Item 10.1: 2020 Summer Weather Update

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Urgent Board of Directors Meeting

ERCOT Public
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Temperature Rankings of Recent Summers (Texas)

	Mean	Maximum	Minimum
Summer 2019	4	11	3
Summer 2018	7	31	3
Summer 2017	52	72	22
Summer 2016	19	59	7
Summer 2015	19	35	10
Summer 2014	52	80	13
Summer 2013	19	33	13
Summer 2012	14	17	17
Summer 2011	1	1	1
Summer 2010	12	43	5
Decade Average Rank	19.9	38.2	9.4

	Mean	Maximum	Minimum
Warmest third	8	6	10
Middle third	2	4	0
Coolest third	0	0	0

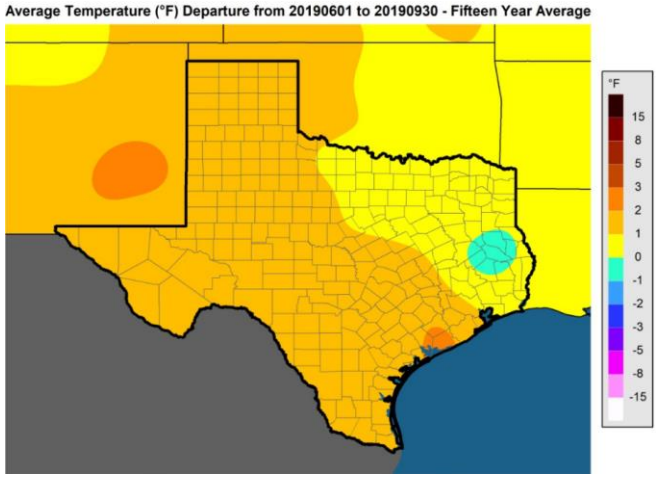
Based on 125 historical summers (1895-2019)

This past decade was the hottest decade on record for the summer season for max, min, and mean temperature

This was the only season from last decade that can make that claim – though the decade as a whole (all years, all seasons) was the warmest on record

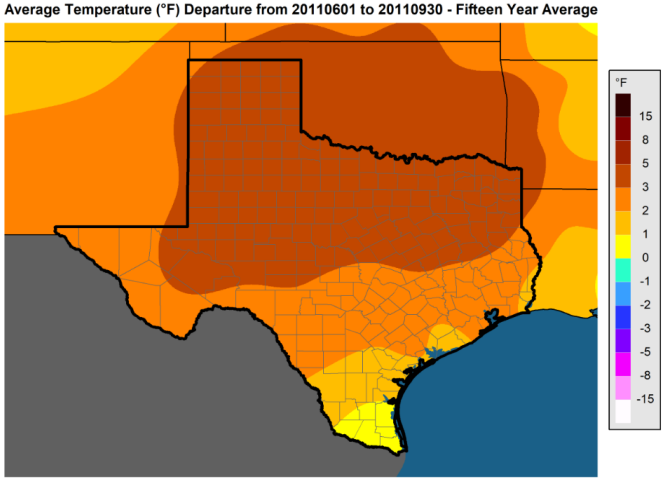
Summer 2019

- Last summer was the 4th hottest on record for Texas, dating back to 1895, based on mean temperature
- Summer 2019 was the second hottest of the decade, trailing only the hottest summer on record, 2011
- But it was not nearly as hot as 2011
- 2019 ranked 4th/11th/3rd (mean, max, min temps, 1895-2019 rank)
- 2011 ranked 1st/1st/1st



- The 2011 summer average high temperature for Texas was 98.2°
- The 2019 summer average high temperature was 94.2°

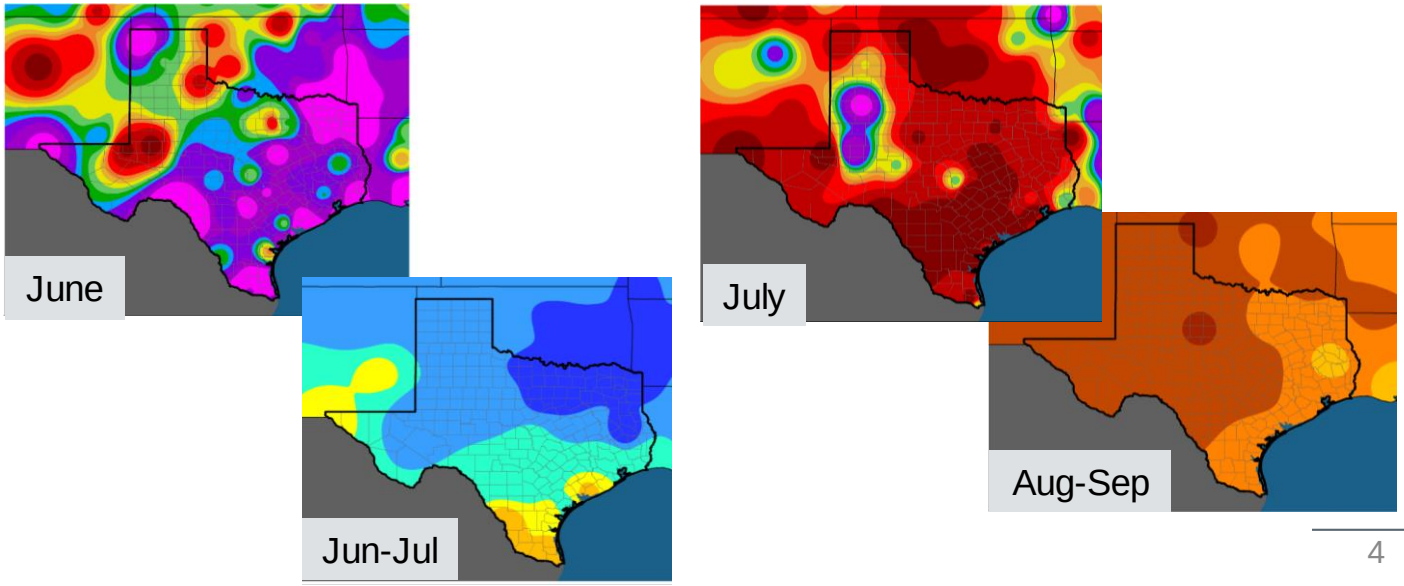
- The 2011 summer mean temperature for Texas was 84.6°
- The 2019 summer mean temperature was 82.3°



Summer 2019

- June 2019 was the coolest for the state of Texas since June 2007. July was the coolest since 2014. **Jun-Jul combined was the coolest since 2007**
- **June-July was the 74th hottest on record (and coolest Jun-Jul since 2007). August-September was the hottest Aug-Sep on record for Texas**
- Dallas-Fort Worth recorded its first 100° day on 7/30 – the latest first 100 since 2007
- June 2019 was the wettest for the state of Texas since June 2007. The wet start drove the mild temperatures to start the summer – but when it stopped raining in July, that supported a much hotter second-half of the summer
- August was the 2nd hottest on record and September was the 1st hottest on record

July trended much drier – driest since 2011 – which resulted in a significantly hotter August-September



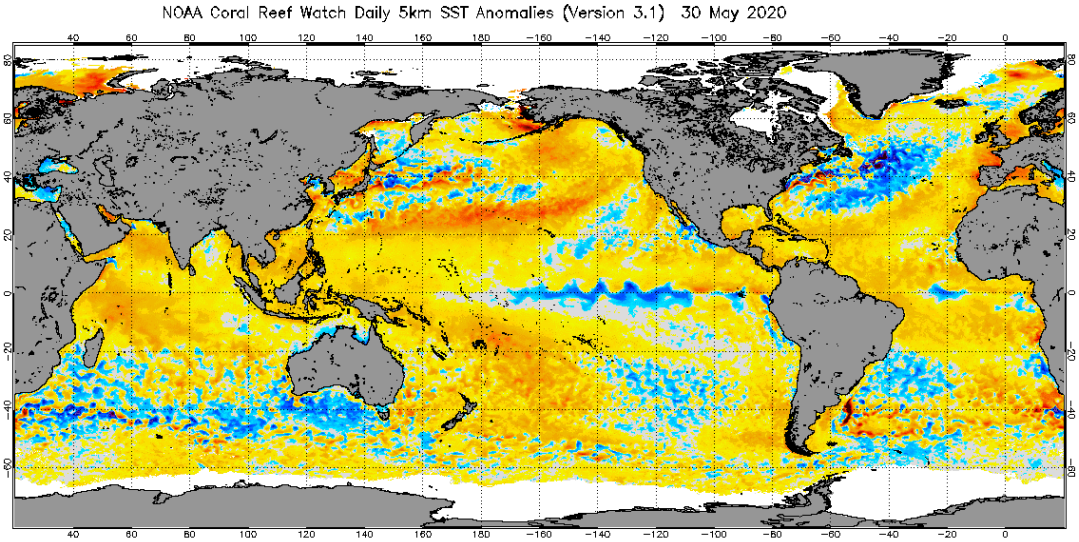
Summer 2019 – 100° days

- Dallas DFW: 14, DAL 21, FTW 11
  - Hottest was 102° (two days)
  - All much fewer than 2018
  - DFW in 2011: 71
- Houston IAH: 8, HOU 4
  - Hottest was 103° (one day)
  - More than 2018, fewer than 2015
  - IAH in 2011: 46
- Austin AUS (ABIA): 37 ATT: 57
  - Similar numbers to 2018 (AUS 41, ATT 54)
  - The first year since 2007 without 105° or greater ATT (Camp Mabry) in 2011: 89
- San Antonio SAT: 17 SSF: 54
  - This difference shows how the 100 degree days were mostly not much above 100
  - SAT in 2011: 55
- McAllen MFE: 53
  - 18 fewer than 2018
- Midland MAF: 37
  - One greater than 2018

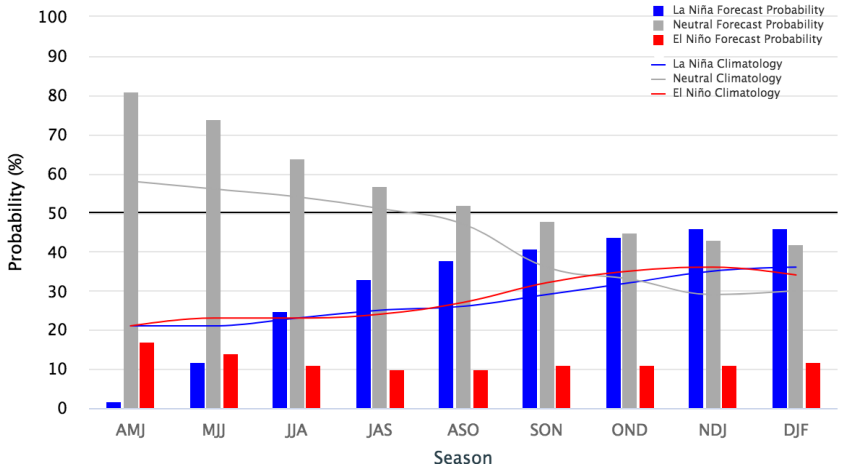
Last summer was not defined by extreme heat – rather, it was defined by prolonged heat that set up in late-July and continued into early-October

Building a Seasonal (Summer) Forecast

- Examining recent summers as comparisons
- In-depth look at the ocean cycles and temperatures
- Soil moisture is a contributing factor
- Examining the months leading up to the summer for trends
- El Niño, La Niña, or Neutral?



- **Neutral** (neither El Niño nor La Niña) is most likely to start this summer.
- Longer term, **La Niña** has more support



Historically Similar Years

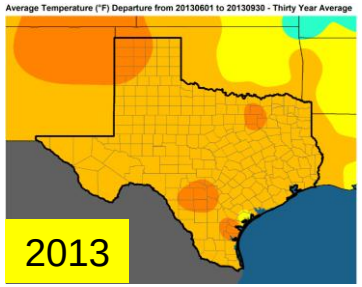
Past years that had similar conditions leading up to the summer season

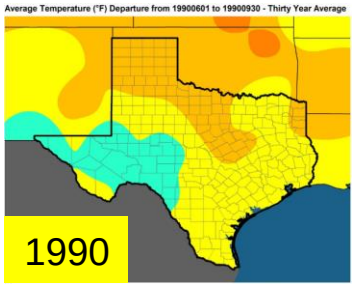
#1: 2013 (might be best pattern – but was not as wet, so tamp down warm a bit)

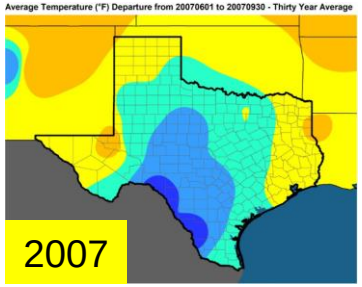
#2: 1990

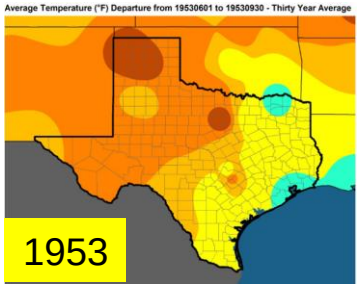
#3: 2007, 1953

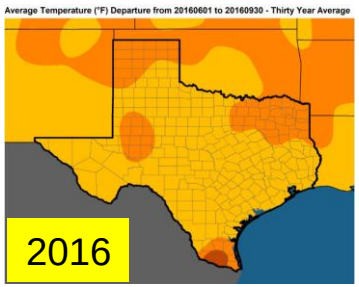
#4: 2018, 2016, 2008, 1995, 1958

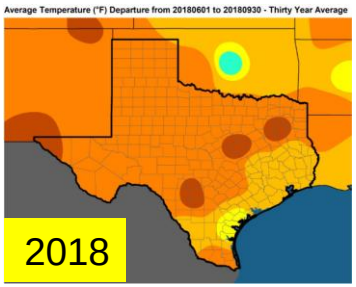












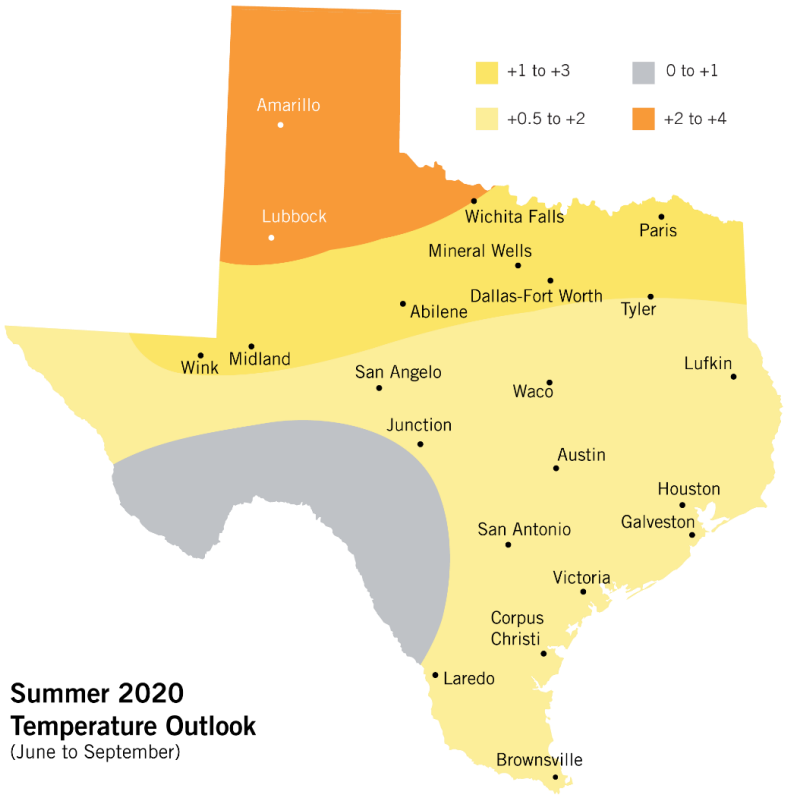
2019
2018 – 3
2017 – 2
2016 – 3
2015 – 2
2013 – 6
2012 – 2
2011
2010
2009
2008 – 3
2007 – 4
2006 – 2
2005
2004 – 2.5
2003
2002
2000 – 2

1999 – 2
1998 – 2
1997 – 1.5
1995 – 3
1993
1991 – 2
1990 – 5
1989 – 2
1983
1979 – 2
1976
1975 – 2
1973 – 1.5
1972
1971

1966
1960
1959 – 2.5
1958 – 3
1957 – 2
1954
1953 – 4
1950 – 2

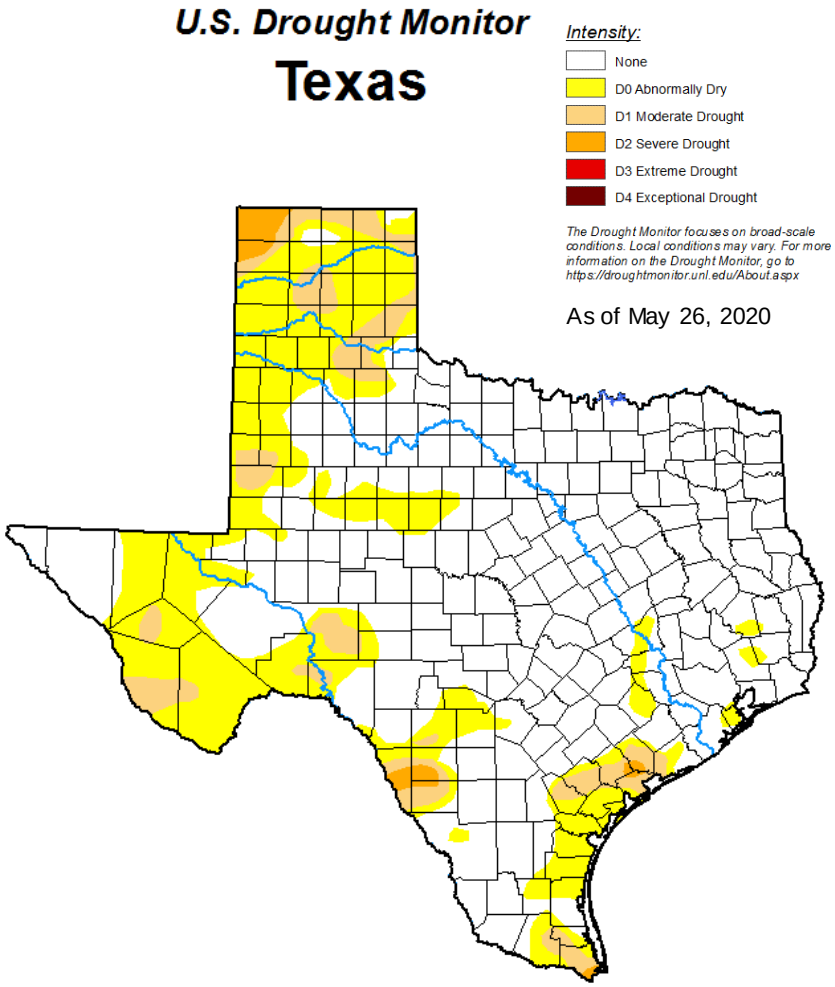
Summer 2020 Temperature Outlook

- Best chance for above-normal summer heat will be across North Texas and the Panhandle
- Among the large cities, Dallas has the greatest chance to be hotter than last summer (and have more 100° days)
- Unlikely to be as hot as last summer (daytime highs, averaged over the season) – but that **doesn't mean there can't or won't be days with more extreme heat (105+) than last summer**
- Minimum temperatures (morning lows) are likely to be more above normal than maximum (daytime highs)

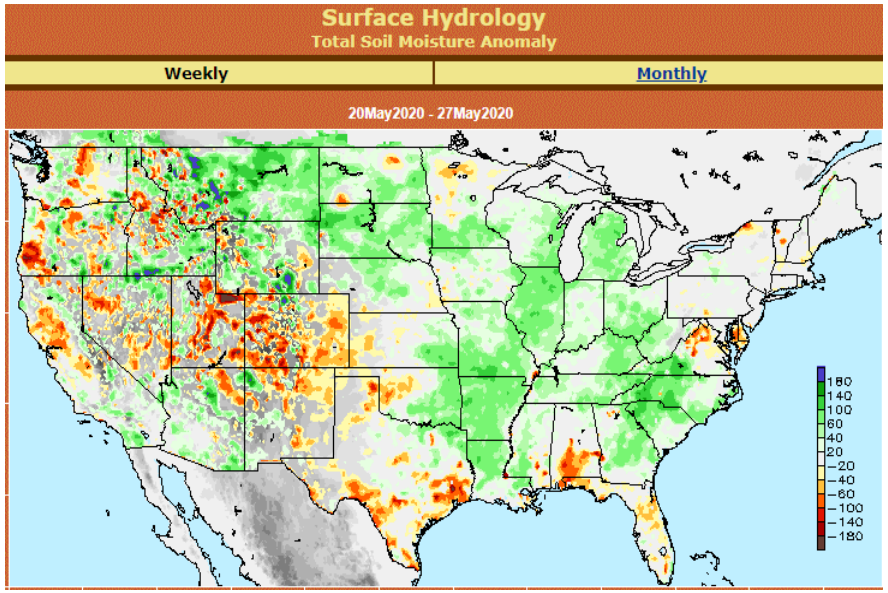


Summer 2020 has an 80% chance of ranking in the hottest half of all historical summers. It has a slightly greater than 50% chance of ranking within the hottest 20 historical summers – but less than 20% chance of ranking hotter than last summer (4th hottest)

Soil Moisture and Drought Conditions

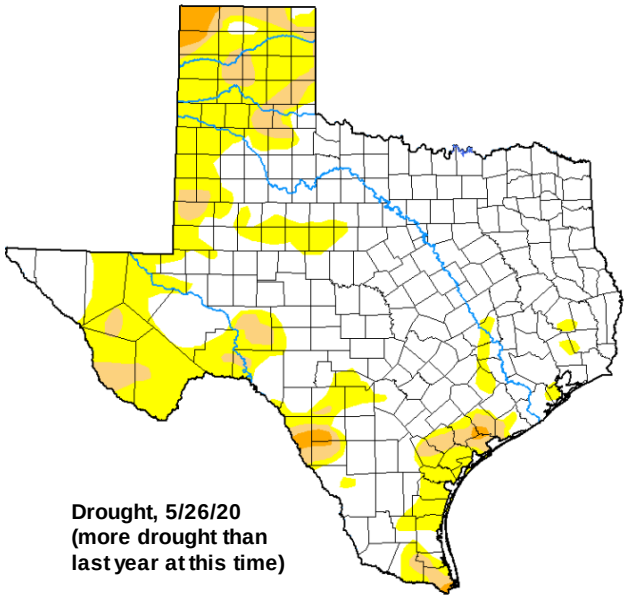


Overall improvements in recent months. 2020 started with 55% of the state's area under some drought designation. As of late-May, the number has dropped to 33%.

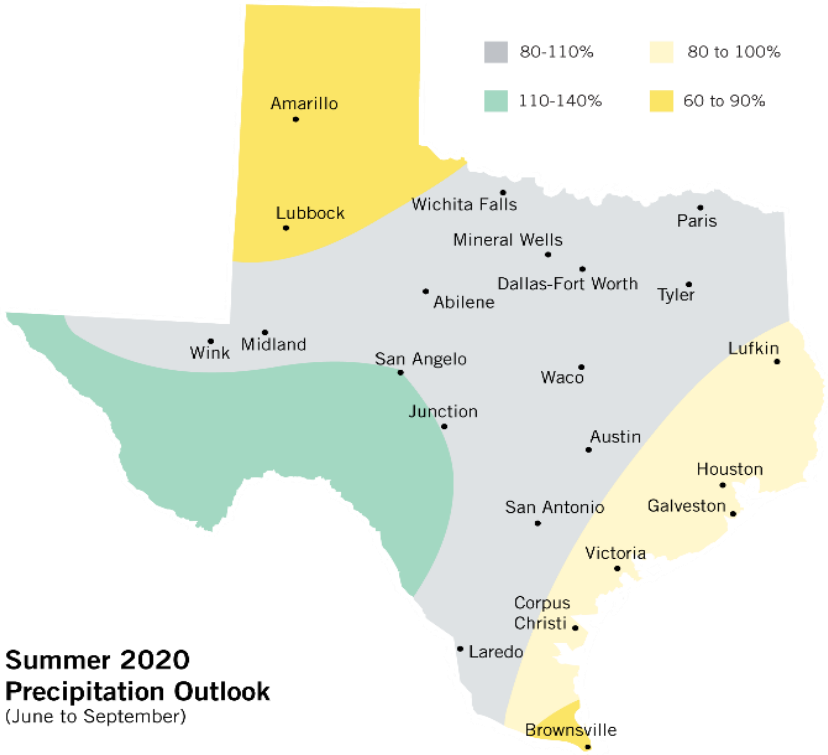


Summer 2020 Rainfall & Drought Outlook

- The Panhandle shows the greatest potential to be dry this summer (and is also the area of increasing concern for drought)
- The Gulf Coast also shows a relatively dry pattern – though that's not taking into account the hurricane seasons (too many unknowns)
- More potential for a drier pattern than wetter – if tropical impacts are limited.
- This is drier (more drought, lower soil moisture) than at this point last year- even though it has been wet in spots this spring



Drought, 5/26/20 (more drought than last year at this time)



Summer 2020 Precipitation Outlook
(June to September)

Hurricanes

- Normal: 12/6/3
- 2019 Season: 18/6/3
- 2020 Forecast: 16/8/4

(named storms/hurricanes/major hurricanes)

Indicators suggest the Gulf of Mexico has greater potential to be active this year

- Minus an El Niño, less wind shear will provide a more calm environment to better allow tropical cyclones to develop
- Also, temperatures in the Atlantic Basin are mostly above normal