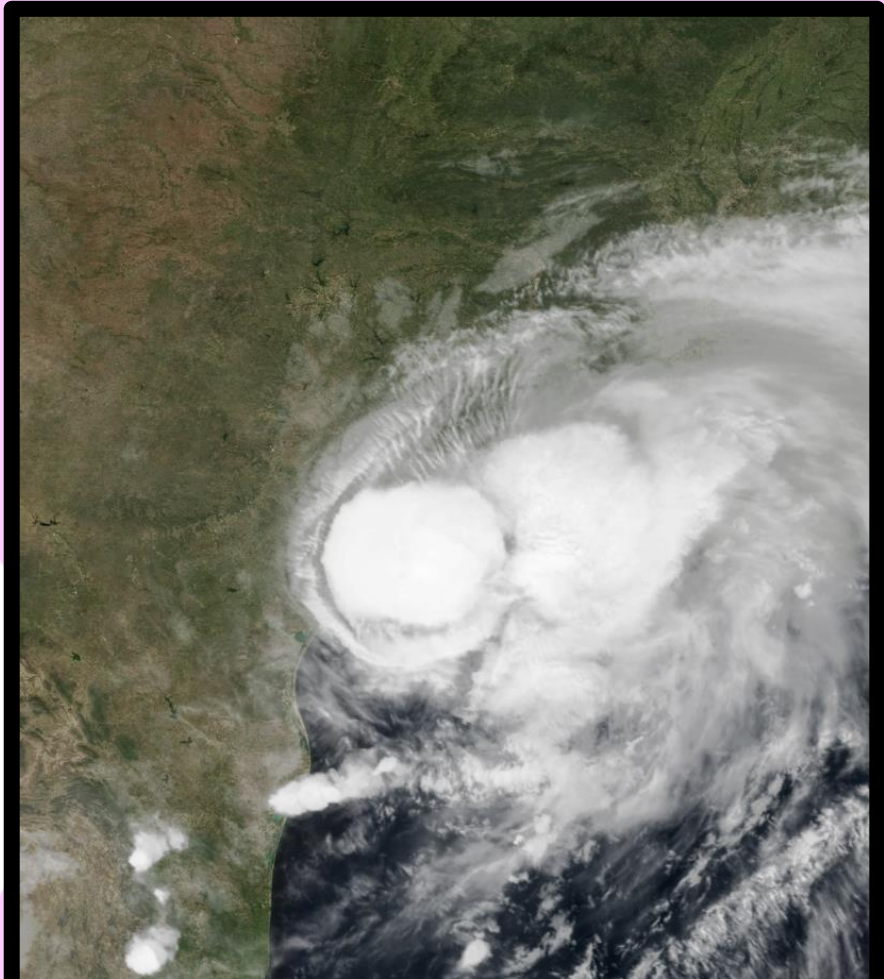
Hurricane Nicolas

On Sunday, September 12, Tropical Storm Nicholas formed in the southwestern Gulf of Mexico, about 130 miles northeast of Veracruz, Mexico. It strengthened gradually as it moved northward along the western edge of the Gulf of Mexico, bringing rains to the Texas Gulf Coast as it slid along its track not far off the coastline through Sunday and Monday.

On Monday night, shortly before it made landfall, Nicholas was upgraded to a hurricane as it produced wind gusts as high as 94 mph at a WeatherFlow sensor on Matagorda Bay. The storm made landfall shortly after midnight on Tuesday about 10 miles west-southwest of Sargent Beach, in rural Matagorda County.

Through Monday night and into Tuesday morning, the storm brought gusty winds to much of coastal Southeast Texas, resulting in power outages to nearly half a million people. It also dumped several inches of rain on the Southeast Texas Gulf Coast and barrier islands, resulting in flash flooding.

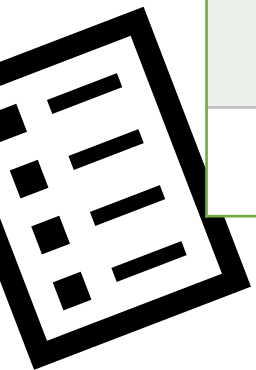
Formed	Dissipated	Min Pressure	Max Sustained Wind
Sept 12 th	Sept 18 th	988 mb	75 mph



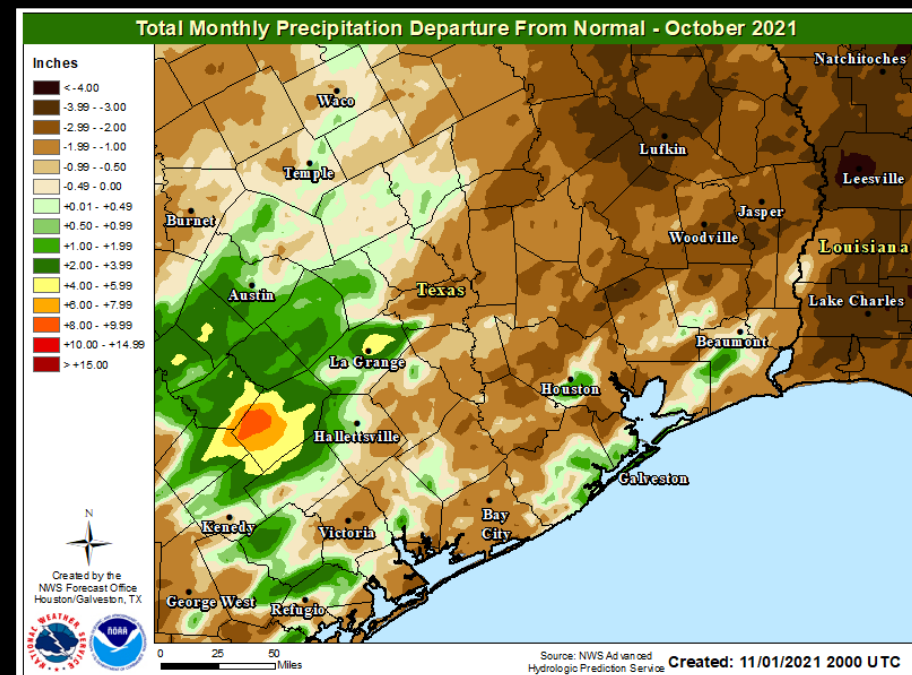
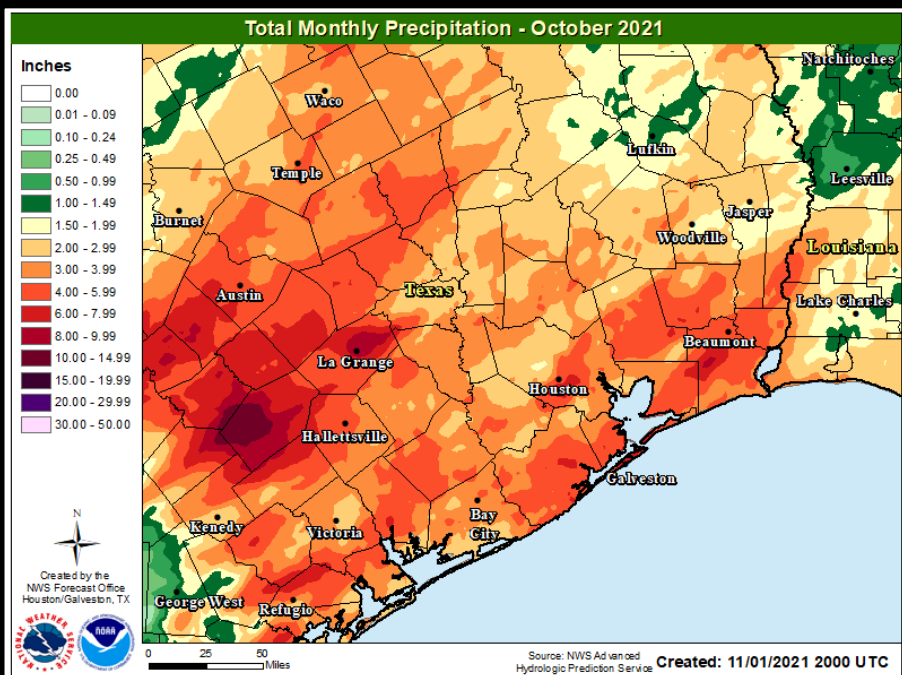
Hurricane Nicolas on September 14th, 2021 as it made landfall

In general, the month of October was three to four degrees above normal and around one to three inches below normal. There were some strong cold fronts to push through the area the brought temporary cool down, but they did not last long enough to outweigh the exceptionally warm days. Some coastal downpours brought above average precipitation to Galveston Island and the near coastal areas.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	84.6	72.7	78.6	75.3	+3.3	90 on the 10 th	55 on the 30 th
Houston Hobby (HOU)	86.0	68.1	77.0	73.0	+4.0	93 on the 15 th	50 on the 30 th
City of Houston (IAH)	85.0	64.6	74.8	71.8	+3.0	92 on the 13 th	47 on the 30 th
College Station (CLL)	85.2	63.7	74.5	71.1	+3.4	92 on the 10 th	45 on the 30 th

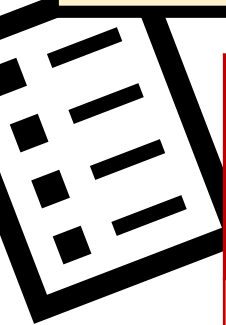


Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	6.77	+1.62	6	1.89	2 nd
Houston Hobby (HOU)	2.75	-3.03	6	1.12	27 th
City of Houston (IAH)	3.64	-1.82	6	1.37	1 st
College Station (CLL)	4.22	-0.71	6	1.43	14 th



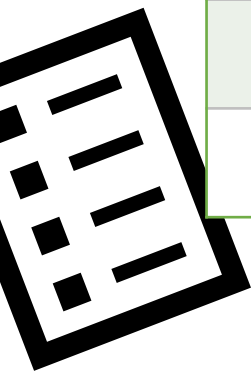
November 2021

Temperature-wise, November was around normal with most locations within a degree of normal average temperatures with coastal locations up around two degrees above normal. Multiple cold fronts moved through the area causing temperatures ups and downs. The entire region saw below normal precipitation with continued drought conditions experienced across the north. Only two daily records were set this month: Record high temperature set on the 17th at Houston-Hobby and a daily rainfall record on the 25th for the City of Houston.

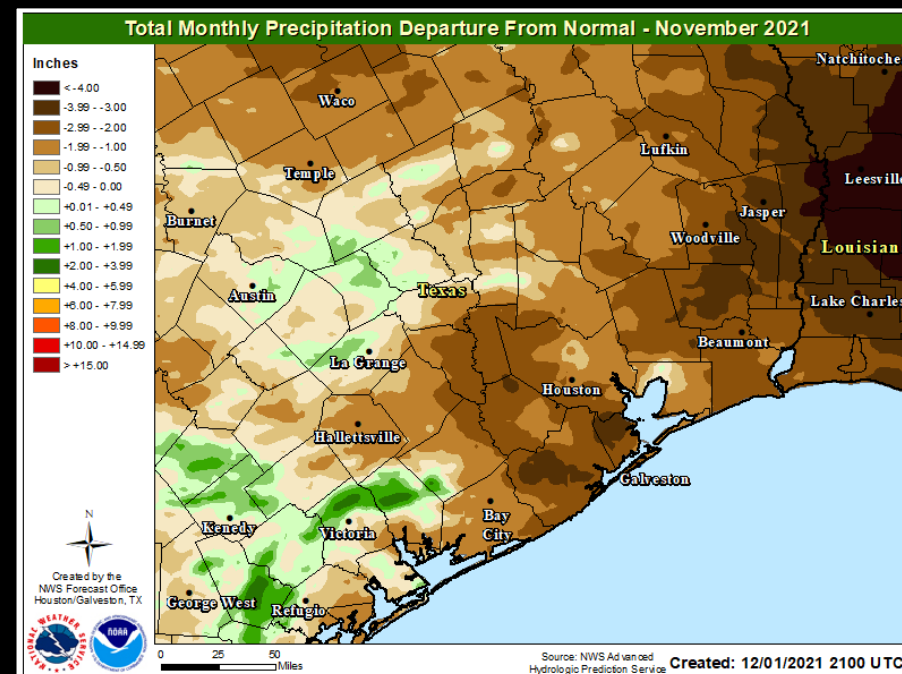
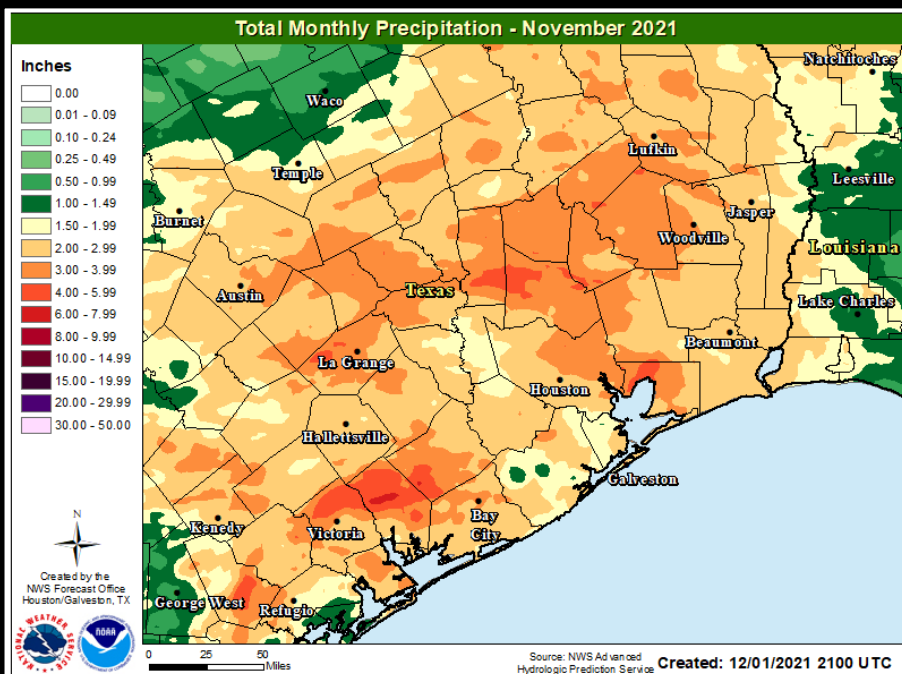


Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	73.4	61.3	67.3	65.5	+1.8	82 on the 17 th	52 on the 19 th , 26 th & 29 th
Houston Hobby (HOU)	74.5	54.5	64.5	63.3	+1.2	87 on the 17 th	46 on the 29 th
City of Houston (IAH)	73.0	49.8	61.4	62.0	-0.6	85 on the 17 th	43 on the 23 rd
College Station (CLL)	72.6	49.8	61.2	60.4	+0.8	84 on the 17 th	40 on the 23 rd & 29 th





Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	1.26	-3.02	2	0.46	3 rd & 11 th
Houston Hobby (HOU)	2.23	-1.67	2	0.62	3 rd
City of Houston (IAH)	3.85	-0.02	3	1.87	25 th
College Station (CLL)	2.46	-0.85	2	1.57	3 rd

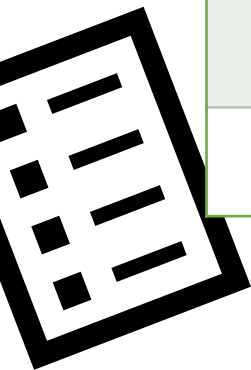


December 2021

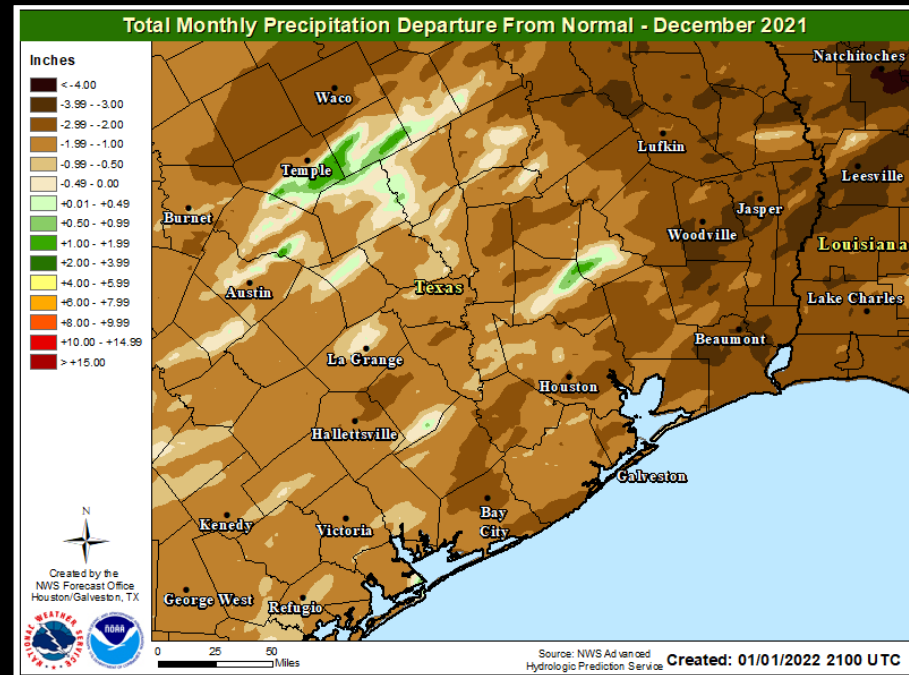
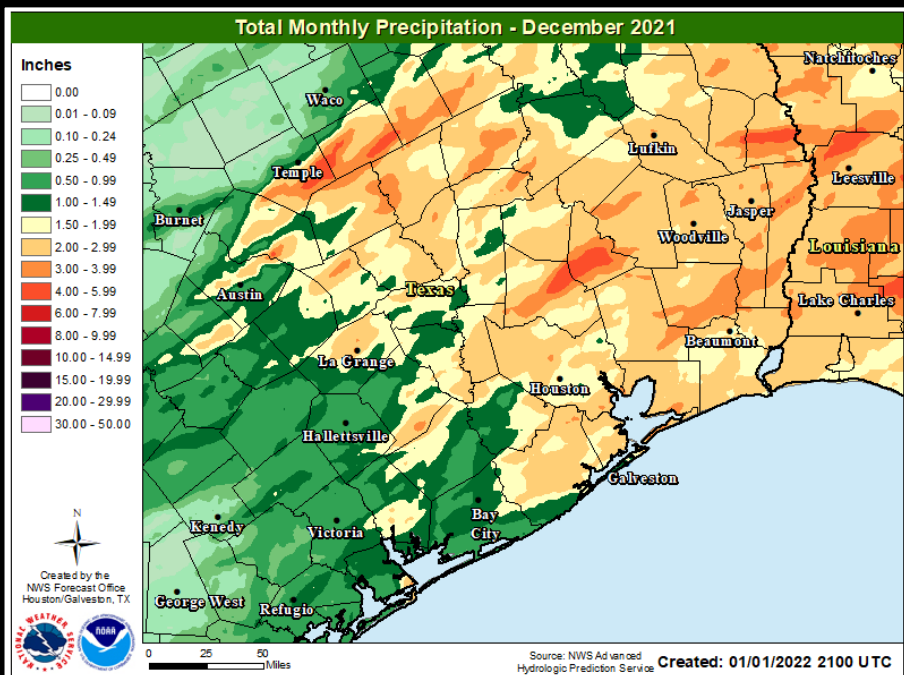
Extremely warm conditions led to our warmest December on record for most of the area, and it wasn't even close. There were 74 daily temperature records set across the area for either record daily high mins or maxes with Galveston, Houston, and Houston-Hobby experiencing their warmest December days on record. This past December was closer climatologically to our typical March/April than it was to our typical December. Below average rainfall for the month led to the expansion of drought conditions across most of the area.

Location	Average High Temp (F)	Average Low Temp (F)	Average Temp (F)	Normal Average Temp (F)	Departure From Normal Average (F)	Maximum Temperature (F)	Minimum Temperature (F)
Galveston (GLS)	75.5	64.2	69.9	58.5	+11.4	82 on the 28 th	49 on the 12 th
Houston Hobby (HOU)	78.2	61.4	69.8	56.9	+12.9	87 on the 9 th	42 on the 21 st
City of Houston (IAH)	76.9	58.8	67.8	55.4	+12.4	85 on the 9 th & 10 th	40 on the 12 th & 21 st
College Station (CLL)	75.8	57.1	66.5	53.1	+13.4	85 on the 10 th	37 on the 12 th





Location	Total Precipitation (in.)	Departure from Normal (in.)	Number of Thunder Days	Maximum Daily Precipitation (in./date)	
Galveston (GLS)	1.19	-3.04	2	1.01	18 th
Houston Hobby (HOU)	1.85	-2.49	2	1.43	18 th
City of Houston (IAH)	2.10	-1.93	2	1.55	18 th
College Station (CLL)	2.29	-1.42	2	0.86	18 th



Exceptional Warmth

City of Houston		
1	67.8	2021
2	64.4	1933
3	63.4	1984
4	61.4	1922
5	60.5	1970

Houston-Hobby		
1	69.8	2021
2	64.8	1984
3	64.0	1933
4	62.4	1970
5	61.9	1971

December 2021 was the warmest December on record for Houston-Hobby, City of Houston, and City of Galveston beating the previous warmest December by +5.0°F, +3.4°F, and 3.5°F, respectively. The City of College Station was the second warmest December on record missing the number one spot by 0.1°F.

This past December was closer climatologically to April than our normal December weather.

Galveston in particular had an exceptionally warm month with 30 new daily record high maximum or high minimum temperatures. Before this past December, Galveston only reached 80 degrees four times in its recorded climatology during the month of December. This year alone it reached 80 degrees nine times.

Houston, Galveston, and Houston-Hobby all saw their all-time December high temperatures this month.

City of Galveston		
1	69.9	2021
2	66.4	1889
3	65.6	1933
4	62.9	2016
5	62.4	1984

City of College Station		
1	66.6	1889
2	66.5	2021
3	60.7	1984
4	60.1	1933
5	58.7	1906



Exceptional Warmth

December 2021						
Observed Average Temperature Departure from Normal (°F)						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 64.0° +6.0° 58°	2 65.5° +7.7° 57.8°	3 73.0° +15.4° 57.6°	4 71.5° +14.1° 57.4°
5 70.5° +13.3° 57.2°	6 70.0° +13.0° 57°	7 59.5° +2.7° 56.8°	8 63.5° +6.9° 56.6°	9 75.0° +18.6° 56.4°	10 80.5° +24.2° 56.3°	11 63.0° +6.9° 56.1°
12 51.5° -4.4° 55.9°	13 58.0° +2.3° 55.7°	14 75.5° +19.9° 55.6°	15 76.5° +21.1° 55.4°	16 77.0° +21.7° 55.3°	17 76.5° +21.4° 55.1°	18 63.5° +8.5° 55°
19 53.0° -1.8° 54.8°	20 51.0° -3.7° 54.7°	21 51.5° -3.1° 54.6°	22 56.5° +2.1° 54.4°	23 64.0° +9.7° 54.3°	24 71.0° +16.8° 54.2°	25 71.5° +17.4° 54.1°
26 75.0° +21.0° 54°	27 74.5° +20.6° 53.9°	28 76.5° +22.7° 53.8°	29 75.5° +21.8° 53.7°	30 71.5° +17.9° 53.6°	31 76.5° +22.9° 53.6°	
NWS Houston/Galveston - Houston (Bush)						

December 2021						
Observed Average Temperature Departure from Normal (°F)						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 66.5° +7.1° 59.4°	2 68.0° +8.8° 59.2°	3 72.5° +13.5° 59°	4 74.5° +15.7° 58.8°
5 73.0° +14.4° 58.6°	6 71.0° +12.6° 58.4°	7 62.0° +3.8° 58.2°	8 68.0° +10.0° 58°	9 77.5° +19.6° 57.9°	10 80.5° +22.8° 57.7°	11 64.5° +7.0° 57.5°
12 54.0° -3.3° 57.3°	13 61.0° +3.8° 57.2°	14 76.0° +19.0° 57°	15 78.5° +21.6° 56.9°	16 77.5° +20.8° 56.7°	17 76.5° +20.0° 56.5°	18 66.0° +9.6° 56.4°
19 55.0° -1.2° 56.2°	20 53.0° -3.1° 56.1°	21 53.5° -2.5° 56°	22 60.5° +4.7° 55.8°	23 67.5° +11.8° 55.7°	24 73.0° +17.4° 55.6°	25 74.0° +18.5° 55.5°
26 75.5° +20.1° 55.4°	27 74.5° +19.3° 55.2°	28 78.0° +22.9° 55.1°	29 78.0° +22.9° 55.1°	30 74.5° +19.5° 55°	31 79.0° +24.1° 54.9°	
NWS Houston/Galveston - Houston (Hobby)						



Exceptional Warmth

December 2021

Observed Average Temperature Departure from Normal (°F)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 63.5° +7.6° 55.9°	2 65.0° +9.3° 55.7°	3 70.5° +15.1° 55.4°	4 74.0° +18.8° 55.2°
5 74.5° +19.5° 55°	6 61.0° +6.2° 54.8°	7 57.0° +2.5° 54.5°	8 65.5° +11.2° 54.3°	9 72.5° +18.4° 54.1°	10 79.0° +25.1° 53.9°	11 58.5° +4.8° 53.7°
12 50.0° -3.5° 53.5°	13 56.0° +2.6° 53.4°	14 71.5° +18.3° 53.2°	15 77.0° +24.0° 53°	16 77.0° +24.2° 52.8°	17 74.0° +21.3° 52.7°	18 60.5° +8.0° 52.5°
19 49.5° -2.9° 52.4°	20 51.5° -0.7° 52.2°	21 51.5° -0.6° 52.1°	22 59.5° +7.5° 52°	23 66.5° +14.6° 51.9°	24 69.5° +17.7° 51.8°	25 69.0° +17.3° 51.7°
26 72.0° +20.4° 51.6°	27 75.0° +23.5° 51.5°	28 72.5° +21.1° 51.4°	29 73.5° +22.2° 51.3°	30 69.5° +18.2° 51.3°	31 73.5° +22.3° 51.2°	

NWS Houston/Galveston - College Station



December 2021

Observed Average Temperature Departure from Normal (°F)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 68.0° +6.6° 61.4°	2 68.5° +7.3° 61.2°	3 73.0° +12.1° 60.9°	4 74.5° +13.8° 60.7°
5 72.5° +12.0° 60.5°	6 71.0° +10.7° 60.3°	7 62.5° +2.4° 60.1°	8 67.0° +7.1° 59.9°	9 75.0° +15.3° 59.7°	10 76.0° +16.5° 59.5°	11 65.5° +6.2° 59.3°
12 56.0° -3.1° 59.1°	13 69.0° +10.1° 58.9°	14 75.0° +16.2° 58.8°	15 74.5° +15.9° 58.6°	16 76.0° +17.6° 58.4°	17 75.0° +16.8° 58.2°	18 67.5° +9.4° 58.1°
19 57.0° -0.9° 57.9°	20 54.5° -3.2° 57.7°	21 56.0° -1.6° 57.6°	22 61.5° +4.1° 57.4°	23 70.0° +12.7° 57.3°	24 73.5° +16.4° 57.1°	25 75.0° +18.0° 57°
26 75.0° +18.1° 56.9°	27 74.0° +17.3° 56.7°	28 77.0° +20.4° 56.6°	29 75.5° +19.0° 56.5°	30 74.0° +17.6° 56.4°	31 76.0° +19.7° 56.3°	

NWS Houston/Galveston - Galveston



2021 Atlantic Tropical Summary

41



21

Named storms

Average is fourteen

Ana Larry
Bill Mindy
Claudette Nicholas
Danny Odette
Elsa Peter
Fred Rose
Grace Sam
Henri Teresa
Ida Victor
Kate Wanda
Julian

7

Hurricanes

Average is seven

4

Major hurricanes

Average is three

5

Rapidly intensifying storms

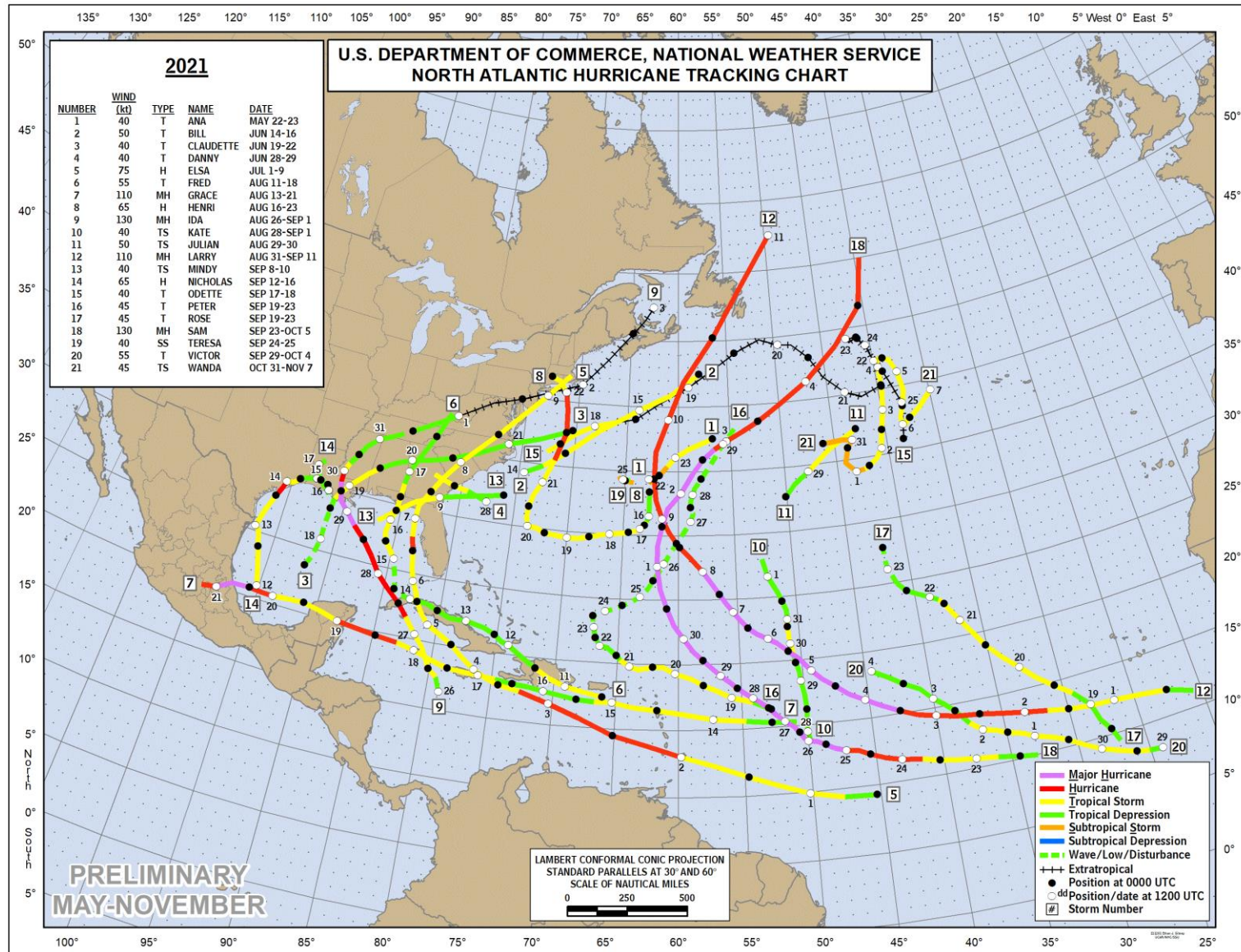
Elsa, Grace, Ida, Larry, Sam

8

Storms hitting the U.S. coastline

7th

Consecutive year with a named storm forming before June 1st



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).

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.

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 .

Houston Hobby (HOU)

Records are based upon observations beginning in August 1931.

