



Item 5.2: Summer Weather Review, Fall-Winter Forecast, and Wind Study Update

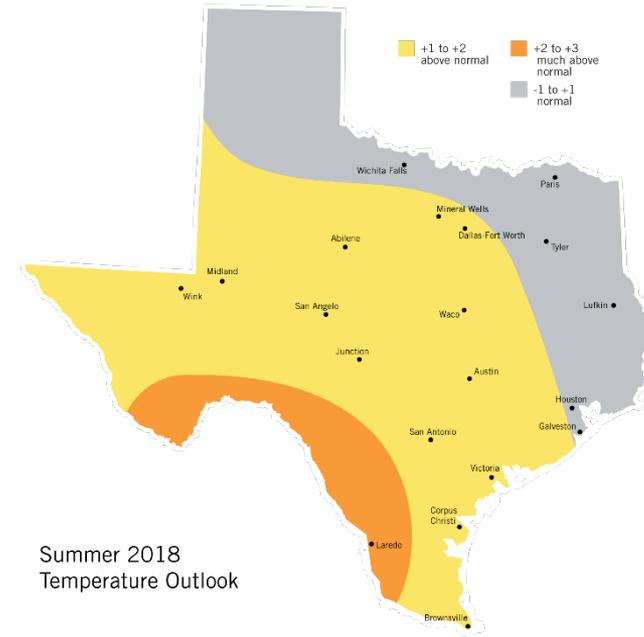
Chris Coleman
ERCOT Sr. Meteorologist

Board of Directors Meeting

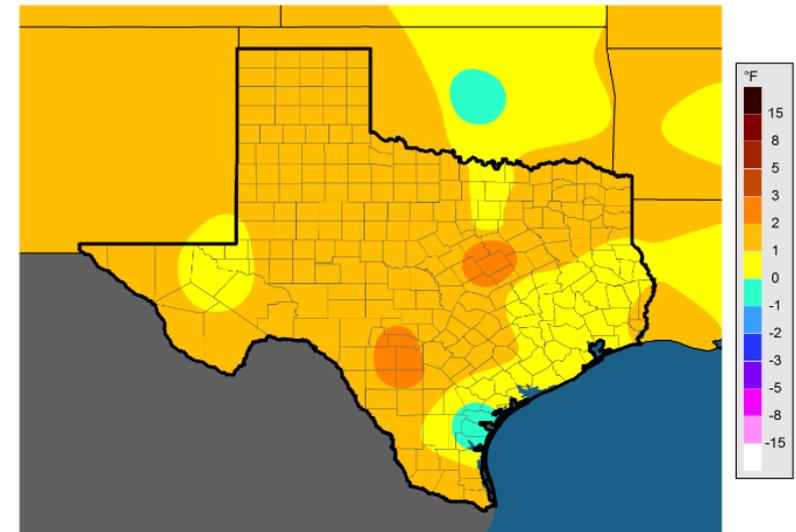
ERCOT Public
October 9, 2018

Summer Review

June – August 2018 was the 5th hottest on record (ERCOT summer also includes September)

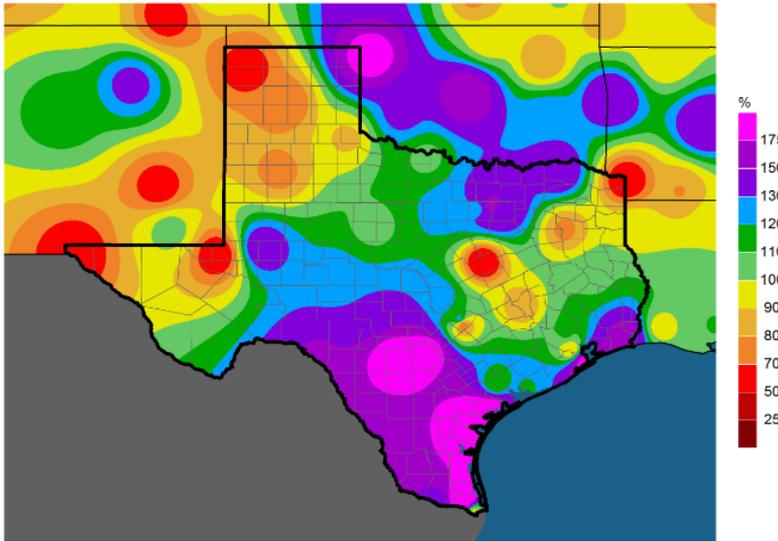


Average Temperature (°F) Departure from 20180601 to 20180930 - Fifteen Year Average

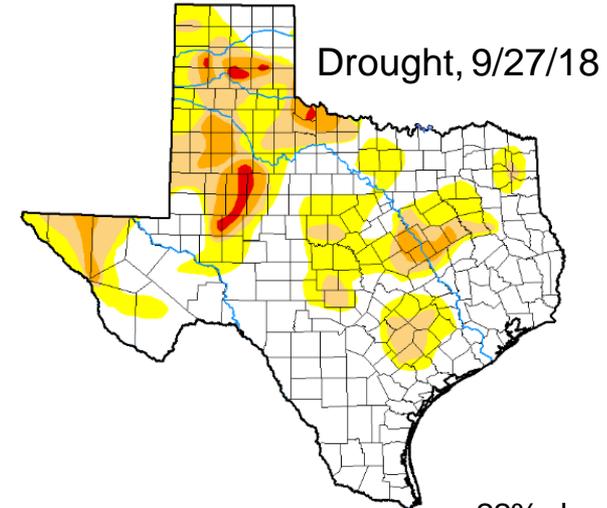
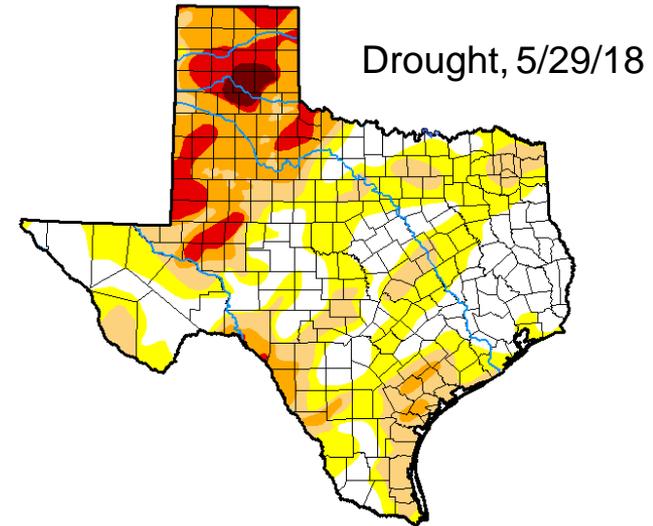


Summer 2018 Rainfall & Drought Update

Percent of Normal Precipitation (%) from 20180601 to 20180930 - Fifteen Year Average



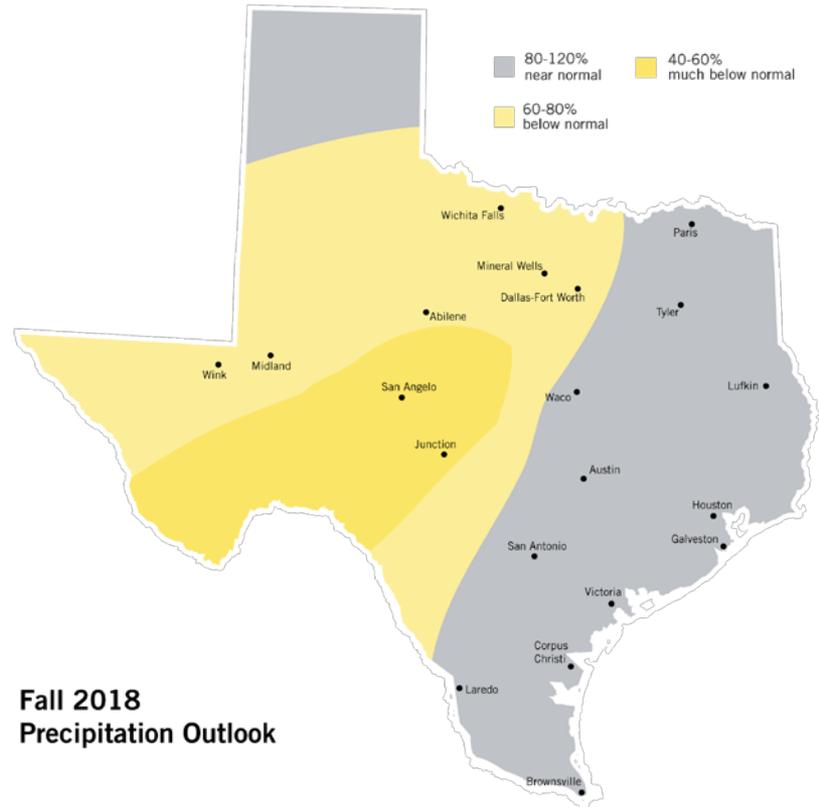
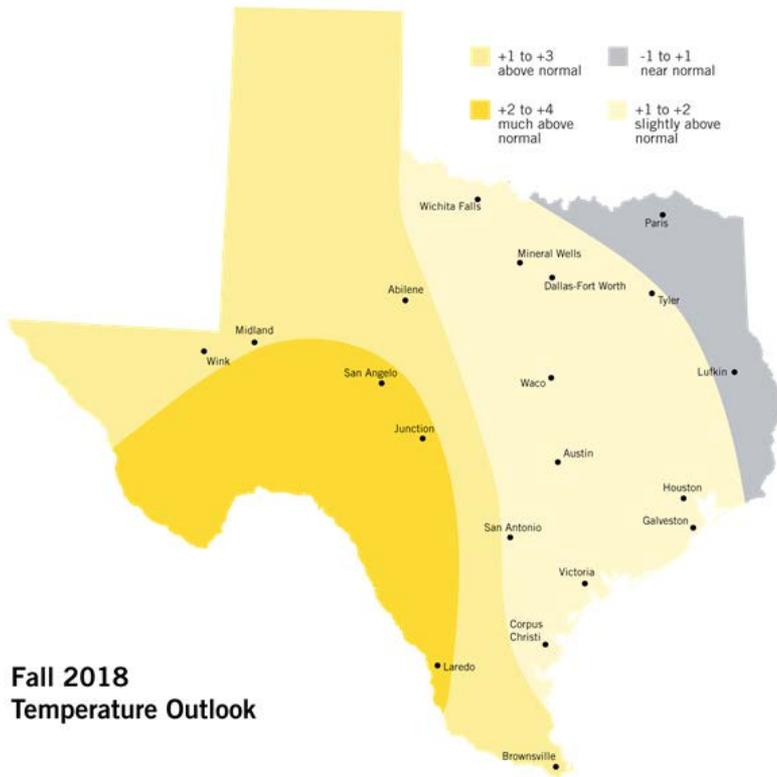
Overall improvements to the rainfall deficit over the past few months. Most widespread improvements over September



22% drop to 7%
moderate to exceptional drought



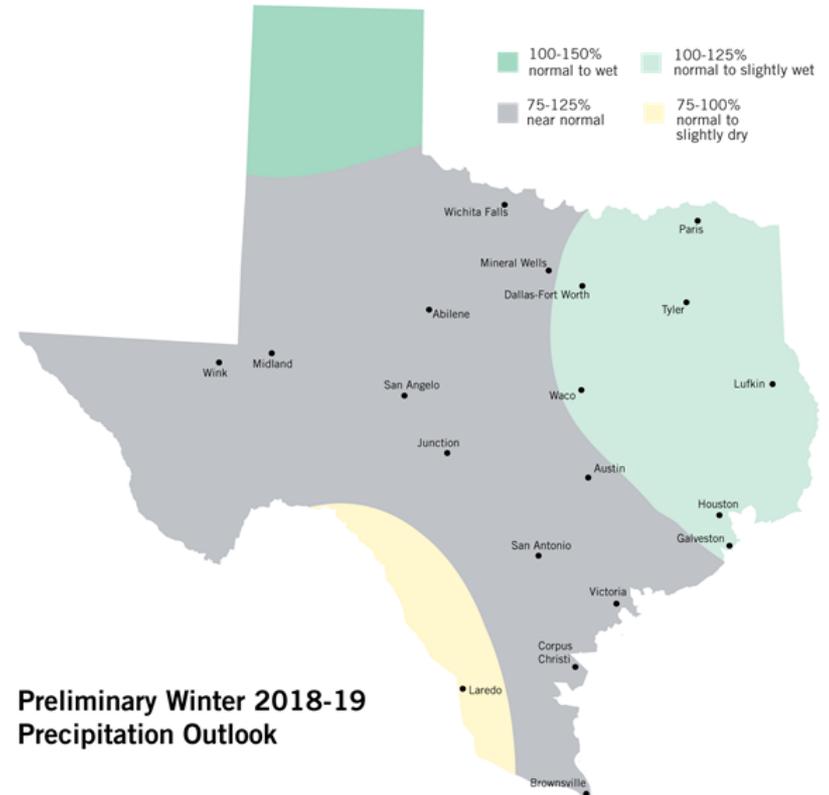
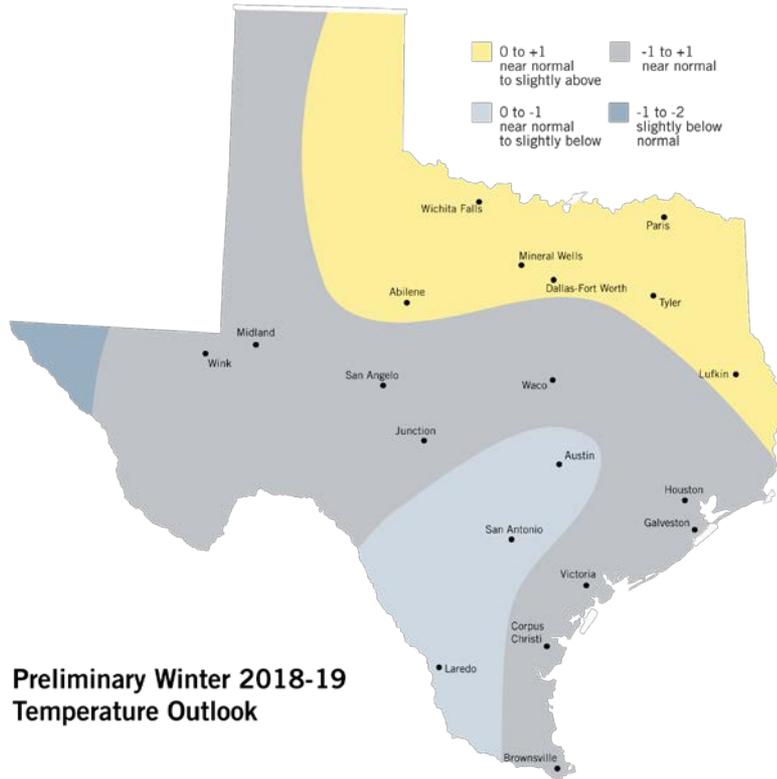
Fall Forecast



Forecasting the warm trend to continue
 The last season that ranked in the coldest half (1895-current) was Winter 2013-14



Preliminary Winter Forecast



Since 2001, only two winters have ranked in the coldest third (1-41) of historical winters (2013-14 and 2009-10)

There are more “warmer” solutions than colder based on current analogs; in other words, forecast adjustments would likely be warmer

El Niño should bring either normal precipitation this winter – or above-normal



Wind Study Analysis

June 2018:

Average Midland high temperature: **98.3°**

Average daily percentage of installed wind capacity at peak (5PM): **39.2%**

June 2017:

Average Midland high temperature: **96.9°**

Average daily percentage of installed wind capacity at peak (5PM): **28.9%**

June 2016:

Average Midland high temperature: **93.4°**

Average daily percentage of installed wind capacity at peak (5PM): **27.5%**

Two mildest Junes resulted in lowest percentage of installed wind capacity being generated

June 2015:

Average Midland high temperature: **91.7°**

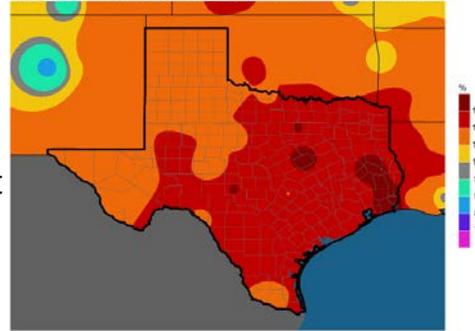
Average daily percentage of installed wind capacity at peak (5PM): **28.7%**

June 2014:

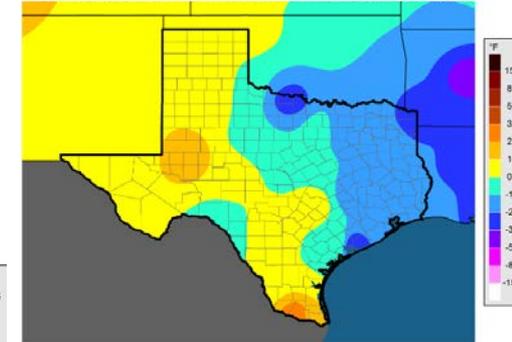
Average Midland high temperature: **95.7°**

Average daily percentage of installed wind capacity at peak (5PM): **42.9%**

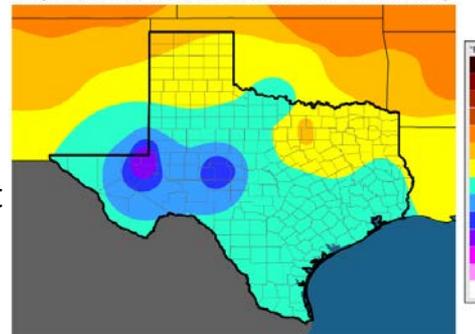
Percent of Average Sfc Wind (%) from 20180601 to 20180630 - Fifteen Year Average



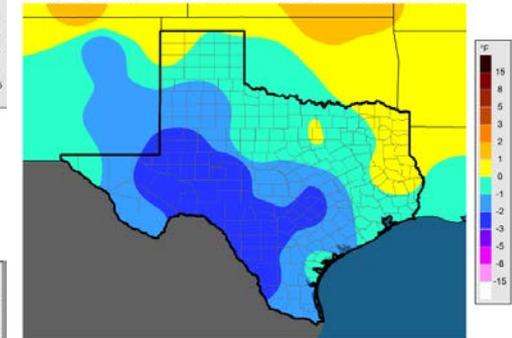
Average Temperature (°F) Departure from 20170601 to 20170630 - Fifteen Year Average



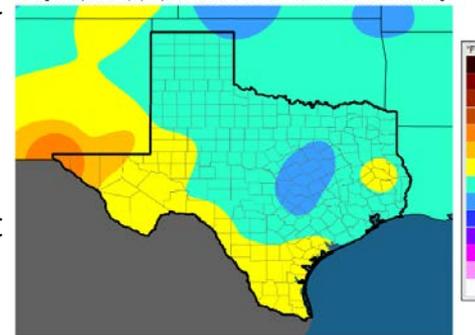
Average Temperature (°F) Departure from 20160601 to 20160630 - Fifteen Year Average



Average Temperature (°F) Departure from 20150601 to 20150630 - Fifteen Year Average



Average Temperature (°F) Departure from 20140601 to 20140630 - Fifteen Year Average



Wind Study Analysis

July 2018:

Average Midland high temperature: **97.4°**

Average daily percentage of installed wind capacity at peak (5PM): **39.2%**

July 2017:

Average Midland high temperature: **96.2°**

Average daily percentage of installed wind capacity at peak (5PM): **26.9%**

July 2016:

Average Midland high temperature: **101.4°**

Average daily percentage of installed wind capacity at peak (5PM): **36.1%**

July 2015:

Average Midland high temperature: **96.8°**

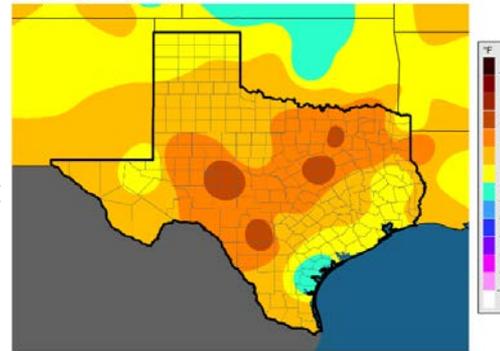
Average daily percentage of installed wind capacity at peak (5PM): **22.4%**

July 2014:

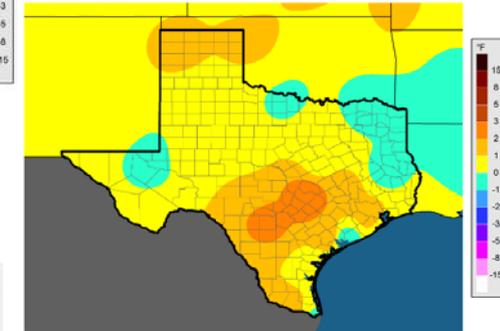
Average Midland high temperature: **95.1°**

Average daily percentage of installed wind capacity at peak (5PM): **25.1%**

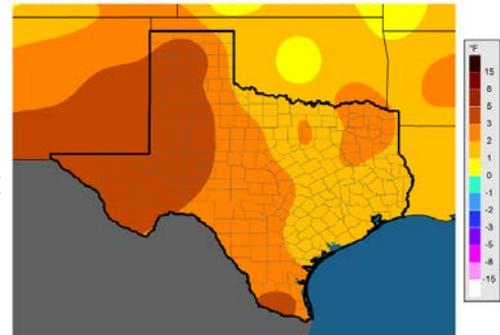
Average Temperature (°F) Departure from 20180701 to 20180731 - Fifteen Year Average



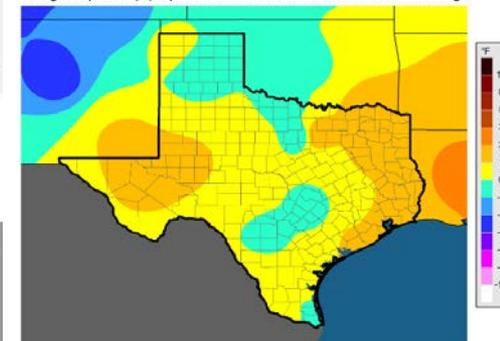
Average Temperature (°F) Departure from 20170701 to 20170731 - Fifteen Year Average



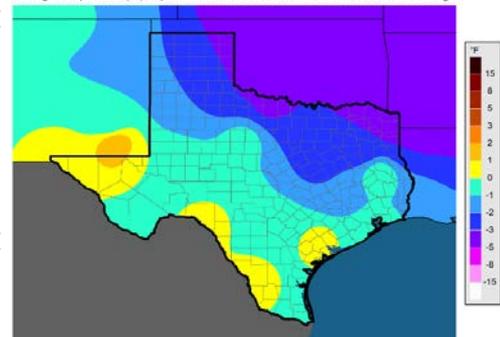
Average Temperature (°F) Departure from 20160701 to 20160731 - Fifteen Year Average



Average Temperature (°F) Departure from 20150701 to 20150731 - Fifteen Year Average



Average Temperature (°F) Departure from 20140701 to 20140731 - Fifteen Year Average



Wind Study Analysis

August 2018:

Average Midland high temperature: **95.5°**

Average daily percentage of installed wind capacity at peak (5PM): **28.5%**

August 2017:

Average Midland high temperature: **92.2°**

Average daily percentage of installed wind capacity at peak (5PM): **23.5%**

August 2016:

Average Midland high temperature: **92.7°**

Average daily percentage of installed wind capacity at peak (5PM): **26.1%**

August 2015:

Average Midland high temperature: **97.8°**

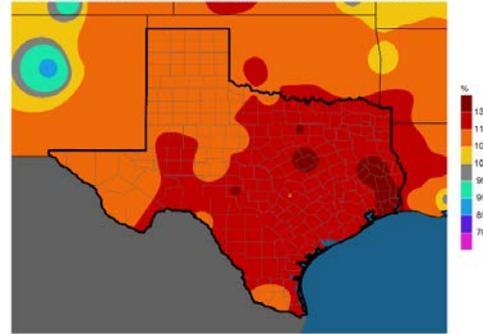
Average daily percentage of installed wind capacity at peak (5PM): **20.9%**

July 2014:

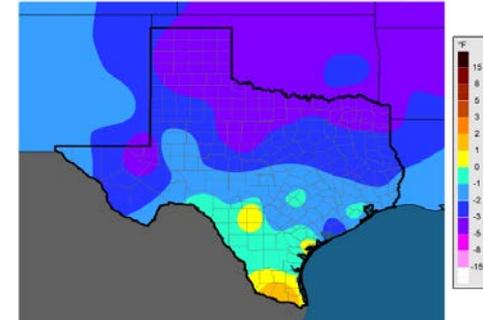
Average Midland high temperature: **95.8°**

Average daily percentage of installed wind capacity at peak (5PM): **20.8%**

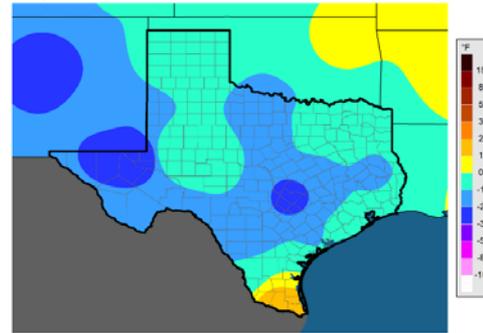
Percent of Average Sfc Wind (%) from 20180601 to 20180630 - Fifteen Year Average



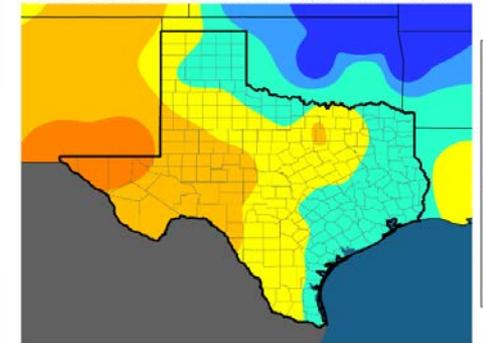
Average Temperature (°F) Departure from 20170801 to 20170831 - Fifteen Year Average



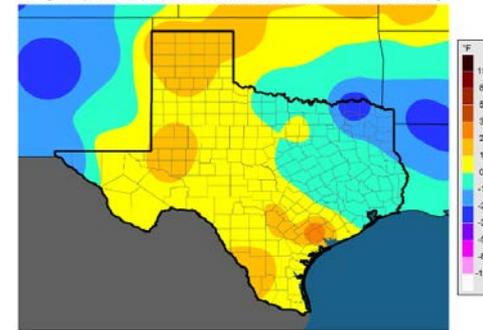
Average Temperature (°F) Departure from 20160801 to 20160831 - Fifteen Year Average



Average Temperature (°F) Departure from 20150801 to 20150831 - Fifteen Year Average



Average Temperature (°F) Departure from 20140801 to 20140831 - Fifteen Year Average



Wind Study Analysis

Correlation has two parts:

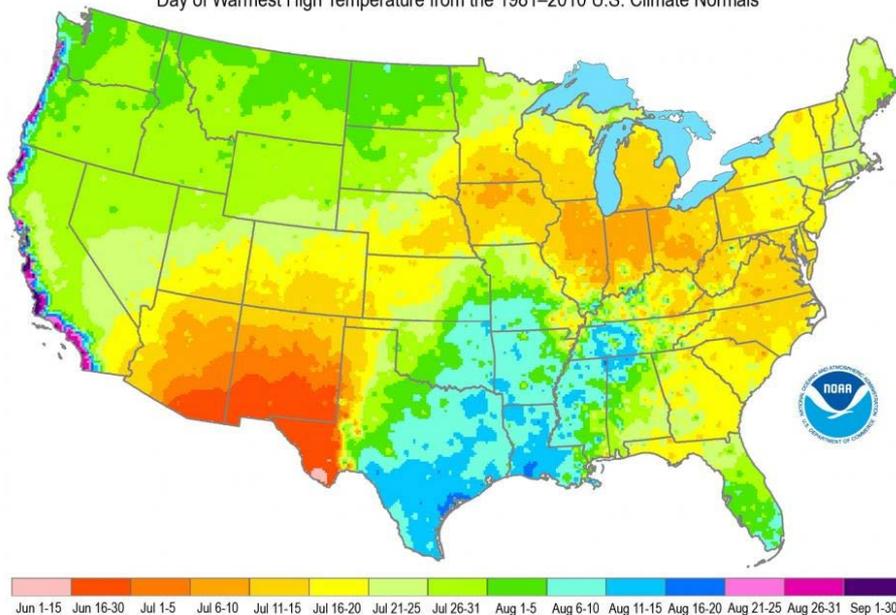
1. Hot West TX (MAF)
2. Hotter anomalies West compared to rest of state

Correlation may work best in June-July

Month:	Speed:	Direction: (at sfc)
January	10.1 MPH	West-Southwest (250 degrees)
February	10.9 MPH	South (190 degrees)
March	12.0 MPH	South (190 degrees)
April	12.7 MPH	South (170 degrees)
May	12.3 MPH	South (170 degrees)
June	12.3 MPH	South (170 degrees)
July	10.9 MPH	South-Southeast (160 degrees)
August	9.8 MPH	South (170 degrees)
September	9.8 MPH	South-Southeast (160 degrees)
October	10.2 MPH	South (170 degrees)
November	10.1 MPH	South (190 degrees)
December	9.9 MPH	South (190 degrees)

Warmest Day of the Year

Day of Warmest High Temperature from the 1981–2010 U.S. Climate Normals



June to early-July has highest potential for wind generation during the summer season