



## **Item 9: 2017 Winter Weather Review and Looking Ahead**

*Chris Coleman*

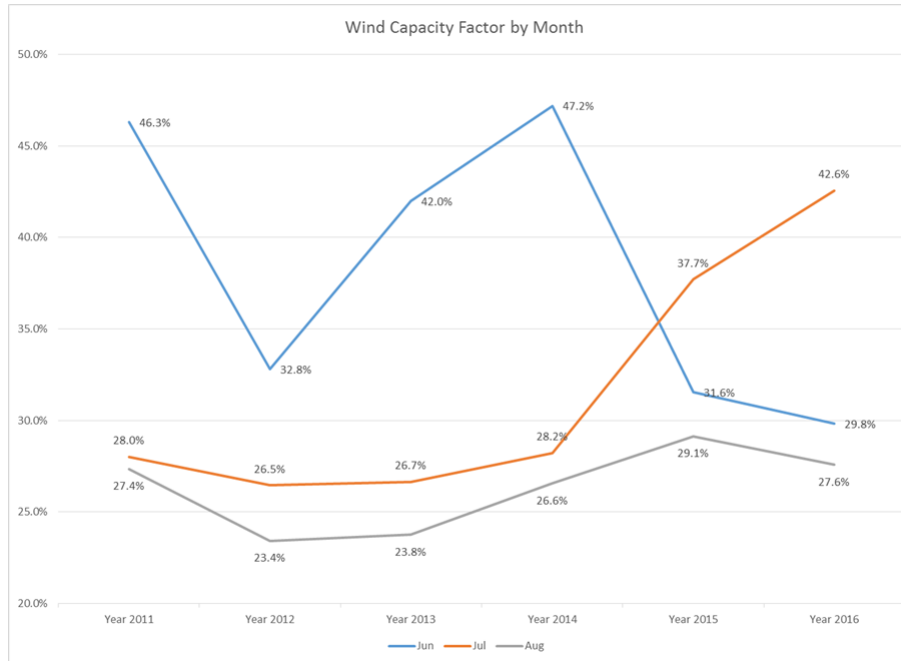
ERCOT Sr. Meteorologist

Board of Directors Meeting

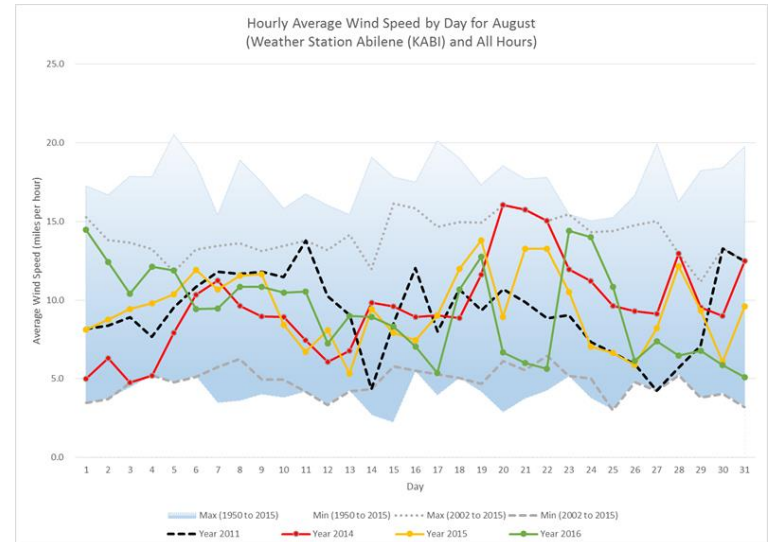
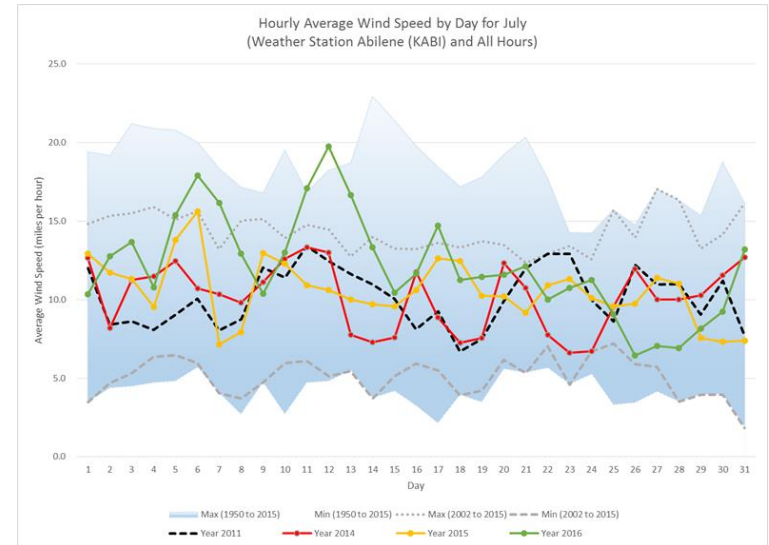
ERCOT Public

February 14, 2017

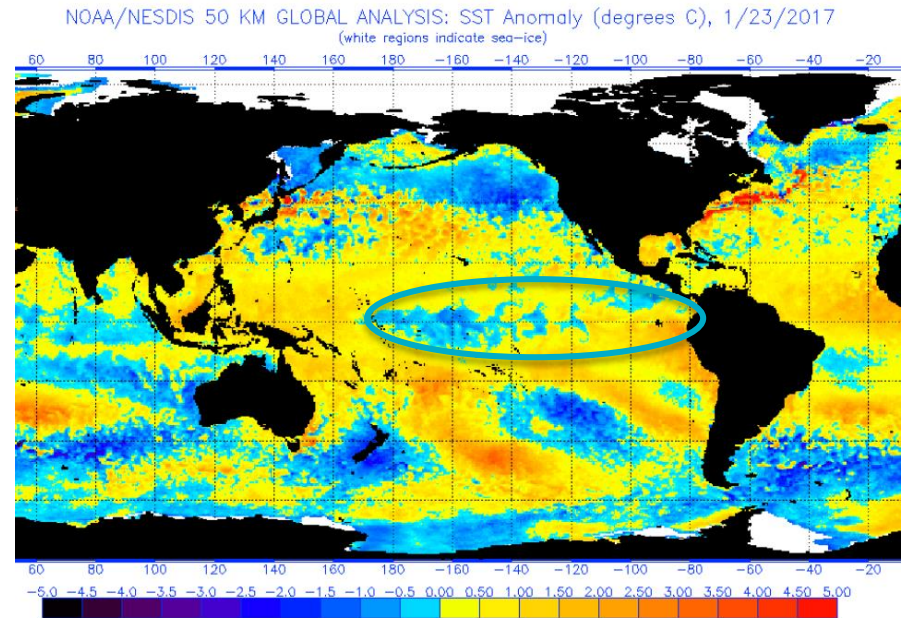
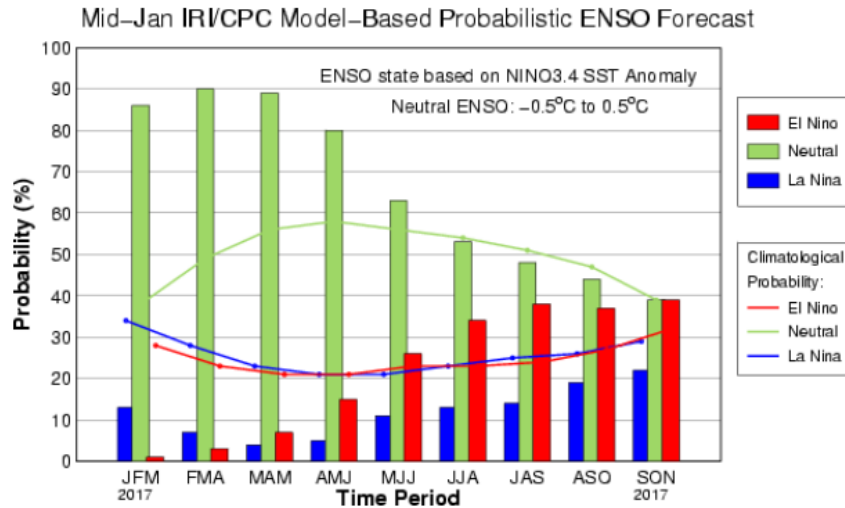
# Wind in 2016 Compared to 2017



- July and early-August 2016 had periods of strong wind
- Four-month summer period was not much different than normal
- Possibly some correlation with El Niño
- Nothing to suggest more wind in 2017 than 2016



# ENSO: La Niña, El Niño, or Neutral?



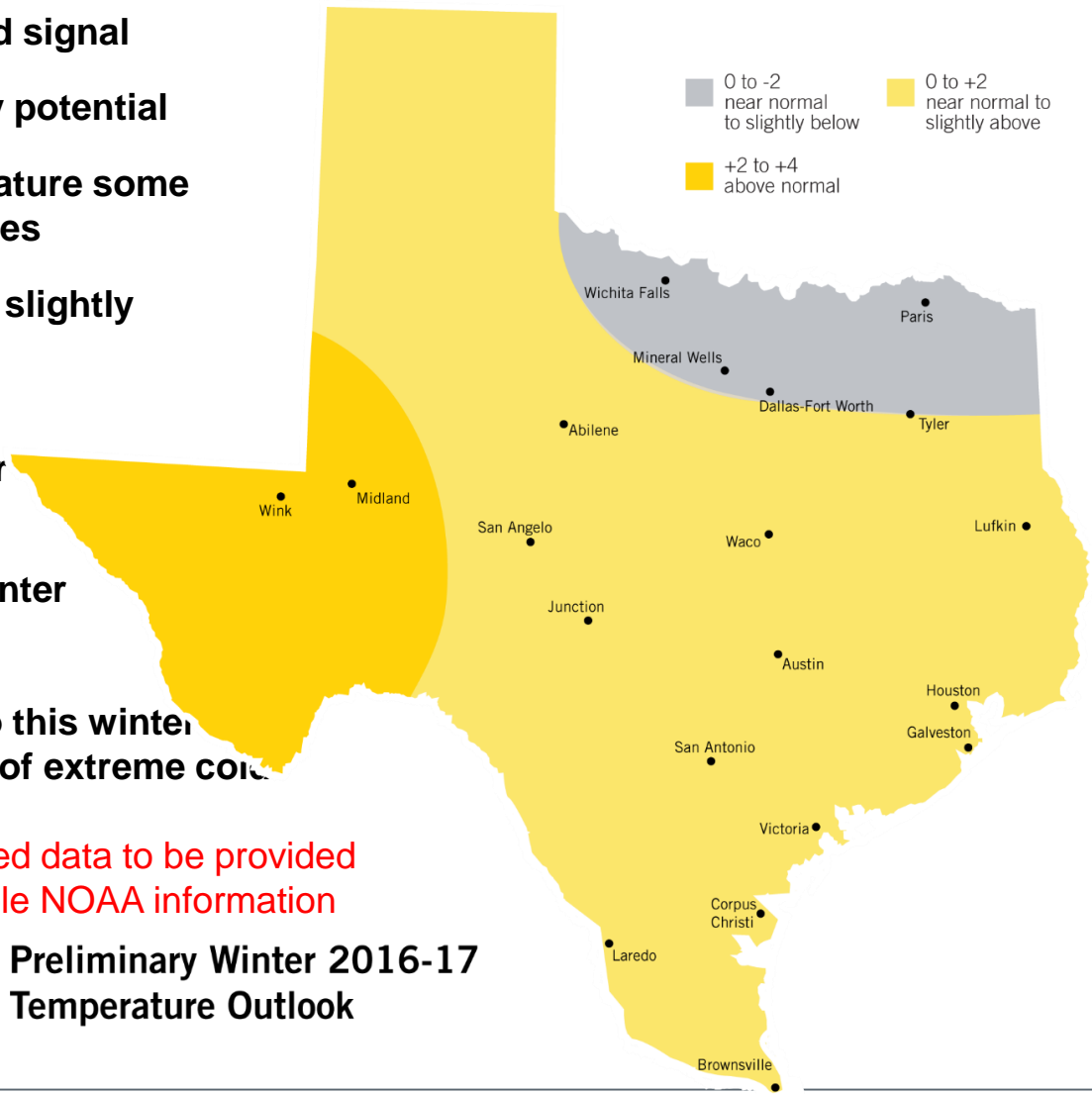
A weak La Niña was briefly present in the autumn season but has since weakened to a neutral state

November ENSO:  $-0.8^{\circ}\text{C}$   
Late-January ENSO:  $-0.2^{\circ}\text{C}$

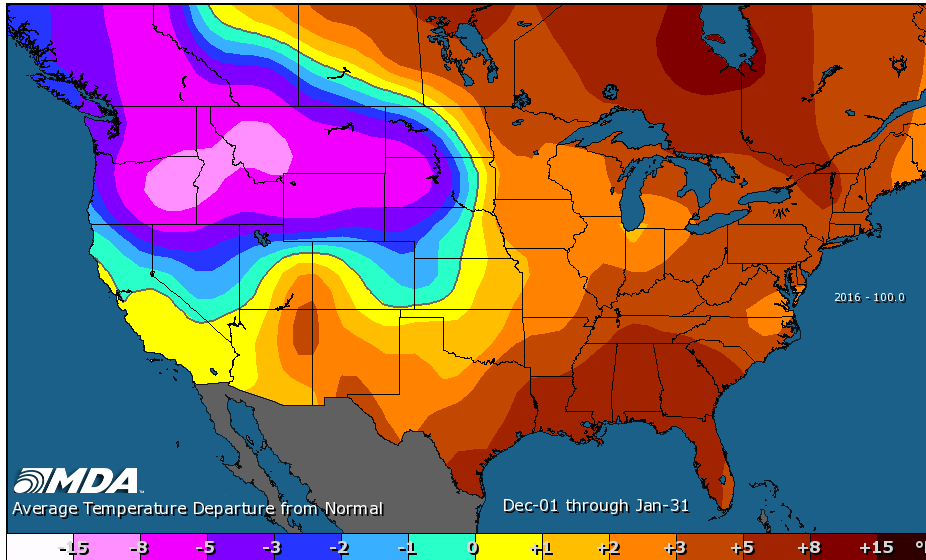
# Reviewing the Winter 2016-17 Temperature Outlook

- ❑ At this time, not seeing a strong cold signal
- ❑ December has the warmest anomaly potential
- ❑ January and February could both feature some periods of below-normal temperatures
- ❑ The overnight/morning lows show a slightly colder (relative to normal) look than the mean temperature
- ❑ Unlikely to be as warm as last winter (114<sup>th</sup> coldest) ... but not impossible
- ❑ Very Unlikely to be as cold as the winter of 2013-14 (30<sup>th</sup> coldest)
- ❑ The main story broadcast going into this winter: even mild winters can have periods of extreme cold
- ❑ **The December 1 – January 31 finalized data to be provided at presentation due to timing of available NOAA information**

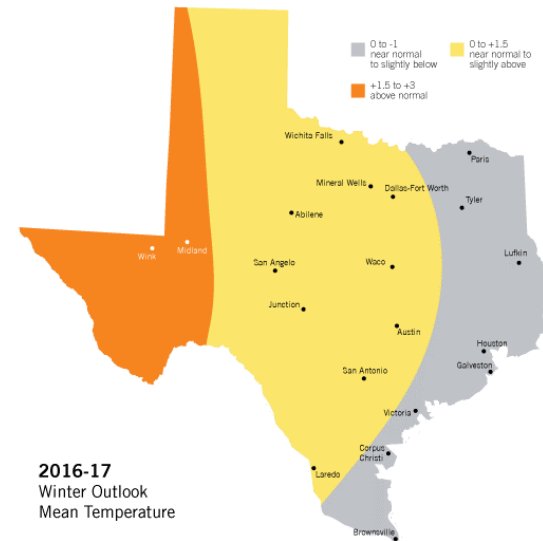
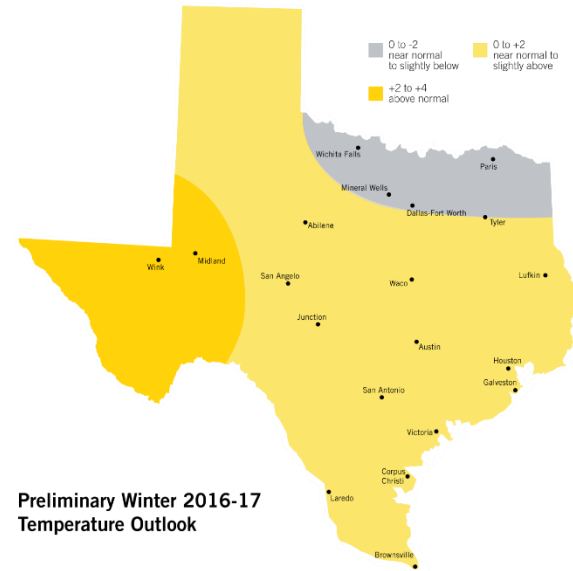
## Preliminary Winter 2016-17 Temperature Outlook



# Reviewing the Winter 2016-17 Temperature Outlook



- ❑ The December 1 – January 31 finalized data to be provided at presentation due to timing of available NOAA information



# Seasonal versus Extremes

- **February 2, 2011:**

- **Dallas:** 13° (20MPH wind)
- **Houston:** 21° (16MPH wind)
- **San Antonio:** 19° (25MPH wind)
- **Austin:** 18° (26MPH wind)
- **Brownsville:** 32° (26MPH wind)
- **Abilene:** 7° (16MPH wind)
- **Midland:** 6° (16MPH wind)
- Winter of 2010-11: 69<sup>th</sup> coldest in TX weather history

- **December 23, 1989:**

- **Dallas:** -1° (8MPH wind)
- **Houston:** 7° (9MPH wind)
- **San Antonio:** 6° (7MPH wind)
- **Austin:** 4° (9MPH wind)
- **Brownsville:** 17° (15MPH wind)
- **Abilene:** -3° (6MPH wind)
- **Midland:** 0° (4MPH wind)
- Winter of 1989-90: 72<sup>nd</sup> coldest in TX weather history

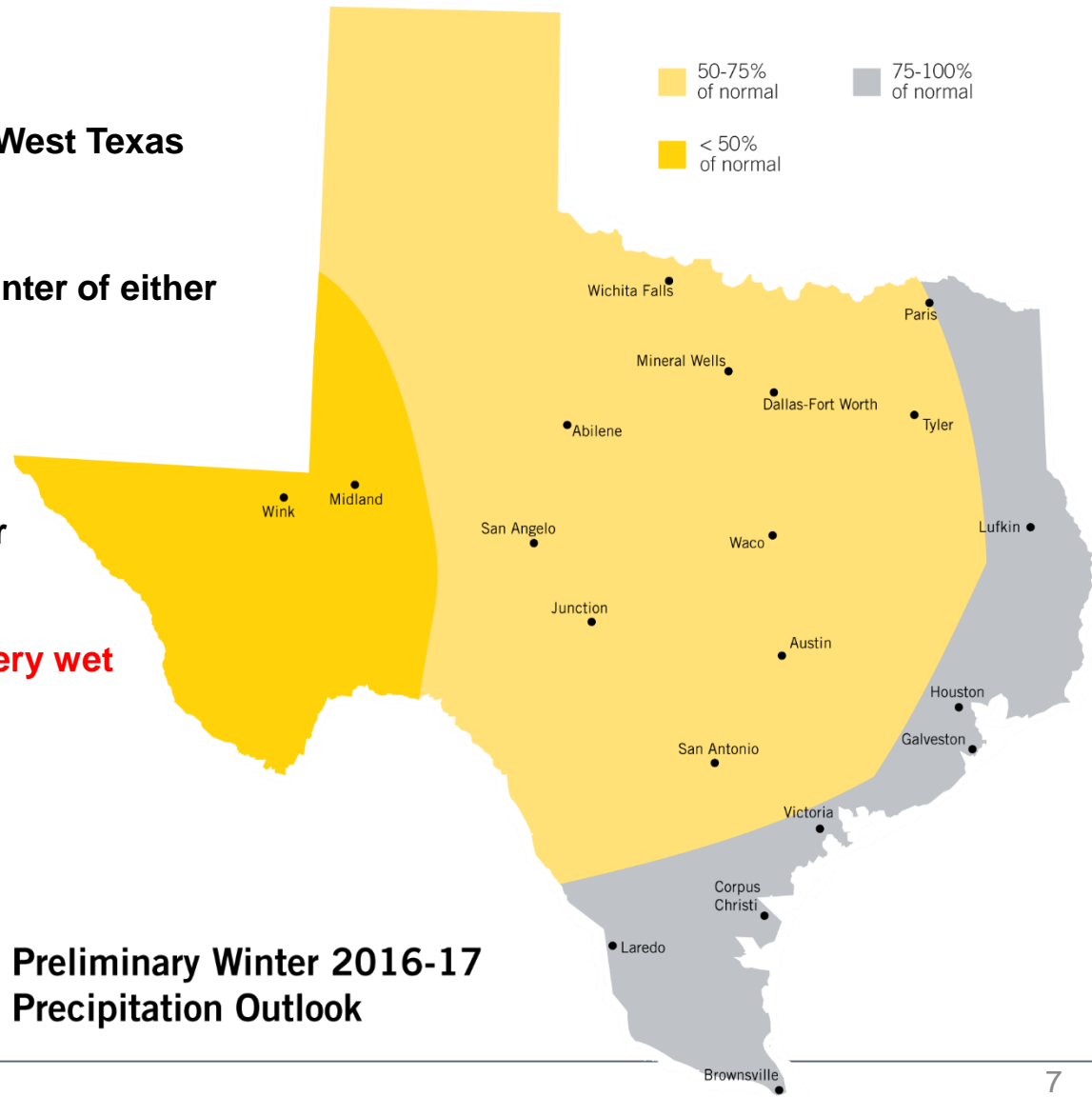
## January 7, 2017:

- **Dallas:** 14° (6MPH wind)
- **Houston:** 21° (11MPH wind)
- **San Antonio:** 20° (6MPH wind)
- **Austin:** 19° (10MPH wind)
- **Brownsville:** 30° (27MPH wind)
- **Abilene:** 9° (3MPH wind)
- **Midland:** 10° (4MPH wind)

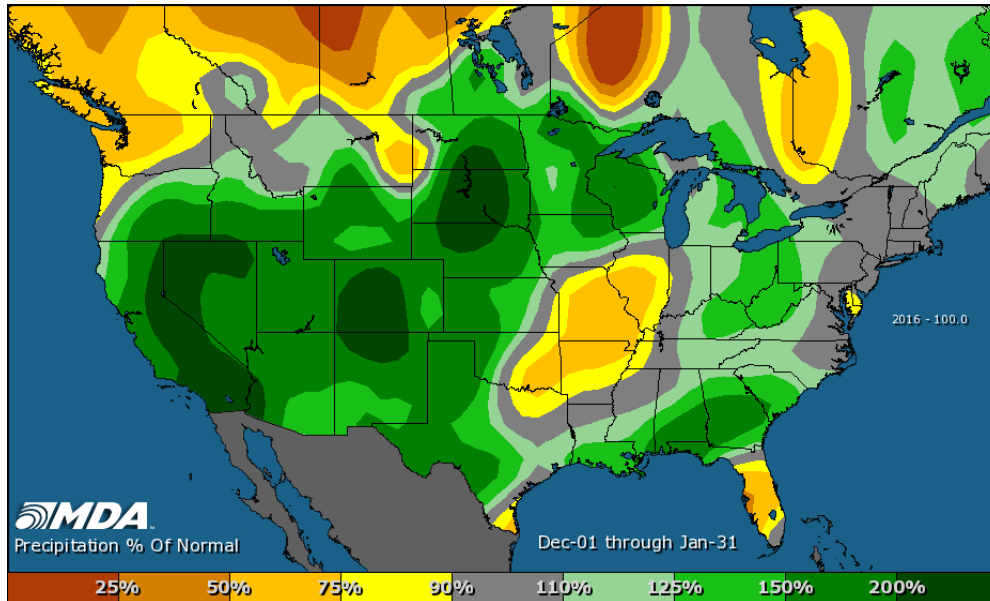
- Dec 2016- Jan 2017: 3<sup>rd</sup> least HDD's

# Reviewing the Winter 2016-17 Precipitation Outlook

- ❑ Drier than normal especially over West Texas
- ❑ Potentially drier than last winter
- ❑ Forecasting the 5<sup>th</sup> consecutive winter of either normal or drier-than-normal precipitation
- ❑ Temperature and precipitation outlooks would not support a winter with multiple major snow or ice events
- ❑ Wetter than forecast, due to two very wet periods



# Reviewing the Winter 2016-17 Precipitation Outlook

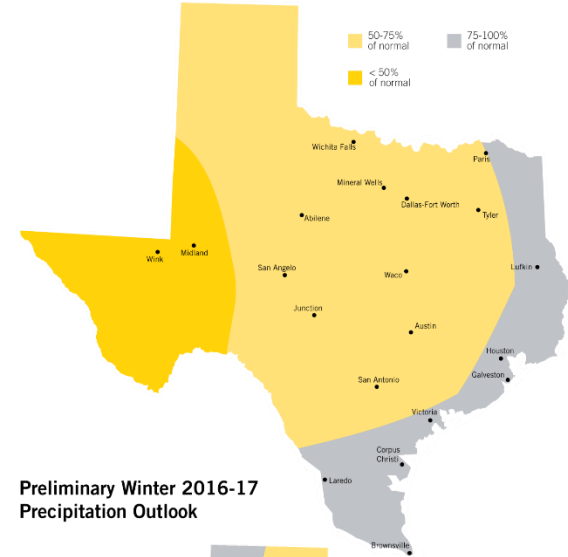


Two very wet periods this winter:

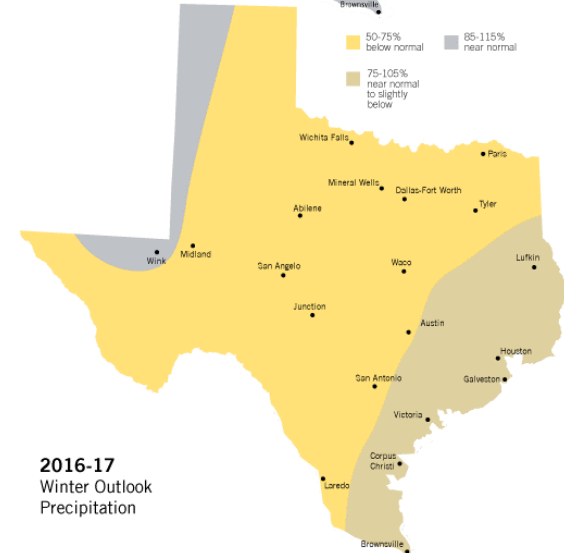
December 2-5

January 13-18

84% of the precipitation recorded at the large cities fell during these two periods



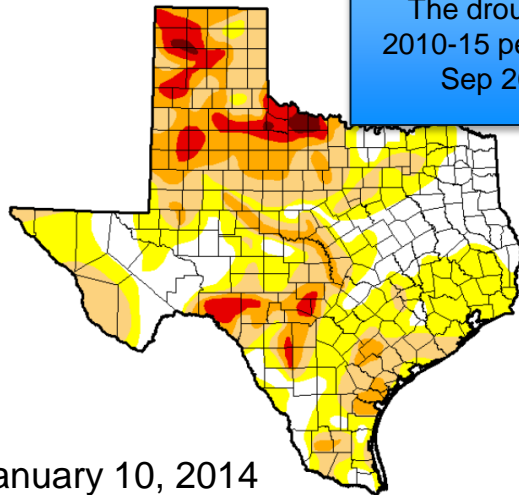
Preliminary Winter 2016-17  
Precipitation Outlook



2016-17  
Winter Outlook  
Precipitation

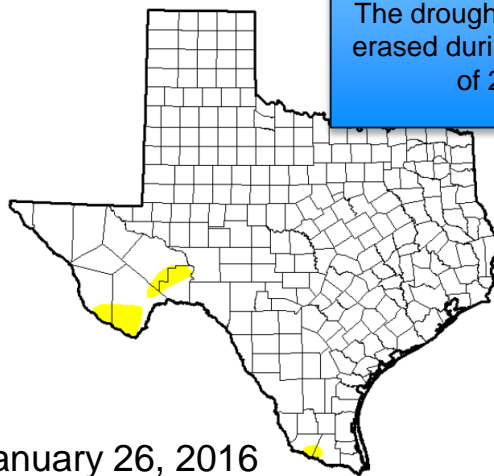


# Drought Update



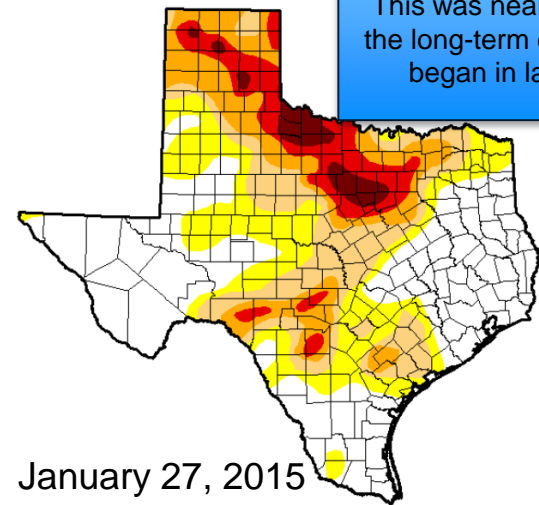
The drought of 2010-15 peaked in Sep 2011

January 10, 2014  
46% in moderate or worse drought



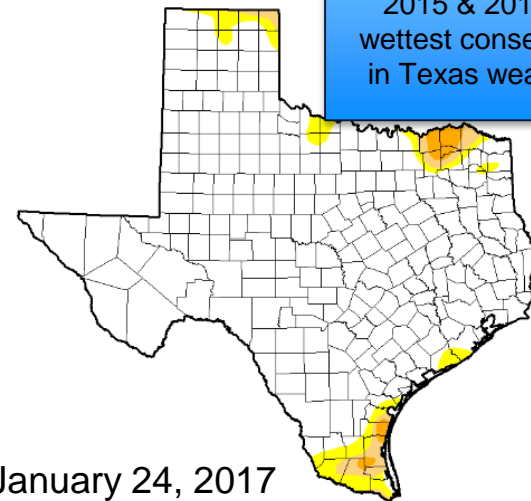
The drought was mostly erased during the spring of 2015

January 26, 2016  
0% in moderate or worse drought



This was near the end of the long-term drought that began in late-2010

January 27, 2015  
39% in moderate or worse drought



2015 & 2016 were the wettest consecutive years in Texas weather history

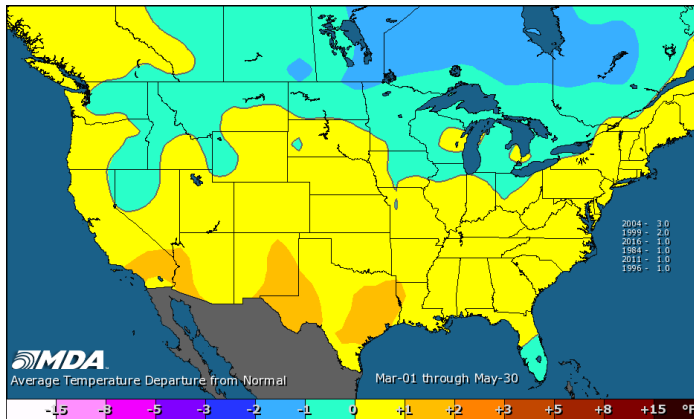
January 24, 2017  
3% in moderate or worse drought

PDO+ began in January 2014. No extreme, long-term droughts have been recorded during PDO+ cycles.

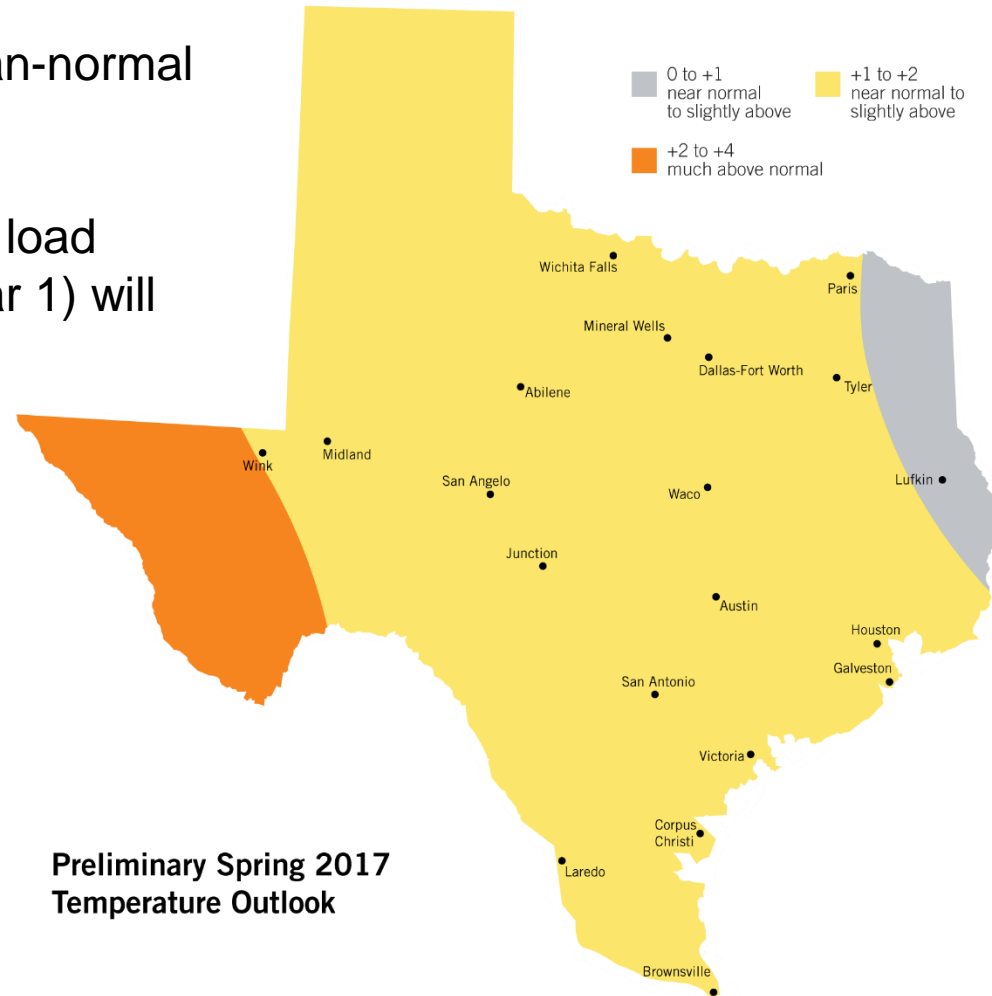
It's likely this PDO+ cycle will continue for another 10-20 years

# Spring 2016 Temperature Outlook

- ❑ Increasing potential for a warmer-than-normal spring
- ❑ This pattern would likely produce a spring load peak in May, due to cooling load
- ❑ The final forecast (to be released Mar 1) will very likely be warmer-than-normal



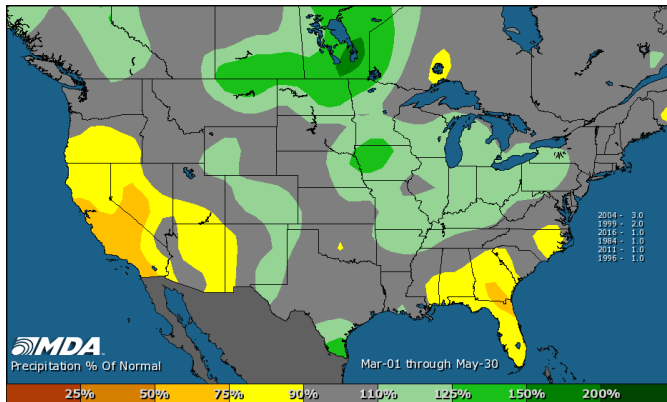
(January 2017 Update)



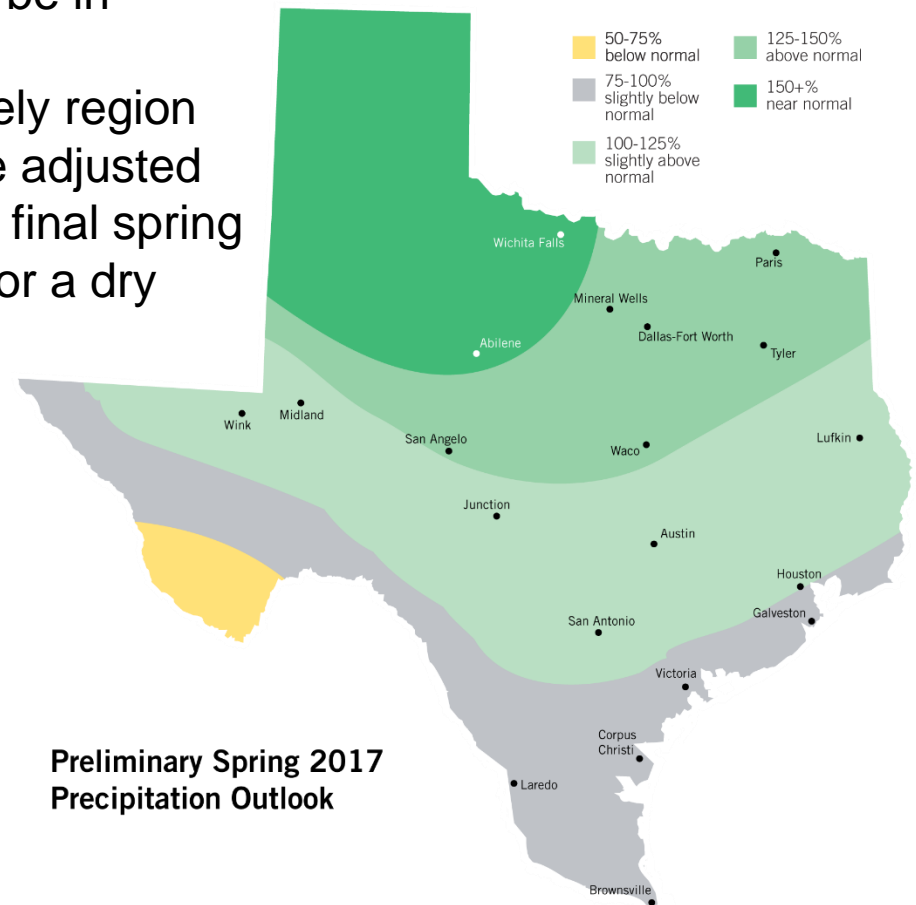
Preliminary Spring 2017  
Temperature Outlook

# Spring 2016 Precipitation Outlook

- ❑ This forecast may be adjusted drier
- ❑ Best bet for above-normal rainfall will be in North Texas – may be adjusted
- ❑ The Rio Grande Valley is the least likely region to record above-normal rainfall – may be adjusted
- ❑ Regardless of any adjustments to the final spring forecast, there are no strong indicators for a dry season



(January 2017 Update)



Preliminary Spring 2017  
Precipitation Outlook

# Recent Texas Weather Records

## Wettest Consecutive Years

1. **2015-16. 73.71"**
2. 1940-41. 71.08"
3. 1991-92. 70.80"
4. 1941-42. 69.43"
5. 1919-20. 69.06"
6. 1990-91. 68.64"
7. 1973-74. 67.18"
8. 1957-58. 66.37"
9. 2014-15. 65.24"
10. 1913-14. 64.90"

## Warmest Years (Mean)

1. 2012. 67.8°
2. 2011. 67.3°
3. **2016. 67.2°**
4. 2006. 67.1°
5. 1998. 67.0°
6. 1933. 66.6°
7. 1954. 66.6°
8. 1999. 66.6°
9. 1921. 66.5°
10. 1934. 66.5°
11. 2000. 66.5°

## Warmest Years (Min)

1. **2016. 55.2°**
2. 2012. 55.0°
3. 1998. 54.8°
4. 2015. 54.2°
5. 2000. 54.1°
6. 2006. 54.1°
7. 2004. 54.0°
8. 1999. 66.6°
9. 1921. 66.5°
10. 1934. 66.5°
11. 2000. 66.5°

(2016 was 11<sup>th</sup> hottest based on max temp)

# August 2016 & January 2017. Load versus Weather

## August 2016

2<sup>nd</sup> coolest since 2006

4<sup>th</sup> coolest in the past 20 years

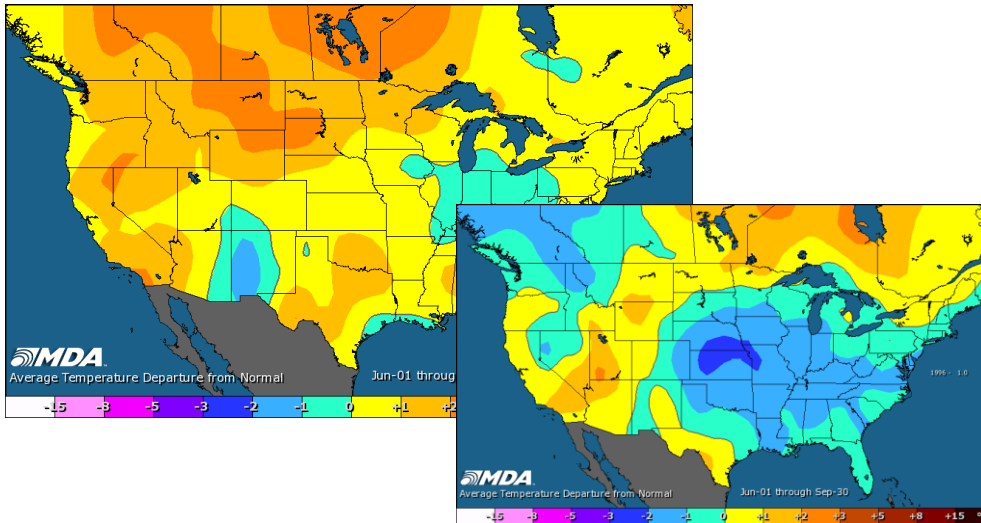
All-Time Peak  
of 71.093 MW set on  
August 11, 2016

## January 2017

January 2017 temperature  
ranking to be provided  
at presentation due to  
timing of available NOAA  
information

All-time Winter Peak of  
59,650 MW\* on January 6,  
2017

# Early Thoughts on the Summer 2017 Weather



- ❑ 2005-06 has some parallels to the current (2016-17) pattern
- ❑ Based on a 30-year normal, 2006 was a hotter-than-normal winter
- ❑ Based on a 10-year normal, 2006 was a bit cooler-than-normal
- ❑ It's quite possible the summer of 2017 will be no hotter, on average, than any of the past three summers, but will have more 100° days
- ❑ 1/9/17 Update: 1996 similarities. Milder, wetter. 2004 also being considered ... also mild, wet
- ❑ Not enough yet to forecast anything other than a normal summer – but preliminary forecast will be issued Mar 1

