

*National Weather Service  
in Lubbock, Texas*

Photo courtesy  
of Erin Shaw

# 2016 Calendar

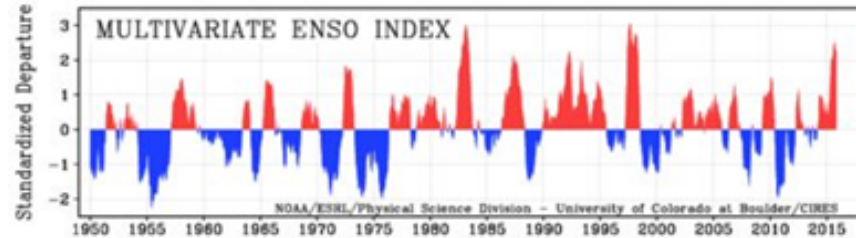
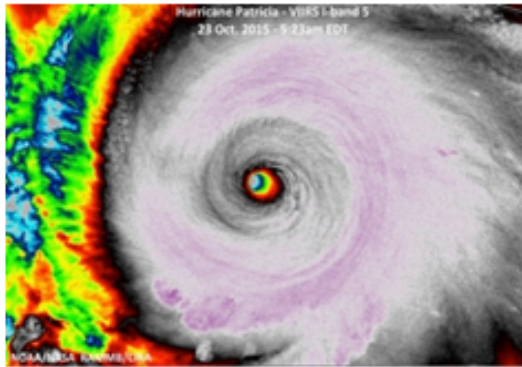
Caprock Canyons State Park



By late 2015 Oceanic Niño Indices in the tropical eastern Pacific Ocean were near all-time records - one of the strongest El Niño events of the past 65 years was underway

January 2016

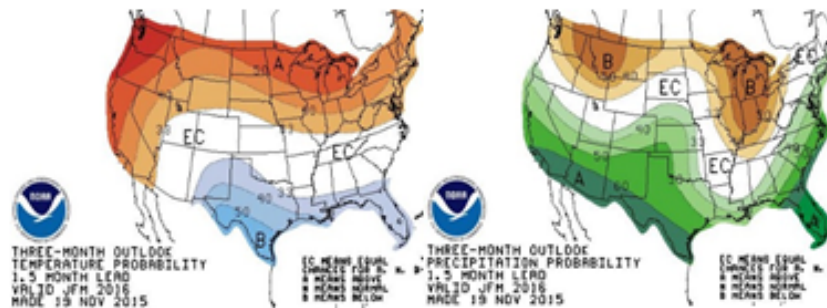
# Super El Niño



The Multivariate ENSO Index (MEI) combines 6 of the main observed variables into a single value. These variables include sea-level pressure, west-to-east and north-to-south winds, sea surface temperature, surface air temperature, and total cloudiness.

### What will early 2016 bring?

Forecasts for early 2016 issued by the Climate Prediction Center showed strong correlation to the El Niño signal. That is, the warm water eventually should lead to a series of Pacific waves crossing California and moving towards West Texas. Here are the January through March temperature (below left) and precipitation (below right) probability outlooks issued by the Climate Prediction Center on November 19, 2015.

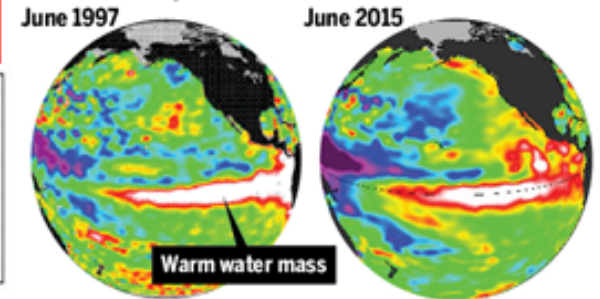


### El Niño spawns strongest-ever Western Hemisphere Hurricane

On October 23, 2015 Pacific Hurricane Patricia quickly grew into a category 5 hurricane. With sea level pressure of 879 millibars and sustained surface wind speeds to 200 mph, Patricia became the strongest hurricane on record in the Western Hemisphere. Powerful Hurricanes in the eastern Pacific Ocean are a hallmark of El Niño, spinning out of tepid waters near the west coast of Mexico. Through early fall of 2015, convective or tropical activity often moved north towards Baja California, which led to a number of low pressure systems crossing West Texas.

### El Niño growing

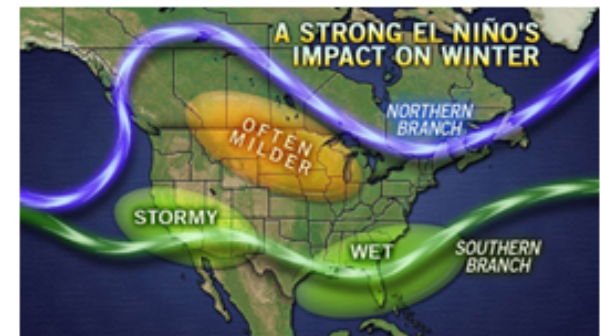
Although the trend could change in coming months, warming waters in the Pacific Ocean could bring soaking winter storms - as they did in the 1997-98 rainy season.



Source: NASA; Jet Propulsion Laboratory BAY AREA NEWS GROUP

### A simplified primer on El Niño

El Niño increases chances for wetter than normal weather over the southern U.S. Warm ocean water near the equator contributes to converging winds and disturbances that can lead to moist tropical plumes that extend into the southwest U.S. The moist plumes can then be exploited by passing storm systems, helping them to maximize their precipitation producing potential.



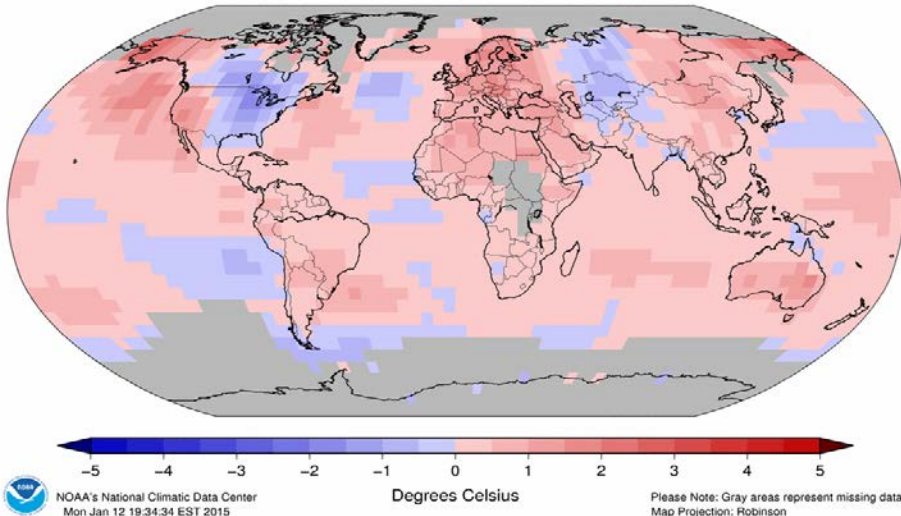
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>	NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500		Normals: 53 / 26 0.02 76-1997 / -2-1919 Lubbock Records 1 sr 752 am - sunrise ss 549 pm - sunset  New Year's Day	53 / 26 0.02 77-2009 / -2-1979 2 sr 752 am ss 550 pm   Last Quarter
3 53 / 26 0.01 83-2006 / -2-1947 sr 752 am ss 551 pm  Quadrantids Meteor Shower (Peaks Jan 3-4)	4 53 / 26 0.02 76-1918 / -9-1947 sr 752 am ss 552 pm	5 53 / 26 0.02 82-1927 / -4-1971 sr 752 am ss 552 pm	6 53 / 26 0.02 79-1927 / 0-1971 sr 752 am ss 553 pm	7 53 / 26 0.02 80-2006 / 6-1968 sr 753 am ss 554 pm	8 53 / 26 0.02 82-1969 / 3-1967 sr 753 am ss 555 pm	9 53 / 26 0.02 79-2002 / 2-1920 sr 753 am ss 556 pm   New Moon
10 53 / 26 0.01 76-1928 / -10-1930 sr 753 am ss 557 pm	11 54 / 26 0.02 76-1911 / -7-1918 sr 753 am ss 558 pm	12 54 / 26 0.02 77-1953 / -10-1918 sr 752 am ss 558 pm	13 54 / 26 0.02 79-1957 / -16-1963 sr 752 am ss 559 pm	14 54 / 26 0.01 82-1928 / 3-1963 sr 752 am ss 600 pm	15 54 / 26 0.02 80-1911 / 4-1963 sr 752 am ss 601 pm	16 54 / 26 0.02 80-1974 / 6-1930 sr 752 am ss 602 pm   First Quarter
17 54 / 26 0.02 87-1914 / -2-1930 sr 752 am ss 603 pm	18 54 / 26 0.03 79-1914 / -5-1930 sr 751 am ss 604 pm  Martin Luther King Jr. Day (Observed)	19 54 / 26 0.02 80-2000 / 0-1963 sr 751 am ss 656 pm	20 54 / 27 0.02 78-1986 / 7-1940 sr 751 am ss 606 pm	21 55 / 27 0.02 81-1950 / -4-1918 sr 750 am ss 607 pm	22 55 / 27 0.02 79-2009 / -6-1918 sr 750 am ss 608 pm	23 55 / 27 0.03 83-1972 / 3-1983 sr 749 am ss 609 pm   Full Moon
24 55 / 27 0.02 83-1970 / -1-1915 sr 749 am ss 610 pm  31 56 / 28 0.03 84-1911 / 2-1985 sr 745 am ss 616 pm Last Quarter	25 55 / 27 0.03 79-1952 / 7-1940 sr 749 am ss 611 pm	26 55 / 27 0.02 78-1975 / 7-1966 sr 748 am ss 612 pm	27 55 / 27 0.03 78-1970 / 5-1925 sr 747 am ss 613 pm	28 55 / 27 0.02 80-2003 / 6-2014 sr 747 am ss 614 pm	29 56 / 27 0.03 80-1911 / 1-1948 sr 746 am ss 615 pm	30 56 / 27 0.02 80-1967 / 6-1951 sr 746 am ss 615 pm

# Warming of Earth's Climate System Continues

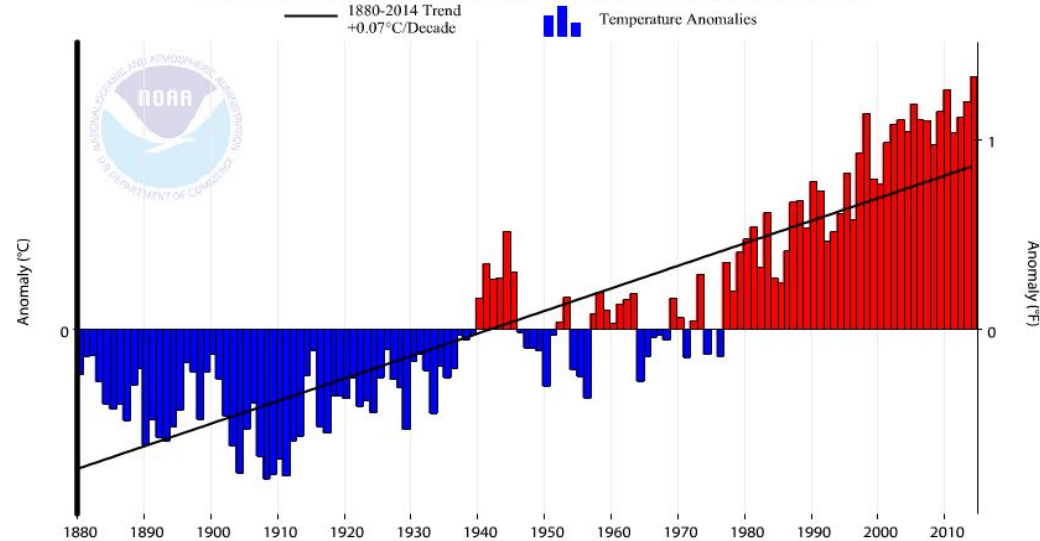
2014 was the warmest year across global land and ocean surfaces since records began in 1880. The annually-averaged temperature was 0.69°C (1.24°F) above the 20<sup>th</sup> century average of 13.9°C (57.0°F) and marked the 38<sup>th</sup> consecutive year (since 1977) with yearly global temperatures above average. Including 2014, 9 of the 10 warmest years in the 135-year period of record have occurred in the 21<sup>st</sup> century. The trend continued in 2015: 8 of the first 10 months of 2015 set all-time warmest months on record, while January and April were 2<sup>nd</sup> and 3<sup>rd</sup> warmest respectively. So it will come as no surprise when 2015 easily surpasses 2014 as the new warmest year on record.

**The Eastern U.S. was one of only a few parts of the world with below normal temperatures in 2014:**

Land & Ocean Temperature Departure from Average Jan–Dec 2014  
(with respect to a 1981–2010 base period)  
Data Source: GHCN–M version 3.2.2 & ERSST version 3b



Global Land and Ocean Temperature Anomalies, January–December



## Do El Niño and La Niña Influence global temperatures?

Global temperatures warm slightly faster during multiple years of Pacific Ocean warming (El Niño). Likewise, global temperatures trend slightly cooler during multiple years of Pacific Ocean cooling (La Niña). However, while four of the warmest years on record, including 2015, have occurred during El Niño, four other of the warmest years have been during La Niña. Ultimate warming, according to climate experts, will greatly depend on global response to greenhouse gas emission.

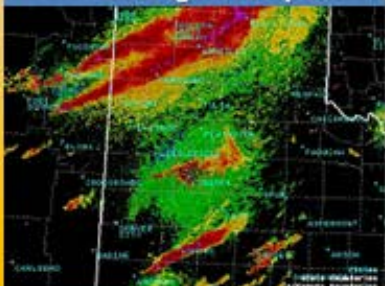
## What happened to the “Pause” in Global Warming?

The notion that a slower rate of warming occurred from 1998 to 2012 has been refuted by NOAA research. According to the study published in the journal *Science*, the rate of global warming was as fast, or faster, during this 15 year period as during the latter half of the 20<sup>th</sup> Century.

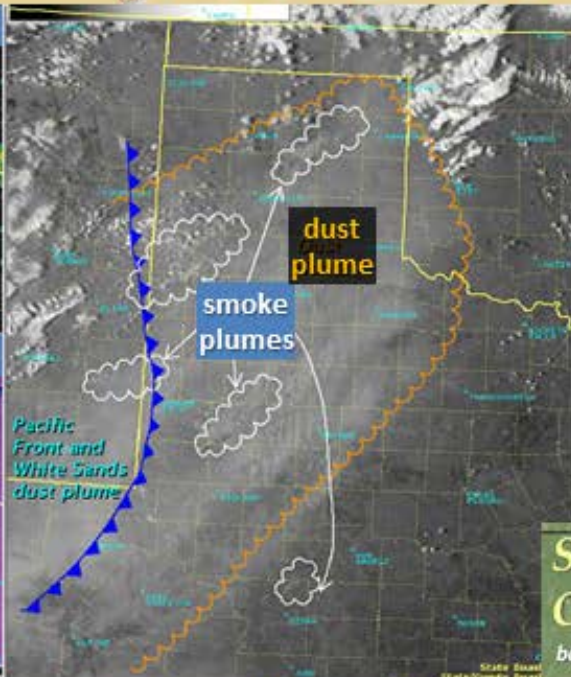
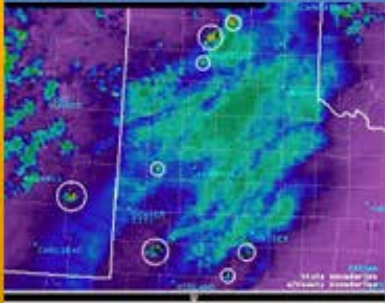
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	<b>1</b> Normals: 56 / 28 0.03 83-1963 / -7-1951 Lubbock Records sr 744 am - sunrise ss 617 pm - sunset	<b>2</b> 56 / 28 0.02 80-2003 / -4-1951 sr 744 am ss 618 pm  Groundhog Day	<b>3</b> 56 / 28 0.03 80-1934 / 4-1972 sr 743 am ss 619 pm	<b>4</b> 57 / 28 0.02 82-1925 / 3-1989 sr 742 am ss 620 pm	<b>5</b> 57 / 28 0.03 81-1937 / 3-1982 sr 742 am ss 621 pm	<b>6</b> 57 / 28 0.02 81-2015 / 4-1956 sr 741 am ss 622 pm
<b>7</b> 57 / 29 0.03 84-2015 / -3-1933 sr 740 am ss 623 pm	<b>8</b> 57 / 29 0.03 83-1951 / -17-1933 (all-time) sr 739 am ss 624 pm   New Moon	<b>9</b> 58 / 29 0.03 83-1976 / 0-1933 sr 738 am ss 625 pm	<b>10</b> 58 / 29 0.03 84-1962 / 1-1929 sr 737 am ss 626 pm  Ash Wednesday	<b>11</b> 58 / 29 0.03 85-1962 / 6-1981 sr 736 am ss 627 pm	<b>12</b> 58 / 29 0.02 86-1962 / 9-1958 sr 735 am ss 628 pm	<b>13</b> 59 / 30 0.03 81-1979 / 7-1963 sr 735 am ss 629 pm
<b>14</b> 59 / 30 0.03 87-1979 / 12-2004 sr 734 am ss 630 pm  Valentine's Day	<b>15</b> 59 / 30 0.02 87-2014 / 8-1951 sr 733 am ss 631 pm Presidents' Day  First Quarter	<b>16</b> 59 / 30 0.03 85-2011 / 13-1979 sr 732 am ss 632 pm	<b>17</b> 59 / 31 0.03 85-1970 / 0-1978 sr 731 am ss 633 pm	<b>18</b> 60 / 31 0.02 83-1996 / -2-1978 sr 730 am ss 633 pm	<b>19</b> 60 / 31 0.03 83-1986 / 2-1978 sr 728 am ss 634 pm	<b>20</b> 60 / 31 0.03 82-1996 / 4-1918 sr 727 am ss 635 pm
<b>21</b> 60 / 31 0.02 84-1996 / 6-1964 sr 726 am ss 636 pm	<b>22</b> 61 / 32 0.03 87-1996 / 12-1911 sr 725 am ss 637 pm   Full Moon	<b>23</b> 61 / 32 0.02 85-2009 / 9-1914 sr 724 am ss 638 pm	<b>24</b> 61 / 32 0.03 89-1918 / 1-1960 sr 723 am ss 639 pm	<b>25</b> 61 / 32 0.02 86-1989 / -8-1960 sr 722 am ss 640 pm	<b>26</b> 62 / 33 0.03 85-1918 / 8-1935 sr 721 am ss 640 pm	<b>27</b> 62 / 33 0.03 81-2006 / 10-1934 sr 719 am ss 641 pm
<b>28</b> 62 / 33 0.03 89-2006 / 7-1962 sr 718 am ss 642 pm	<b>29</b> 62 / 33 0.00 87-1940 / 14-1960 sr 717 am ss 643 pm		 Follow us on facebook at:  <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>	NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES: Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500		 Follow us on twitter at:  <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>

# Fire Weather

Radar sensing smoke plumes



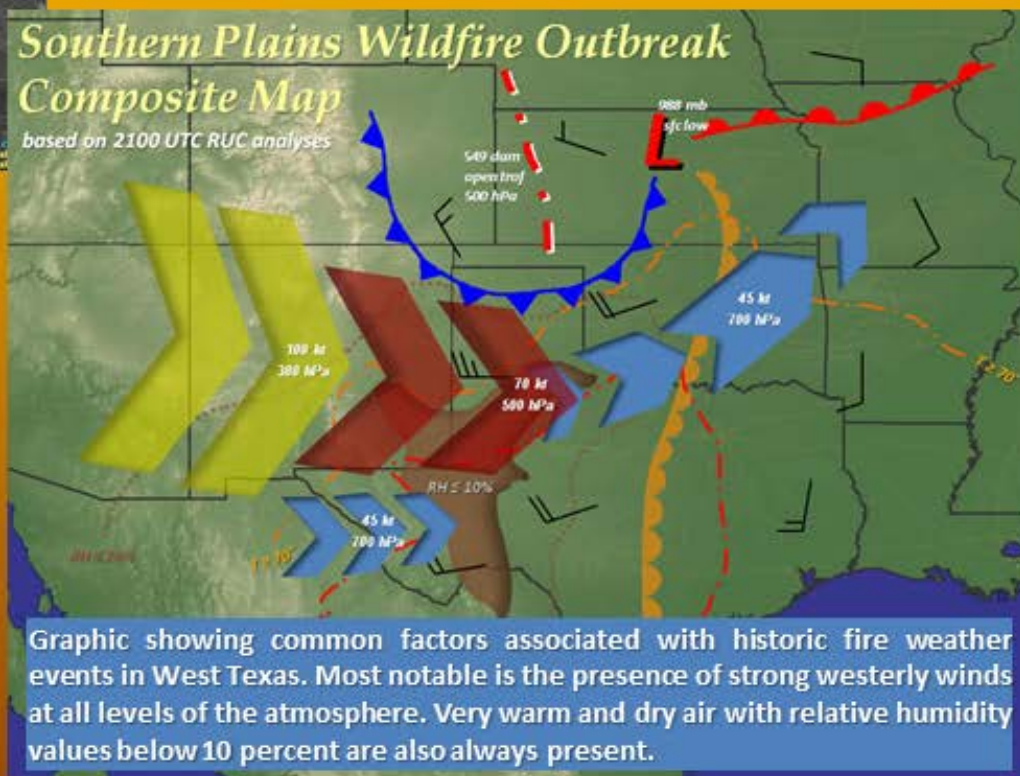
Satellite detects heat & dust











- ❖ Strong winds, low relative humidity and above normal (warm) temperatures all contribute to weather supportive of fires
- ❖ Need volatile fuels to burn (dry/cured grasses) in addition to favorable weather
- ❖ Greatest probability of dangerous fire weather conditions in West Texas is from late February through April

## February 27, 2011 Wildfires (above)

- ❖ Vegetation blossomed to record levels after a wet period lasting from the winter of 2009-2010 through October 2010
- ❖ La Niña developed by late 2010 into 2011, contributing to an overall warmer and drier winter and early spring
- ❖ A strong upper level low approaching from the Desert Southwest brought dry and very windy conditions with well above normal temperatures in the upper 70s to middle 80s

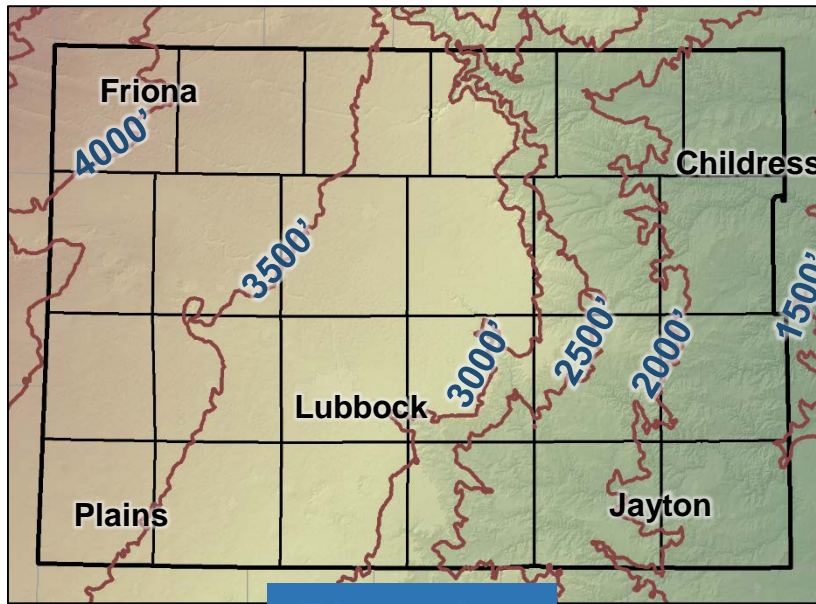


SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		<b>1</b> Normals: 63 / 33 0.03 89-2006 / 5-1922 Lubbock Records sr 716 am - sunrise ss 644 pm - sunset 	<b>2</b> 63 / 34 0.03 86-1974 / -2-1922 sr 715 am ss 645 pm	<b>3</b> 63 / 34 0.03 88-2009 / 7-1943 sr 713 am ss 645 pm	<b>4</b> 63 / 34 0.03 89-2009 / -1-1917 sr 712 am ss 646 pm	<b>5</b> 64 / 34 0.04 90-1916 / 11-1989 sr 711 am ss 647 pm
<b>6</b> 64 / 35 0.03 87-1934 / 10-1943 sr 710 am ss 648 pm	<b>7</b> 64 / 35 0.03 88-2006 / 11-1996 sr 708 am ss 649 pm	<b>8</b> 64 / 35 0.03 87-1918 / 12-1967 sr 707 am ss 650 pm 	<b>9</b> 65 / 35 0.04 88-1911 / 13-1969 sr 706 am ss 650 pm	<b>10</b> 65 / 36 0.03 88-1911 / 4-1948 sr 704 am ss 651 pm	<b>11</b> 65 / 36 0.03 95-1989 / 2-1948 sr 703 am ss 652 pm	<b>12</b> 66 / 36 0.04 94-1989 / 10-1948 sr 702 am ss 653 pm
<b>13</b> 66 / 36 0.03 91-1916 / 12-1950 sr 801 am ss 753 pm Daylight Saving Time begins	<b>14</b> 66 / 37 0.04 86-1972 / 13-1954 sr 759 am ss 754 pm	<b>15</b> 66 / 37 0.03 88-2013 / 17-1947 sr 758 am ss 755 pm 	<b>16</b> 67 / 37 0.04 87-1966 / 16-1923 sr 757 am ss 756 pm	<b>17</b> 67 / 37 0.03 90-2011 / 18-1970 sr 755 am ss 757 pm St. Patrick's Day	<b>18</b> 67 / 37 0.04 88-1916 / 11-1923 sr 754 am ss 757 pm	<b>19</b> 68 / 38 0.04 87-1995 / 11-1923 sr 753 am ss 758 pm Spring Equinox (11:30 pm)
<b>20</b> 68 / 38 0.03 90-1916 / 8-1965 sr 751 am ss 759 pm	<b>21</b> 68 / 38 0.04 93-1997 / 17-1983 sr 750 am ss 800 pm	<b>22</b> 68 / 38 0.04 86-1935 / 18-1952 sr 748 am ss 800 pm	<b>23</b> 69 / 39 0.04 87-2015 / 13-1952 sr 747 am ss 801 pm 	<b>24</b> 69 / 39 0.04 88-1929 / 22-1965 sr 746 am ss 802 pm	<b>25</b> 69 / 39 0.04 90-1998 / 19-2013 sr 744 am ss 803 pm	<b>26</b> 70 / 40 0.04 88-1956 / 16-1965 sr 743 am ss 803 pm
<b>27</b> 70 / 40 0.04 94-1971 / 12-1931 sr 742 am ss 804 pm Easter Sunday	<b>28</b> 70 / 40 0.04 90-1963 / 16-1931 sr 740 am ss 805 pm	<b>29</b> 70 / 40 0.04 91-2012 / 18-1944 sr 739 am ss 805 pm	<b>30</b> 71 / 41 0.03 91-2010 / 16-1987 sr 738 am ss 806 pm	<b>31</b> 71 / 41 0.04 95-1946 / 19-1931 sr 736 am ss 807 pm 	NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES: Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500	 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>

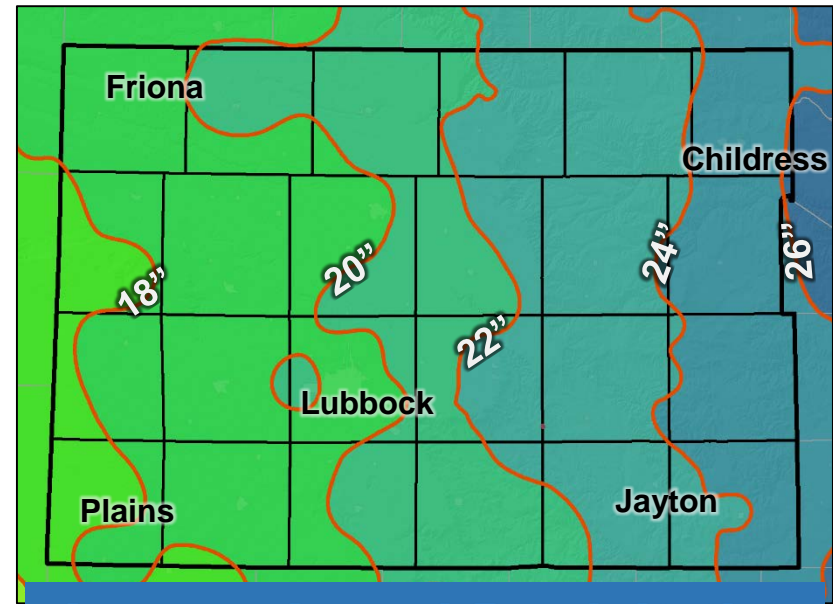
# How Elevation Affects our Weather

Despite the often held perception, West Texas is NOT flat! Elevation across the region ranges from 4400 feet in northwest Parmer County to 1450 feet in northeast Stonewall County. The difference in elevation influences our weather through many different ways.

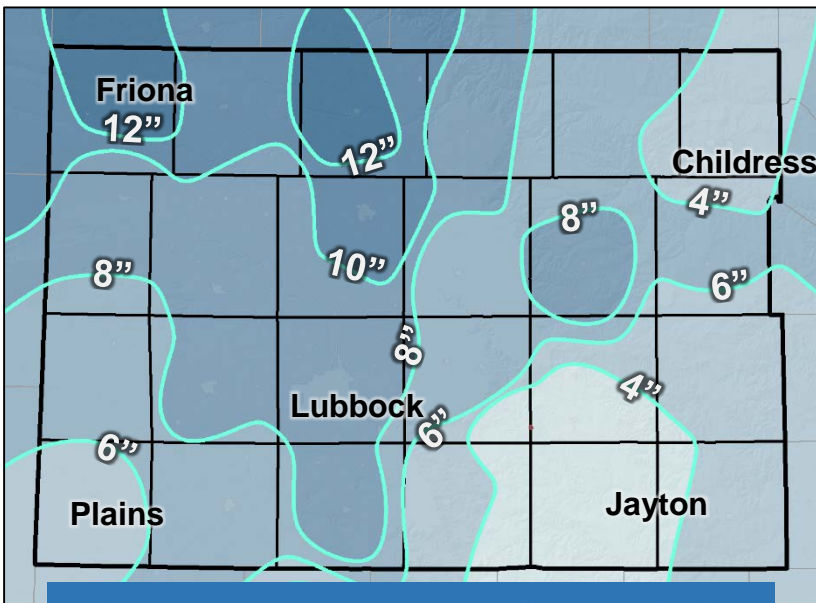
Average precipitation increases from west to east, while average snowfall generally decreases from the northwest to the southeast. Moisture most closely follows the contours of elevation as it moves uphill from the Gulf of Mexico.



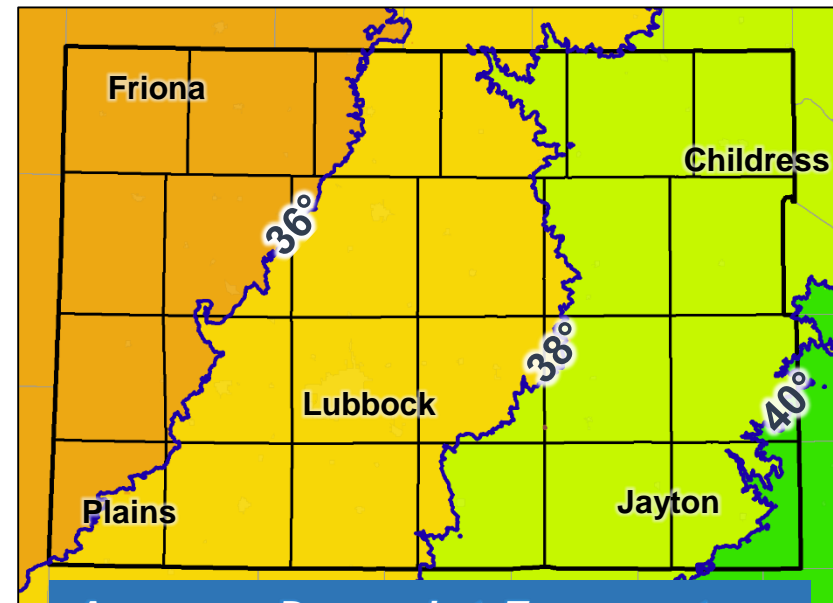
**Elevation**



**Average Annual Precipitation**







**Average Annual Snowfall**



**Average Dewpoint Temperature**



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on facebook at:  <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>		NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  <b>Lubbock</b> 162.400 <b>Dimmitt</b> 162.500 <b>Plainview</b> 162.450 <b>Childress</b> 162.525 <b>Dickens</b> 162.500	  Follow us on twitter at:  <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		<b>1</b> Normals: 71 / 41 0.04 96-1946 / 22-1948 Lubbock Records sr 735 am - sunrise ss 808 pm - sunset  <b>April Fool's Day</b>	<b>2</b> 92-2011 / 20-1936  sr 734 am ss 808 pm
<b>3</b> 72 / 42 0.04 94-2011 / 26-1975  sr 732 am ss 809 pm	<b>4</b> 72 / 42 0.04 92-1928 / 18-1920  sr 731 am ss 810 pm	<b>5</b> 72 / 42 0.04 92-2006 / 21-1917  sr 730 am ss 811 pm	<b>6</b> 73 / 43 0.04 96-1972 / 21-1936  sr 728 am ss 811 pm	<b>7</b> 73 / 43 0.04 93-1930 / 21-1936  sr 727 am ss 812 pm   New Moon	<b>8</b> 73 / 43 0.05 91-1930 / 23-1938  sr 726 am ss 813 pm	<b>9</b> 74 / 44 0.04 94-1939 / 23-1973  sr 725 am ss 814 pm
<b>10</b> 74 / 44 0.04 93-1972 / 22-2013  sr 723 am ss 814 pm	<b>11</b> 74 / 44 0.04 94-1972 / 25-1932  sr 722 am ss 815 pm	<b>12</b> 74 / 44 0.04 96-1972 / 22-1997  sr 721 am ss 816 pm	<b>13</b> 75 / 45 0.05 91-2006 / 26-1957  sr 719 am ss 817 pm	<b>14</b> 75 / 45 0.04 93-2006 / 27-1933  sr 718 am ss 817 pm   First Quarter	<b>15</b> 75 / 45 0.04 92-2006 / 25-2014  sr 717 am ss 818 pm	<b>16</b> 76 / 46 0.05 100-1925 / 31-1947  sr 716 am ss 819 pm
<b>17</b> 76 / 46 0.05 94-2006 / 23-1921  sr 715 am ss 820 pm	<b>18</b> 76 / 47 0.04 96-1987 / 29-1953  sr 713 am ss 820 pm	<b>19</b> 76 / 47 0.05 92-2001 / 25-2013  sr 712 am ss 821 pm	<b>20</b> 77 / 47 0.05 93-1925 / 30-1933  sr 711 am ss 822 pm	<b>21</b> 77 / 48 0.04 98-1989 / 28-1918  sr 710 am ss 823 pm	<b>22</b> 77 / 48 0.06 100-1989 / 29-1927  sr 709 am ss 823 pm   Full Moon  Earth Day	<b>23</b> 78 / 48 0.05 97-1989 / 30-1928  sr 708 am ss 824 pm  Lynids Meteor Shower (Peaks Apr 22-23)
<b>24</b> 78 / 49 0.05 95-1996 / 25-2013  sr 706 am ss 825 pm	<b>25</b> 78 / 49 0.06 104-2012 / 35-1927  sr 705 am ss 826 pm	<b>26</b> 78 / 49 0.05 96-1943 / 29-1947  sr 704 am ss 826 pm	<b>27</b> 79 / 50 0.06 97-1996 / 27-1920  sr 703 am ss 827 pm	<b>28</b> 79 / 50 0.06 94-1992 / 35-1994  sr 702 am ss 828 pm	<b>29</b> 79 / 50 0.06 97-2011 / 31-1968  sr 701 am ss 829 pm   Last Quarter	<b>30</b> 80 / 51 0.06 94-2013 / 33-1918  sr 700 am ss 829 pm

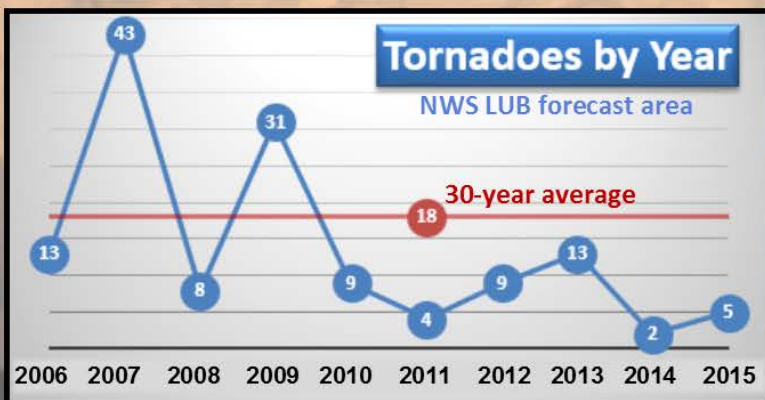
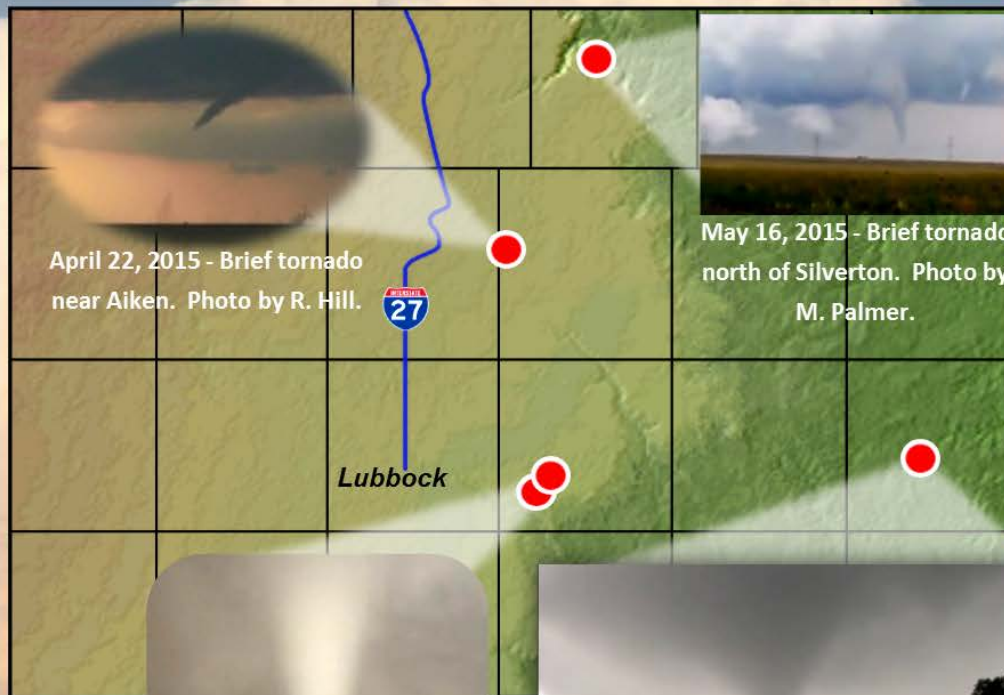
## A Good Quiet, but...

For the sixth consecutive year, the NWS Lubbock forecast area enjoyed a below average number of tornadoes. Of the five tornadoes confirmed in 2015, all remained over open land and were rated EF-0. Since 1980, the 30-year average for tornadoes in our 24-county warning area is 18.

This quiet stretch of tornadoes is obviously good news to area residents, but from a public safety perspective there is evidence that shows such trends can breed complacency over time. Similar to how a lack of hurricanes along the U.S. coastline triggers a false sense of security in coastal residents, a limited number of tornadoes over a region of tornado alley can create the same type of optimism bias in people. Such beliefs often impede the success of public safety campaigns and in the worst cases can cost people their lives should they disregard severe weather warnings. This is why the NWS performs safety training year-round regardless of how quiet recent years have been.

# Tornadoes of 2015



## NWS LUBBOCK FORECAST AREA



May 6, 2015 - The second of two tornadoes that tracked south of Ralls. Photo by K. Duesterhaus.



May 13, 2015 - Tornado passing through the 6666 Ranch just south of Highway 82/114. Photo by S. Tarver.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>1</b> Normals: 80 / 51 0.05 96-2012 / 32-1970 Lubbock Records sr 659 am - sunrise ss 830 pm - sunset	<b>2</b> 80 / 51 0.06 97-2012 / 30-1967 sr 658 am ss 831 pm	<b>3</b> 80 / 52 0.05 98-2012 / 27-2013 sr 657 am ss 832 pm	<b>4</b> 81 / 52 0.06 104-1947 / 35-1935 sr 656 am ss 833 pm	<b>5</b> 81 / 52 0.05 99-2012 / 34-1953 sr 655 am ss 833 pm  Cinco De Mayo	<b>6</b> 81 / 53 0.06 99-2000 / 32-1917 sr 654 am ss 834 pm   New Moon	<b>7</b> 81 / 53 0.05 100-2009 / 29-1917 sr 653 am ss 835 pm  Eta Aquarids Meteor Shower (Peaks May 6-7)
<b>8</b> 82 / 53 0.06 102-1989 / 31-1938 sr 652 am ss 836 pm  Mother's Day	<b>9</b> 82 / 54 0.06 97-2011 / 38-1961 sr 652 am ss 836 pm	<b>10</b> 82 / 54 0.06 99-2000 / 33-1918 sr 651 am ss 837 pm	<b>11</b> 83 / 54 0.07 101-2000 / 37-1930 sr 650 am ss 838 pm	<b>12</b> 83 / 55 0.06 98-1962 / 35-1960 sr 649 am ss 839 pm	<b>13</b> 83 / 55 0.08 100-2006 / 37-1971 sr 648 am ss 839 pm   First Quarter	<b>14</b> 83 / 55 0.07 100-1996 / 35-1953 sr 648 am ss 840 pm
<b>15</b> 84 / 56 0.06 103-1996 / 34-1967 sr 647 am ss 841 pm	<b>16</b> 84 / 56 0.07 102-1996 / 37-1945 sr 646 am ss 842 pm	<b>17</b> 84 / 56 0.08 101-1996 / 41-1986 sr 646 am ss 842 pm	<b>18</b> 84 / 57 0.08 103-2003 / 42-1916 sr 645 am ss 843 pm	<b>19</b> 85 / 57 0.08 105-1996 / 42-1971 sr 644 am ss 844 pm	<b>20</b> 85 / 57 0.08 102-2006 / 40-1931 sr 644 am ss 844 pm	<b>21</b> 85 / 58 0.09 101-1989 / 39-1967 sr 643 am ss 845 pm   Full Moon
<b>22</b> 85 / 58 0.09 105-1996 / 40-1931 sr 643 am ss 846 pm	<b>23</b> 86 / 58 0.09 105-2000 / 45-1917 sr 642 am ss 847 pm	<b>24</b> 86 / 58 0.09 109-2000 / 40-1930 sr 641 am ss 847 pm	<b>25</b> 86 / 59 0.09 102-2012 / 44-1924 sr 641 am ss 848 pm	<b>26</b> 86 / 59 0.09 101-1945 / 43-1950 sr 641 am ss 849 pm	<b>27</b> 86 / 59 0.08 103-1984 / 48-1961 sr 640 am ss 849 pm	<b>28</b> 87 / 60 0.10 104-2011 / 43-1917 sr 640 am ss 850 pm
<b>29</b> 87 / 60 0.10 104-2011 / 38-1947 sr 639 am ss 850 pm   Last Quarter	<b>30</b> 87 / 60 0.09 103-1998 / 45-1983 sr 639 am ss 851 pm  Memorial Day	<b>31</b> 87 / 61 0.10 102-1916 / 43-1983	 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500	 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>

# The Enhanced Fujita Scale (EF-Scale)

## The Basics

The EF-Scale is used to rate the strength of tornadoes in the United States and Canada based on the damage they cause.

Storm near Olton on April 21, 2007



Scale	Wind Speed (estimated)	Frequency	Potential Damage	Examples of Damage
<b>EF0</b>	65-85 mph	53.5%	Minor or no damage	-shingle & siding damage -branches broken off trees
<b>EF1</b>	86-110 mph	31.6%	Moderate damage	-roofs severely stripped -mobile homes overturned
<b>EF2</b>	111-135 mph	10.7%	Considerable damage	-roofs torn off, foundations shifted -mobile homes destroyed
<b>EF3</b>	136-165 mph	3.4%	Severe damage	-stories of well-constructed homes destroyed -trains overturned; trees debarked; cars lifted
<b>EF4</b>	166-200 mph	0.7%	Extreme damage	-well-constructed frame homes levelled -cars and large objects thrown
<b>EF5</b>	> 200 mph	< 0.1%	Total destruction	-well built homes levelled and swept away -some cars and trucks can be thrown ~1 mile

Example of EF3 damage in St. Louis, Missouri after May 31, 2013 tornado



## EF-Scale Limitations

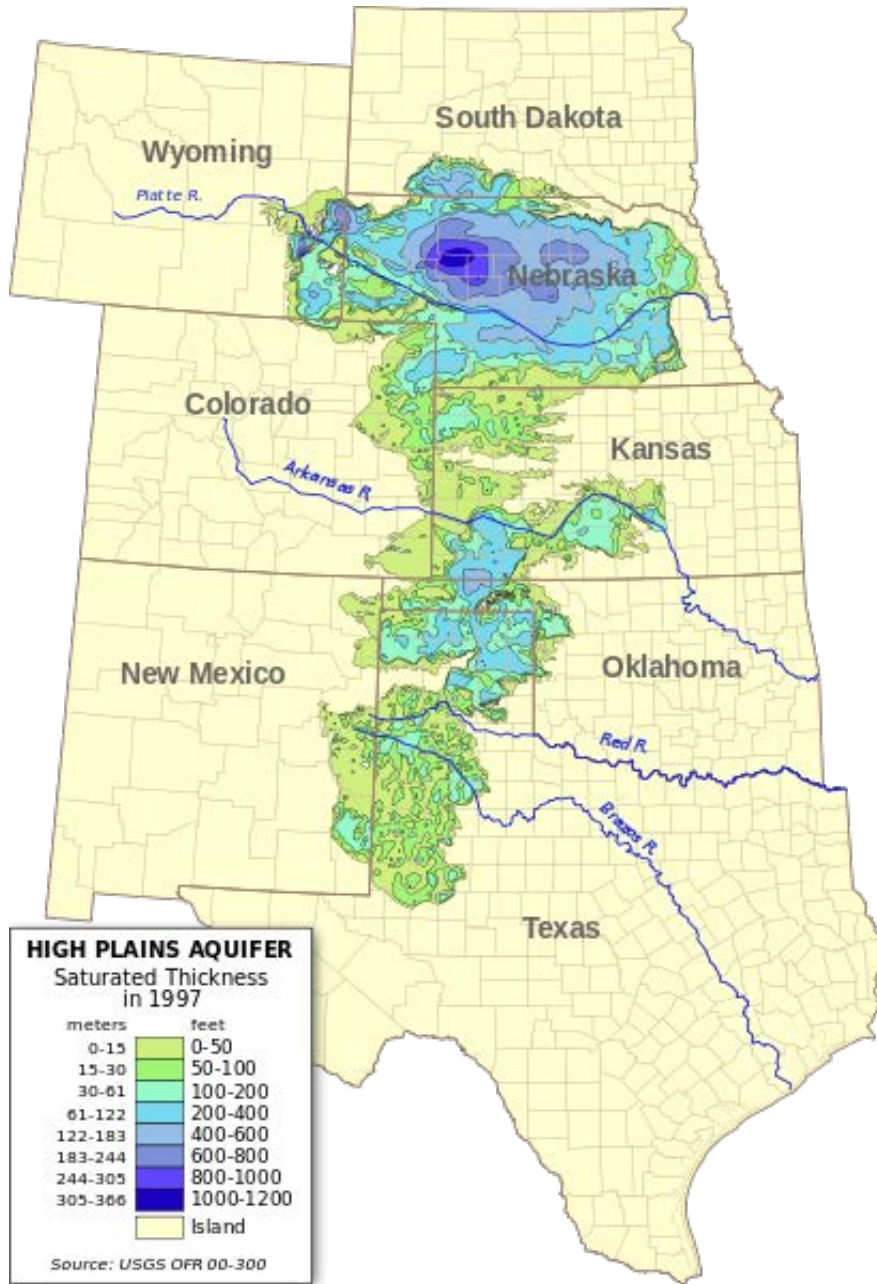
The EF-Scale uses damage to rate tornado strength because in most cases it is impossible to directly measure the wind speeds in tornadoes. Hence, a violent tornado that is over an open field and does no measureable damage will be rated as an EF0. In addition, varying building codes and construction quality can make it difficult to assess the true strength (wind speed) of a tornado.

Example of EF5 damage in Moore, Oklahoma after May 20, 2013 tornado



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on facebook at:  <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>	NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  <b>Lubbock</b> 162.400 <b>Dimmitt</b> 162.500 <b>Plainview</b> 162.450 <b>Childress</b> 162.525 <b>Dickens</b> 162.500		Normals: <b>88 / 61 0.11</b> 107-1998 / 45-1964 Lubbock Records <b>1</b> sr 638 am - sunrise ss 852 pm - sunset	<b>88 / 61 0.10</b> 107-1998 / 39-1917 <b>2</b> sr 638 am ss 853 pm	<b>88 / 61 0.11</b> 104-1998 / 43-1919 <b>3</b> sr 638 am ss 853 pm	<b>89 / 62 0.12</b> 106-2013 / 47-1970 <b>4</b> sr 638 am ss 854 pm  
<b>5</b> <b>89 / 62 0.11</b> 106-1990 / 45-1928 sr 637 am ss 855 pm	<b>6</b> <b>89 / 62 0.12</b> 107-1990 / 45-1917 sr 637 am ss 855 pm	<b>7</b> <b>89 / 62 0.11</b> 103-1994 / 45-1915 sr 637 am ss 856 pm	<b>8</b> <b>89 / 63 0.11</b> 106-1981 / 43-1915 sr 637 am ss 856 pm	<b>9</b> <b>90 / 63 0.12</b> 107-1981 / 50-1955 sr 637 am ss 857 pm	<b>10</b> <b>90 / 63 0.10</b> 105-1917 / 47-1955 sr 637 am ss 857 pm	<b>11</b> <b>90 / 63 0.11</b> 105-2008 / 50-1955 sr 637 am ss 857 pm
<b>12</b> <b>90 / 64 0.10</b> 105-2001 / 53-1951 sr 637 am ss 858 pm  	<b>13</b> <b>90 / 64 0.11</b> 105-2011 / 52-1945 sr 637 am ss 858 pm	<b>14</b> <b>91 / 64 0.11</b> 106-1939 / 44-1947 sr 637 am ss 859 pm  Flag Day	<b>15</b> <b>91 / 64 0.10</b> 109-1939 / 49-1927 sr 637 am ss 859 pm	<b>16</b> <b>91 / 65 0.10</b> 108-2011 / 49-1981 sr 637 am ss 859 pm	<b>17</b> <b>91 / 65 0.10</b> 107-1924 / 53-1999 sr 637 am ss 900 pm	<b>18</b> <b>91 / 65 0.10</b> 107-1924 / 47-1945 sr 637 am ss 900 pm
<b>19</b> <b>91 / 65 0.10</b> 107-2011 / 52-1945 sr 637 am ss 900 pm  Father's Day	<b>92 / 65 0.09</b> 108-1935 / 49-1973 <b>20</b> sr 638 am ss 901 pm Summer Solstice (5:34 pm)  	<b>92 / 66 0.10</b> 107-1981 / 54-1973 <b>21</b> sr 638 am ss 901 pm	<b>92 / 66 0.10</b> 106-1978 / 50-1927 <b>22</b> sr 638 am ss 901 pm	<b>92 / 66 0.09</b> 107-1980 / 56-1964 <b>23</b> sr 638 am ss 901 pm	<b>92 / 66 0.09</b> 110-1990 / 56-1957 <b>24</b> sr 639 am ss 901 pm	<b>92 / 66 0.10</b> 110-2011 / 54-1940 <b>25</b> sr 639 am ss 901 pm
<b>92 / 66 0.08</b> 112-2011 / 53-1958 <b>26</b> sr 639 am ss 902 pm	<b>92 / 67 0.09</b> 114-1994 / 56-1958 (all-time) <b>27</b> sr 640 am ss 902 pm  	<b>92 / 67 0.08</b> 108-1980 / 56-1946 <b>28</b> sr 640 am ss 902 pm	<b>92 / 67 0.09</b> 107-1957 / 57-1948 <b>29</b> sr 640 am ss 902 pm	<b>93 / 67 0.09</b> 106-1957 / 57-1940 <b>30</b> sr 641 am ss 902 pm		 Follow us on twitter at:  <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>

# Water in West Texas - A Precious Resource



Lake Alan Henry filled to capacity in late Nov. 2004

## Where does our water come from?

West Texas agriculture and municipalities rely on the following two sources of water to supplement precipitation:








### 1. Underground water from the **Ogallala Aquifer**

Where the aquifer is deeper, it supports large-volume irrigation allowing for robust farming in our semi-arid climate. It is estimated that the usable lifetime for the era of irrigated agriculture on the Texas High Plains will probably come to an end within the next generation (~30 years) as usage far outpaces the recharge rates of the aquifer.

### 2. Surface water from **reservoirs** including Lake Alan Henry, White River Lake, Lake Mackenzie and Lake Meredith

Area reservoirs provide a good portion of the water for many of the towns and cities. Unfortunately, during prolonged droughts evaporation and usage can quickly dwindle the available supplies. The drought of the early 2010s rendered White River Lake and Lake Meredith effectively empty while Lake Alan Henry plunged to less than 60% of capacity. Interestingly, a full Lake Alan Henry holds about 31 billion gallons of water. This can supply Lubbock with enough water for about 2.5 years (assuming average demand).

**The Ogallala Aquifer extent and saturated thicknesses**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on facebook at:  <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>		NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  <b>Lubbock</b> 162.400 <b>Dimmitt</b> 162.500 <b>Plainview</b> 162.450 <b>Childress</b> 162.525 <b>Dickens</b> 162.500	 Follow us on twitter at:  <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		<b>1</b> Normals: 93 / 67 0.08 105-1994 / 56-1924 Lubbock Records sr 641 am - sunrise ss 902 pm - sunset	<b>2</b> 93 / 67 0.08 106-1989 / 56-1944 sr 642 am ss 902 pm
<b>3</b> 93 / 67 0.08 108-1983 / 54-1929 sr 642 am ss 902 pm	<b>4</b> 93 / 67 0.07 105-1987 / 56-1924 sr 642 am ss 901 pm Independence Day  New Moon	<b>5</b> 93 / 67 0.07 104-1971 / 49-1915 sr 643 am ss 901 pm	<b>6</b> 93 / 67 0.07 105-1994 / 53-1946 sr 643 am ss 901 pm	<b>7</b> 93 / 68 0.07 103-1998 / 51-1952 sr 644 am ss 901 pm	<b>8</b> 93 / 68 0.06 106-2009 / 51-1952 sr 644 am ss 901 pm	<b>9</b> 93 / 68 0.07 107-2009 / 56-1952 sr 645 am ss 901 pm
<b>10</b> 93 / 68 0.06 109-1940 / 58-1968 sr 646 am ss 900 pm	<b>11</b> 93 / 68 0.07 104-1970 / 57-1999 sr 646 am ss 900 pm  First Quarter	<b>12</b> 93 / 68 0.06 105-1933 / 57-1999 sr 647 am ss 900 pm	<b>13</b> 93 / 68 0.06 107-1933 / 54-1953 sr 647 am ss 859 pm	<b>14</b> 93 / 68 0.07 108-1933 / 55-1990 sr 648 am ss 859 pm	<b>15</b> 93 / 68 0.06 105-2001 / 58-1926 sr 648 am ss 859 pm	<b>16</b> 93 / 68 0.06 105-2001 / 58-1935 sr 649 am ss 858 pm
<b>17</b> 93 / 68 0.06 105-1989 / 59-1930 sr 650 am ss 858 pm	<b>18</b> 93 / 68 0.05 103-1978 / 60-1935 sr 650 am ss 857 pm	<b>19</b> 93 / 68 0.06 108-1936 / 55-1947 sr 651 am ss 857 pm  Full Moon	<b>20</b> 93 / 68 0.05 105-1936 / 59-1971 sr 652 am ss 856 pm	<b>21</b> 93 / 68 0.06 102-1966 / 57-1988 sr 652 am ss 856 pm	<b>22</b> 93 / 68 0.05 104-2003 / 55-1915 sr 653 am ss 855 pm	<b>23</b> 93 / 68 0.06 104-2001 / 54-1915 sr 654 am ss 854 pm
<b>24</b> 93 / 68 0.05 104-1958 / 57-1915 sr 654 am ss 854 pm  <b>31</b> 93 / 68 0.06 104-1934 / 56-1971 sr 659 am ss 849 pm	<b>25</b> 93 / 68 0.05 104-1940 / 59-1956 sr 655 am ss 853 pm	<b>26</b> 93 / 68 0.06 105-1995 / 58-1959 sr 656 am ss 852 pm  Last Quarter	<b>27</b> 93 / 68 0.05 106-1995 / 57-1933 sr 656 am ss 852 pm	<b>28</b> 93 / 68 0.06 105-1995 / 54-2005 sr 657 am ss 851 pm  Delta Aquarids Meteor Shower (Peaks July 28-29)	<b>29</b> 93 / 68 0.05 102-1948 / 60-2004 sr 658 am ss 850 pm	<b>30</b> 93 / 68 0.05 104-1946 / 60-2000 sr 658 am ss 849 pm

## Neat Facts:

- ⚡ A single flash carries 300 million volts of electricity!
- ⚡ Lightning heats the air around it to over 50,000°F or about 5 times hotter than the sun!
- ⚡ Texas averages 2.9 million cloud-to-ground lightning strikes per year

## Myths:

- ❌ A lightning victim is electrified. If you touch them, you'll be electrocuted.
- ✅ The human body does not store electricity, so it is perfectly safe to touch a lightning victim to give them first aid.
- ❌ If it's not raining or there aren't clouds overhead, you're safe from lightning.
- ✅ Lightning has been known to strike more than 30 miles from a thunderstorm!

More lightning myths can be found at:  
[www.lightningsafety.noaa.gov/myths.shtml](http://www.lightningsafety.noaa.gov/myths.shtml)

# LIGHTNING

- Stay away from trees and tall objects
- Get off the golf course
- Stay away from water
- No place is safe outdoors...remember...

**When thunder roars, go indoors!**

**Did you know??**  
One flash of lightning  
can light a compact  
fluorescent bulb for  
one year!



## Outdoor Safety:



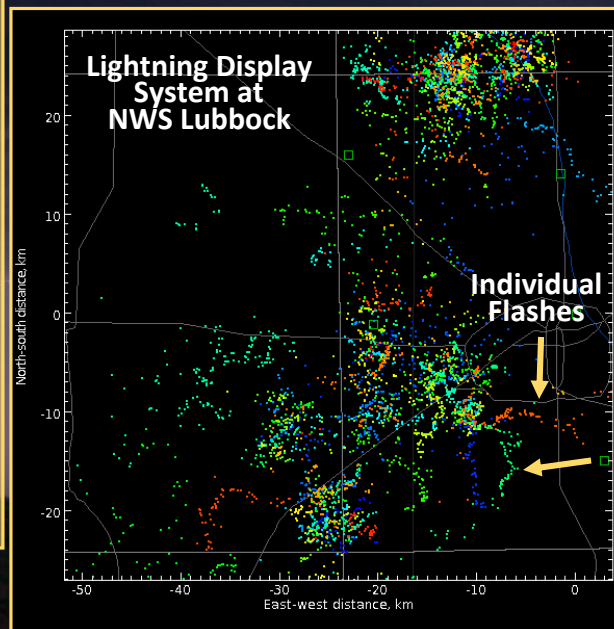
Lightning strike at  
Rawls Golf Course

## Indoor Safety:

- Unplug electronics
- Stay away from water (showers, bathing & dishes)
- Stay away from windows and doors

## Lightning Mapping:

Lightning can be mapped in real time by listening on a VHF frequency. It's similar to the crackles you hear on AM radio when lightning is in the area. Lubbock is one of the few NWS offices in the nation to have access to such a system!



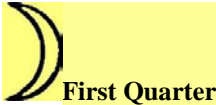






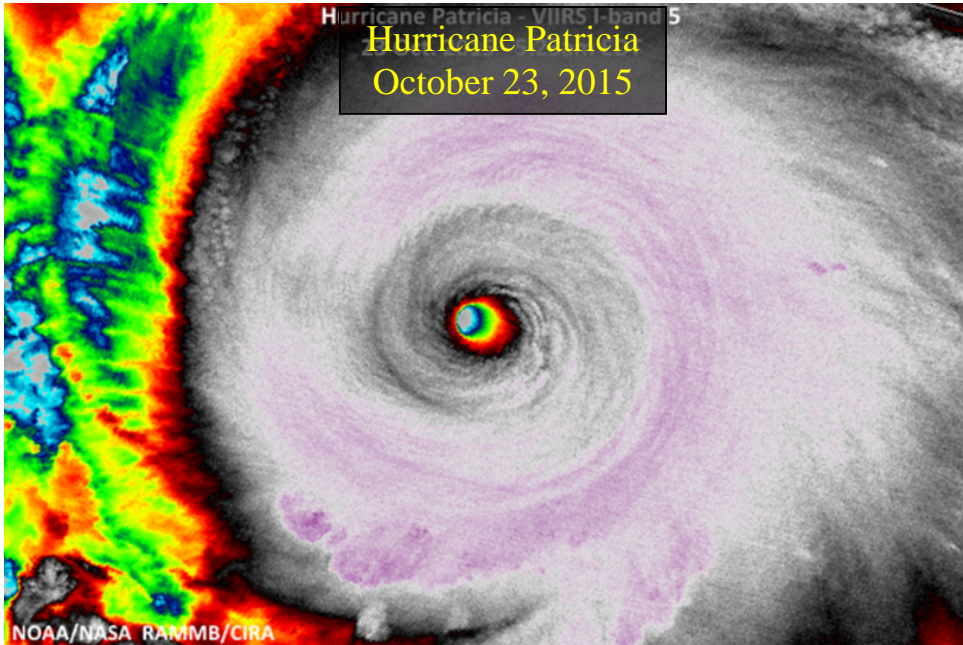


# August 2016

Lubbock National Weather Service

WWW.WEATHER.GOV/LUBBOCK

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	<b>1</b> Normals: 93 / 68 0.05 106-1966 / 55-1925 Lubbock Records sr 700 am - sunrise ss 848 pm - sunset	<b>2</b> 93 / 68 0.06 105-2012 / 54-1936 sr 701 am ss 847 pm 	<b>3</b> 93 / 68 0.07 107-1944 / 56-1921 sr 701 am ss 846 pm	<b>4</b> 93 / 68 0.06 105-2003 / 57-1915 sr 702 am ss 845 pm	<b>5</b> 92 / 68 0.07 102-2011 / 57-1915 sr 703 am ss 844 pm	<b>6</b> 92 / 68 0.06 105-2013 / 57-1990 sr 703 am ss 843 pm
<b>7</b> 92 / 68 0.06 104-2003 / 58-1971 sr 704 am ss 842 pm	<b>8</b> 92 / 68 0.06 105-2003 / 58-1990 sr 705 am ss 842 pm	<b>9</b> 92 / 68 0.07 103-2011 / 51-1946 sr 706 am ss 841 pm	<b>10</b> 92 / 68 0.06 104-2011 / 55-1915 sr 706 am ss 840 pm 	<b>11</b> 92 / 67 0.06 103-1936 / 56-1931 sr 707 am ss 838 pm	<b>12</b> 92 / 67 0.05 107-1936 / 54-1979 sr 708 am ss 837 pm Perseids Meteor Shower (Peaks Aug 12-13)	<b>13</b> 92 / 67 0.06 107-1936 / 54-1920 sr 708 am ss 836 pm
<b>14</b> 92 / 67 0.06 103-1946 / 53-1920 sr 709 am ss 835 pm	<b>15</b> 92 / 67 0.06 103-1982 / 56-1920 sr 710 am ss 834 pm	<b>16</b> 92 / 67 0.06 104-1943 / 55-1931 sr 710 am ss 833 pm	<b>17</b> 92 / 67 0.06 103-1978 / 56-1931 sr 711 am ss 832 pm	<b>18</b> 91 / 67 0.06 103-1994 / 55-1943 sr 712 am ss 831 pm 	<b>19</b> 91 / 67 0.05 103-1994 / 57-2015 sr 713 am ss 830 pm	<b>20</b> 91 / 66 0.06 103-1943 / 54-1915 sr 713 am ss 829 pm
<b>21</b> 91 / 66 0.07 103-1930 / 52-1956 sr 714 am ss 827 pm	<b>22</b> 91 / 66 0.06 100-1999 / 58-1967 sr 715 am ss 826 pm	<b>23</b> 91 / 66 0.06 101-1985 / 54-1923 sr 715 am ss 825 pm	<b>24</b> 91 / 66 0.06 101-1936 / 51-1916 sr 716 am ss 824 pm 	<b>25</b> 90 / 66 0.07 105-1936 / 54-1962 sr 717 am ss 822 pm	<b>26</b> 90 / 65 0.06 102-1922 / 51-2010 sr 717 am ss 821 pm	<b>27</b> 90 / 65 0.06 100-1931 / 53-1926 sr 718 am ss 820 pm
<b>28</b> 90 / 65 0.06 103-2011 / 54-1916 sr 719 am ss 819 pm	<b>29</b> 90 / 65 0.07 99-1943 / 51-1917 sr 719 am ss 817 pm	<b>30</b> 89 / 64 0.07 104-2011 / 44-1915 sr 720 am ss 816 pm	<b>31</b> 89 / 64 0.07 100-2014 / 43-1915 sr 721 am ss 815 pm	 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>	NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES: Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500	 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>



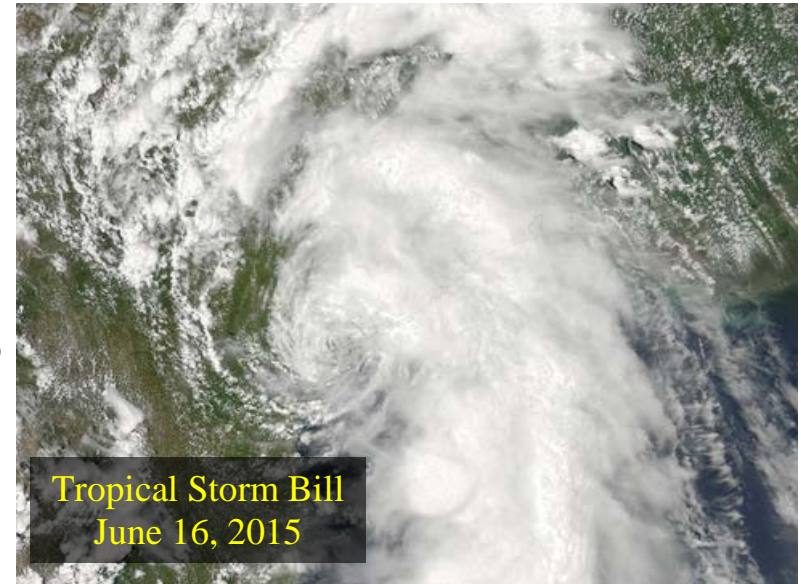
## 2015 Tropical Season

The 2015 Atlantic hurricane season was slightly below average, producing 11 tropical storms, 4 hurricanes, and 2 major hurricanes (long-term averages are 12, 6, and 2, respectively). Hurricane Patricia, in the eastern Pacific, was relatively short-lived, but it made quite an impression. It quickly strengthened to a Category 5 storm and obtained a record minimum pressure for the eastern Pacific and Atlantic basins, when a central pressure of 879 mb was observed. Patricia made landfall near Cuixmala, Mexico, and contributed moisture to a system that dumped torrential rainfall over Central and South Texas in late October.

## 2016 Atlantic Cyclone Names

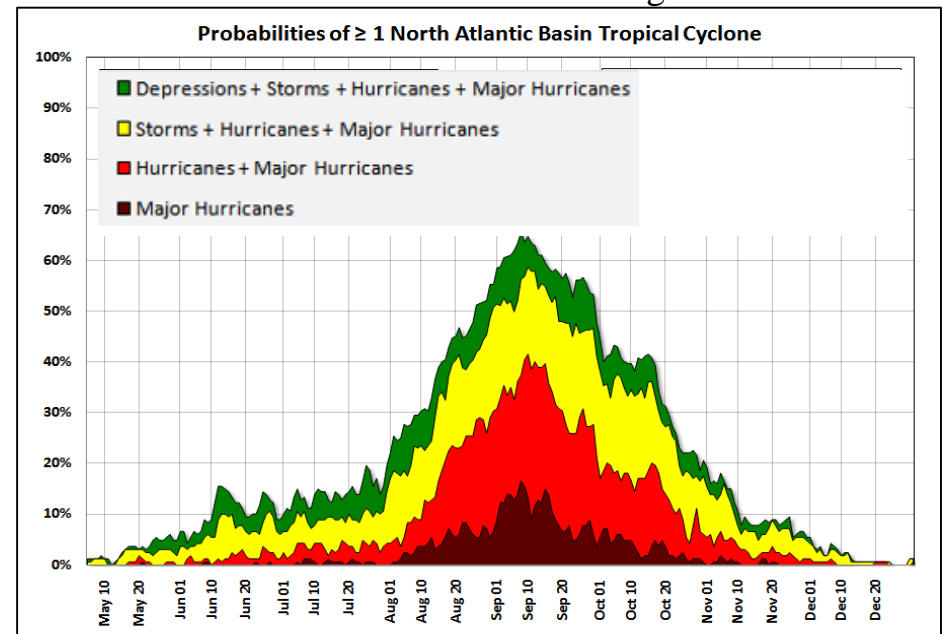
Alex	Hermine	Otto
Bonnie	Ian	Paula
Colin	Julia	Richard
Danielle	Karl	Shary
Earl	Lisa	Tobias
Fiona	Matthew	Virginie
Gaston	Nicole	Walter

## The Tropics



## Tropical Impacts Closer to Home






For the first time since 2011, Texas endured a direct tropical cyclone impact when Tropical Storm Bill made landfall at Matagorda Island on June 16, 2015 with peak winds of 60 mph. Bill quickly weakened, but did produce heavy rain tallying 6-12+ inches in spots. Flooding in Texas and Oklahoma led to three deaths and over 17.9 million dollars in damage in the U.S.



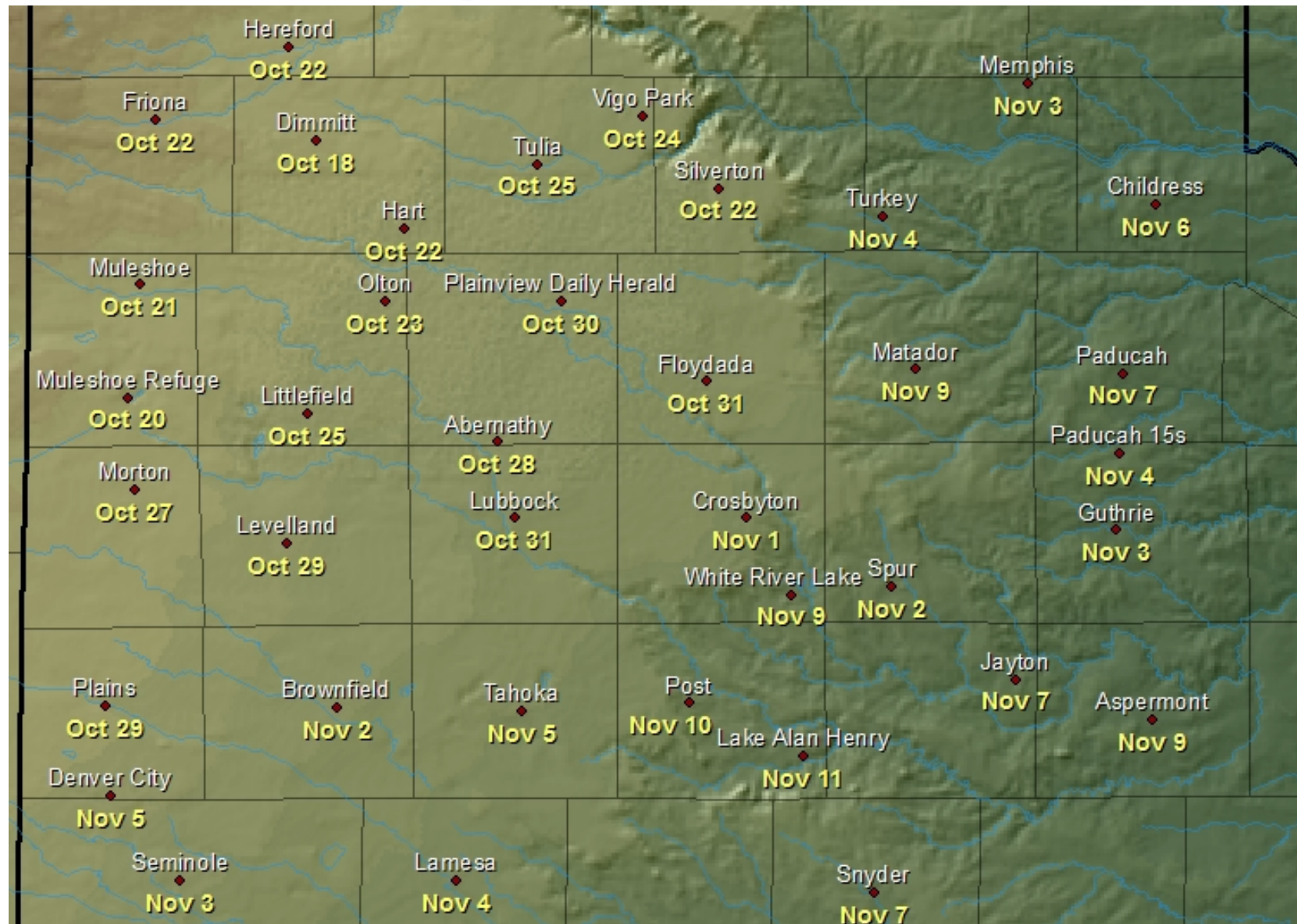
# September 2016

Lubbock National Weather Service







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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>	<b>NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:</b>  <b>Lubbock 162.400</b> <b>Dimmitt 162.500</b> <b>Plainview 162.450</b> <b>Childress 162.525</b> <b>Dickens 162.500</b>	 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>		<b>1</b> Normals: 89 / 64 0.08 104-2014 / 43-1915 Lubbock Records sr 722 am - sunrise ss 814 pm - sunset  	<b>2</b> 89 / 64 0.07 101-1947 / 50-1955 sr 722 am ss 812 pm	<b>3</b> 88 / 63 0.09 101-2000 / 48-1974 sr 723 am ss 811 pm
<b>4</b> 88 / 63 0.08 101-2000 / 46-1915 sr 724 am ss 810 pm	<b>5</b> 88 / 63 0.09 102-2000 / 46-1961 sr 724 am ss 808 pm  <b>Labor Day</b>	<b>6</b> 87 / 62 0.09 103-1948 / 51-1918 sr 725 am ss 807 pm	<b>7</b> 87 / 62 0.09 99-2012 / 45-1918 sr 726 am ss 806 pm	<b>8</b> 87 / 62 0.09 97-1985 / 47-2004 sr 726 am ss 804 pm	<b>9</b> 87 / 61 0.09 99-1984 / 47-1956 sr 727 am ss 803 pm  	<b>10</b> 86 / 61 0.09 100-2000 / 47-1962 sr 728 am ss 801 pm
<b>11</b> 86 / 61 0.09 103-2000 / 47-1959 sr 728 am ss 800 pm	<b>12</b> 86 / 60 0.08 100-1930 / 44-1959 sr 729 am ss 759 pm	<b>13</b> 85 / 60 0.09 101-1930 / 43-1959 sr 730 am ss 757 pm	<b>14</b> 85 / 60 0.09 100-1965 / 42-1945 sr 730 am ss 756 pm	<b>15</b> 85 / 59 0.08 99-1965 / 42-1993 sr 731 am ss 755 pm	<b>16</b> 84 / 59 0.09 100-1965 / 42-1951 sr 732 am ss 753 pm  	<b>17</b> 84 / 58 0.09 98-2005 / 42-1951 sr 732 am ss 752 pm
<b>18</b> 84 / 58 0.08 100-2015 / 43-1971 sr 733 am ss 750 pm	<b>19</b> 83 / 58 0.09 105-1930 / 42-1991 sr 734 am ss 749 pm	<b>20</b> 83 / 57 0.08 98-1977 / 41-1991 sr 734 am ss 748 pm	<b>21</b> 83 / 57 0.08 98-1998 / 33-1983 sr 735 am ss 746 pm	<b>22</b> 83 / 56 0.09 98-1977 / 40-1995 sr 736 am ss 745 pm  <b>Autumnal Equinox (9:21 am)</b>	<b>23</b> 82 / 56 0.08 98-1926 / 41-2009 sr 736 am ss 743 pm  	<b>24</b> 82 / 56 0.09 97-1953 / 38-1989 sr 737 am ss 742 pm
<b>25</b> 82 / 55 0.08 100-2005 / 36-2000 sr 738 am ss 741 pm	<b>26</b> 81 / 55 0.08 99-1997 / 36-1926 sr 738 am ss 739 pm	<b>27</b> 81 / 55 0.08 100-1953 / 39-1942 sr 739 am ss 738 pm	<b>28</b> 81 / 54 0.07 98-1994 / 36-1918 sr 740 am ss 737 pm	<b>29</b> 80 / 54 0.07 97-2011 / 33-1916 sr 740 am ss 735 pm	<b>30</b> 80 / 53 0.07 99-1977 / 35-1985 sr 741 am ss 734 pm  	

# Average First Freeze Dates



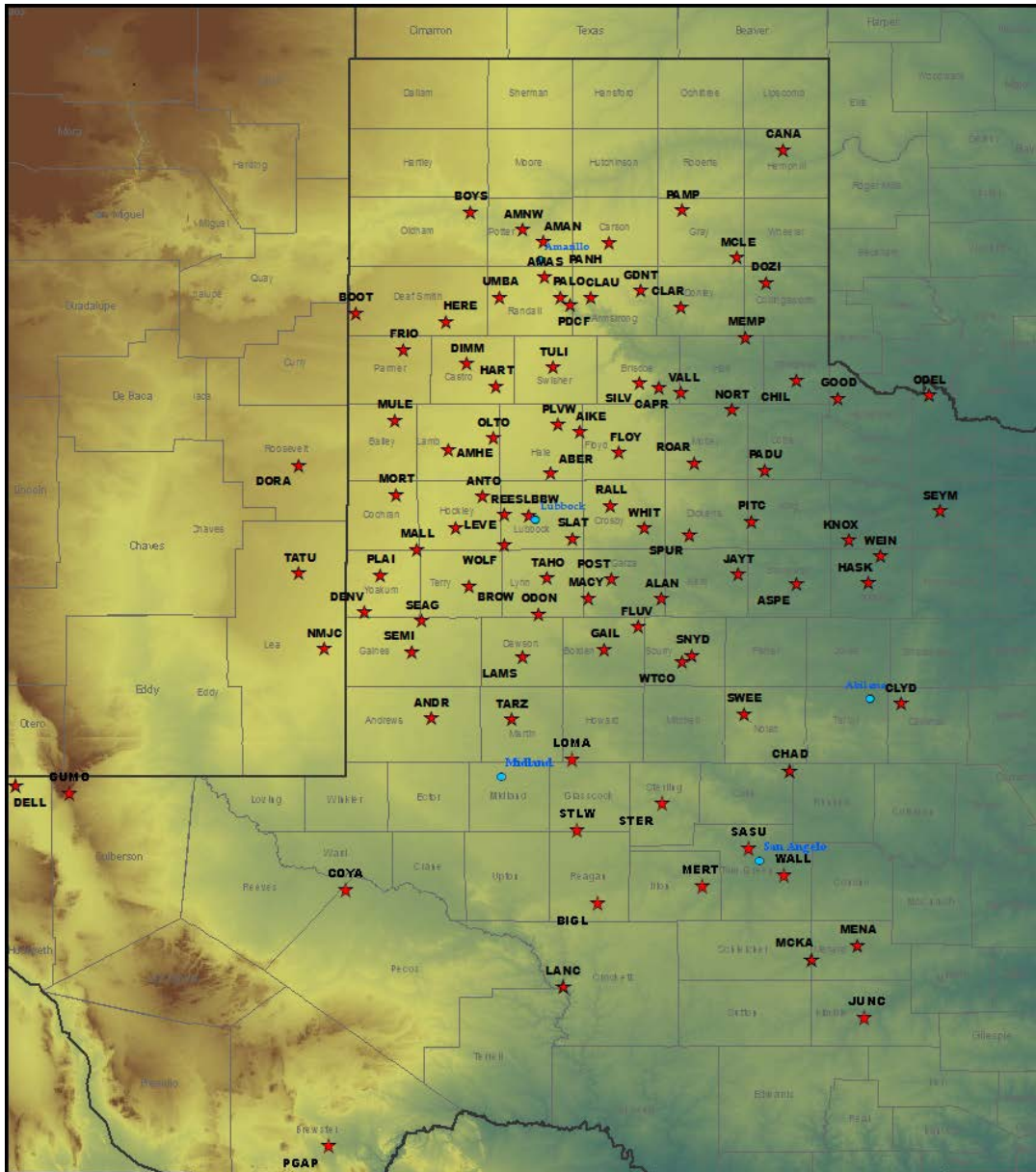
In Lubbock, the earliest fall freeze occurred on October 7, 1952.  
The latest fall freeze in Lubbock occurred on November 23, 2003.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	 Follow us on facebook at:  <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>		NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:  Lubbock 162.400 Dimmitt 162.500 Plainview 162.450 Childress 162.525 Dickens 162.500	 Follow us on twitter at:  <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>		Normals: 80 / 53 0.07 98-2000 / 39-1985 Lubbock Records sr 742 am - sunrise ss 732 pm - sunset
<b>2</b> 79 / 53 0.07 99-2000 / 40-2009  sr 743 am ss 731 pm	<b>3</b> 79 / 52 0.06 100-2000 / 35-1961  sr 743 am ss 730 pm	<b>4</b> 79 / 52 0.06 96-2000 / 41-1961  sr 744 am ss 728 pm	<b>5</b> 79 / 52 0.07 97-1934 / 33-1932  sr 745 am ss 727 pm	<b>6</b> 78 / 51 0.07 94-1939 / 34-2001  sr 745 am ss 726 pm	<b>7</b> 78 / 51 0.07 98-1979 / 31-1952  sr 746 am ss 724 pm	<b>8</b> 78 / 51 0.07 98-1979 / 31-1976  sr 747 am ss 723 pm
<b>9</b> 77 / 50 0.07 93-1965 / 29-1970  sr 748 am ss 722 pm  	<b>10</b> 77 / 50 0.07 93-1965 / 37-2009  sr 748 am ss 721 pm  Columbus Day	<b>11</b> 77 / 50 0.08 93-1979 / 34-2009  sr 749 am ss 719 pm	<b>12</b> 77 / 49 0.07 92-1989 / 33-1969  sr 750 am ss 718 pm	<b>13</b> 76 / 49 0.06 92-1992 / 28-1969  sr 751 am ss 716 pm	<b>14</b> 76 / 49 0.07 93-2009 / 31-1969  sr 751 am ss 716 pm	<b>15</b> 76 / 48 0.07 92-1965 / 31-1966  sr 752 am ss 714 pm
<b>16</b> 75 / 48 0.07 92-2003 / 30-2001  sr 753 am ss 713 pm  	<b>17</b> 75 / 48 0.06 93-1988 / 32-1999  sr 754 am ss 712 pm	<b>18</b> 75 / 47 0.07 90-2001 / 32-1968  sr 755 am ss 711 pm	<b>19</b> 74 / 47 0.06 92-1940 / 24-1917  sr 755 am ss 710 pm	<b>20</b> 74 / 47 0.06 93-2012 / 25-1916  sr 756 am ss 708 pm	<b>21</b> 74 / 46 0.07 90-2003 / 26-1917  sr 757 am ss 707 pm  Orionids Meteor Shower (Peaks Oct 21-22)	<b>22</b> 74 / 46 0.06 89-1961 / 28-1945  sr 758 am ss 706 pm  
<b>23</b> 73 / 46 0.06 91-2003 / 22-1917  sr 759 am ss 705 pm	<b>24</b> 73 / 45 0.05 91-1933 / 26-1929  sr 800 am ss 704 pm	<b>25</b> 72 / 45 0.05 91-1959 / 30-1955  sr 800 am ss 703 pm	<b>26</b> 72 / 44 0.05 91-2014 / 26-1913  sr 801 am ss 702 pm	<b>27</b> 72 / 44 0.05 87-1922 / 26-2012  sr 802 am ss 701 pm	<b>28</b> 71 / 44 0.05 91-1943 / 25-1970  sr 803 am ss 700 pm	<b>29</b> 71 / 43 0.05 90-2003 / 20-1917  sr 804 am ss 659 pm
<b>30</b> 71 / 43 0.04 90-2010 / 18-1993  sr 805 am ss 658 pm  New Moon	<b>31</b> 70 / 43 0.05 88-1934 / 20-1991  sr 806 am ss 657 pm  Halloween					

# WEST TEXAS MESONET

View live data at:

<http://www.mesonet.ttu.edu/>



The West Texas Mesonet project began in 1999 to provide **free, real-time** weather and agricultural information for residents of the South Plains of West Texas. Over the years the project has grown well beyond the South Plains to include three observation towers in eastern New Mexico, sites in Guadalupe Mountains and Big Bend National Parks, and stations at Palo Duro and Caprock Canyons State Parks. To the left is a map of the West Texas domain which includes 94 mesonet stations (red stars) as of late 2015. Each observation station collects temperature, moisture, wind, pressure, solar radiation, and precipitation data, with most sites also sensing soil temperature and moisture at several depths. The data are not only valuable for the agriculture community; they are a tremendous resource for the National Weather Service.


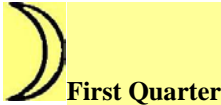

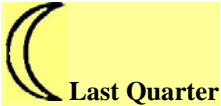




West Texas Mesonet Station in Guadalupe Mountains National Park

# November 2016

Lubbock National Weather Service

WWW.WEATHER.GOV/LUBBOCK

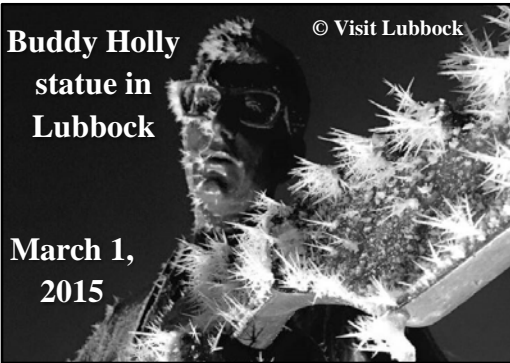
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		<b>1</b> Normals: 70 / 42 0.04 85-1994 / 23-1951 Lubbock Records sr 806 am - sunrise ss 656 pm - sunset	<b>2</b> 69 / 42 0.04 85-2012 / 19-1991 sr 807 am ss 655 pm	<b>3</b> 69 / 41 0.04 88-2005 / 7-1991 sr 808 am ss 654 pm	<b>4</b> 69 / 41 0.04 86-1916 / 20-1950 sr 809 am ss 653 pm	<b>5</b> 68 / 40 0.03 86-1924 / 22-1959 sr 810 am ss 652 pm
<b>6</b> 68 / 40 0.03 85-1975 / 16-1959 sr 711 am ss 551 pm  Daylight Saving Time Ends	<b>7</b> 67 / 40 0.03 89-1916 / 19-1947 sr 712 am ss 551 pm  	<b>8</b> 67 / 39 0.03 88--2005 / 20-1943 sr 713 am ss 550 pm  Election Day	<b>9</b> 67 / 39 0.02 90-2006 / 21-1943 sr 714 am ss 549 pm	<b>10</b> 66 / 38 0.03 85-1927 / 19-1950 sr 715 am ss 548 pm	<b>11</b> 66 / 38 0.03 82-1956 / 16-1950 sr 715 am ss 548 pm  Veterans Day	<b>12</b> 65 / 37 0.03 85-1995 / 19-2014 sr 716 am ss 547 pm
<b>13</b> 65 / 37 0.02 82-1973 / 14-1976 sr 717 am ss 546 pm	<b>14</b> 64 / 37 0.03 85-1933 / 4-1976 sr 718 am ss 546 pm  	<b>15</b> 64 / 36 0.03 85-1965 / 10-1916 sr 719 am ss 545 pm	<b>16</b> 63 / 36 0.02 83-1966 / 11-1916 sr 720 am ss 544 pm	<b>17</b> 63 / 35 0.03 85-1966 / 10-1959 sr 721 am ss 544 pm  Leonids Meteor Shower (Peaks Nov 17-18)	<b>18</b> 62 / 35 0.02 82-1999 / 16-1951 sr 722 am ss 543 pm	<b>19</b> 62 / 34 0.03 85-1996 / 14-1937 sr 723 am ss 543 pm
<b>20</b> 62 / 34 0.02 88-1996 / 17-1937 sr 724 am ss 542 pm	<b>21</b> 61 / 33 0.03 84-1927 / 18-1956 sr 725 am ss 542 pm  	<b>22</b> 61 / 33 0.02 82-2006 / 6-1957 sr 726 am ss 542 pm	<b>23</b> 60 / 33 0.03 84-1965 / -1-1957 sr 727 am ss 541 pm	<b>24</b> 60 / 32 0.02 82-1915 / 7-1938 sr 728 am ss 541 pm  Thanksgiving Day	<b>25</b> 59 / 32 0.03 86-1965 / 15-1993 sr 728 am ss 541 pm	<b>26</b> 59 / 32 0.03 82-1970 / 8-1980 sr 729 am ss 540 pm
<b>27</b> 59 / 31 0.02 81-1949 / 12-1976 sr 730 am ss 540 pm	<b>28</b> 58 / 31 0.03 83-1949 / 5-1976 sr 731 am ss 540 pm	<b>29</b> 58 / 30 0.03 80-2014 / 1-1976 sr 732 am ss 540 pm  	<b>30</b> 58 / 30 0.02 81-2012 / 10-1918 sr 733 am ss 539 pm  End of the Atlantic Hurricane Season	 Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a>	<b>NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:</b>  <b>Lubbock 162.400</b> <b>Dimmitt 162.500</b> <b>Plainview 162.450</b> <b>Childress 162.525</b> <b>Dickens 162.500</b>	 Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a>

# NWS Cooperative Observer Program (COOP)

Buddy Holly  
statue in  
Lubbock

© Visit Lubbock

March 1,  
2015



Near Caprock Canyons State Park

Late November 2013



The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the nation's weather and climate observing network of, by, and for the people. The COOP was formally created in 1890 under the Organic Act. More than 10,000 volunteers take observations on farms, in urban and suburban areas, in National Parks, on seashores, and on mountain tops. The data are representative of the places people live, work, and play.

The NWS Lubbock COOP program has about 40 observers that collect valuable meteorological data every day, with dozens more that send in information when it rains, sleet or snows. These data are widely used by surrounding NWS offices, River Forecast Centers at Tulsa, OK, and Fort Worth, TX, and the National Climatic Data Center (NCDC). The weather information is not only valuable for day-to-day forecast operations, but help establish a baseline for the climate across our nation.

Near Tulia, TX, on February 26, 2013



© Kristina Alexander



Muleshoe, TX, on January 20, 2007

© Jack Rennels



**NWS Lubbock staff would like to express our sincere appreciation to the many COOP observers who provide these important services. Thank You!**

In addition to the COOP observers, many other groups provide great information to the NWS. These groups include, but are not limited to:

- SKYWARN Storm Spotters
- Sheriff's Offices
- Media
- Emergency Management Officials
- Public



SUNDAY

MONDAY








TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

 <p>Follow us on facebook at: <a href="http://www.facebook.com/NWSLubbock">www.facebook.com/NWSLubbock</a></p>	<p>NOAA WEATHER RADIO CAN BE FOUND AT THE FOLLOWING FREQUENCIES:</p> <p><b>Lubbock</b> 162.400 <b>Dimmitt</b> 162.500 <b>Plainview</b> 162.450 <b>Childress</b> 162.525 <b>Dickens</b> 162.500</p>		 <p>Follow us on twitter at: <a href="http://www.twitter.com/NWSLubbock">www.twitter.com/NWSLubbock</a></p>	<p><b>1</b> Normals: 57 / 30 0.02 79-2012/ 12-1918 Lubbock Records sr 734 am - sunrise ss 539 pm – sunset</p>	<p><b>2</b> 57 / 30 0.03 81-1995 / 13-1985 sr 735 am ss 539 pm</p>	<p><b>3</b> 57 / 29 0.02 82-2010 / 15-1967 sr 735 am ss 539 pm</p>
<p><b>4</b> 56 / 29 0.02 81-1958 / 15-1921 sr 736 am ss 539 pm</p>	<p><b>5</b> 56 / 29 0.03 79-1939 / 10-1950 sr 737 am ss 539 pm</p>	<p><b>6</b> 56 / 28 0.02 83-1939 / 1-1950 sr 738 am ss 539 pm</p>	<p><b>7</b> 55 / 28 0.03 79-2007 / 8-2005 sr 739 am ss 539 pm</p>  <p>First Quarter</p>	<p><b>8</b> 55 / 28 0.03 78-1970 / 3-1917 sr 739 am ss 539 pm</p>	<p><b>9</b> 55 / 28 0.02 80-1939 / 5-1978 sr 740 am ss 539 pm</p>	<p><b>10</b> 55 / 28 0.03 81-1933 / 5-1917 sr 741 am ss 540 pm</p>
<p><b>11</b> 54 / 27 0.03 80-1939 / 6-1917 sr 742 am ss 540 pm</p>	<p><b>12</b> 54 / 27 0.02 82-1937 / 6-1961 sr 742 am ss 540 pm</p>	<p><b>13</b> 54 / 27 0.03 79-1921 / 5-1917 sr 743 am ss 540 pm</p>  <p>Full Moon</p>	<p><b>14</b> 54 / 27 0.03 82-2010 / 8-1987 sr 744 am ss 540 pm</p> <p>Geminids Meteor Shower (Peaks Dec 13-14)</p>	<p><b>15</b> 54 / 27 0.02 80-2010 / 2-1987 sr 744 am ss 541 pm</p>	<p><b>16</b> 54 / 27 0.03 77-2006 / 3-1987 sr 745 am ss 541 pm</p>	<p><b>17</b> 53 / 27 0.03 78-1980 / 5-1932 sr 746 am ss 541 pm</p>
<p><b>18</b> 53 / 27 0.02 77-1980 / 6-1996 sr 746 am ss 542 pm</p>	<p><b>19</b> 53 / 26 0.03 76-1921 / 0-1924 sr 747 am ss 542 pm</p>	<p><b>20</b> 53 / 26 0.02 80-1921 / 3-1924 sr 747 am ss 543 pm</p>  <p>Last Quarter</p>	<p><b>21</b> 53 / 26 0.03 78-1981 / 2-1983 sr 748 am ss 543 pm</p> <p>Winter Solstice (4:44 am)</p>	<p><b>22</b> 53 / 26 0.02 79-1969 / -2-1989 sr 748 am ss 544 pm</p>	<p><b>23</b> 53 / 26 0.03 80-1964 / -1-1989 sr 749 am ss 544 pm</p>	<p><b>24</b> 53 / 26 0.02 80-1955 / 0-1983 sr 749 am ss 545 pm</p>
<p><b>25</b> 53 / 26 0.02 76-1955 / -1-1924 sr 750 am ss 545pm</p> <p>Christmas</p>	<p><b>26</b> 53 / 26 0.02 77-2005 / 0-1918 sr 750 am ss 546 pm</p>	<p><b>27</b> 53 / 26 0.03 76-2006 / 3-1918 sr 750 am ss 547 pm</p>	<p><b>28</b> 53 / 26 0.02 81-1928 / -2-1924 sr 751 am ss 547 pm</p>	<p><b>29</b> 53 / 26 0.02 77-1920 / -1-1939 sr 751 am ss 548 pm</p>  <p>New Moon</p>	<p><b>30</b> 53 / 26 0.02 80-2008 / 7-2000 sr 751 am ss 549 pm</p>	<p><b>31</b> 53 / 26 0.02 76-2011 / 8-1923 sr 752 am ss 549 pm</p> <p>New Year's Eve</p>

# Severe Weather Safety Tips

## Prepare a Home Severe Weather Plan—

- Pick a place where family members can gather if a tornado is headed your way. It could be your **basement** or, if there is no basement, a **center hallway, bathroom, or closet on the lowest floor**. Keep this place uncluttered.
- If you are in a high-rise building, you may not have enough time to go to the lowest floor. Pick a place in a **hallway** in the center of the building.

## Assemble a Disaster Supplies Kit containing—

- First aid kit and essential medications.
- Canned food and can opener.
- At least three gallons of water per person.
- Protective clothing, bedding, or sleeping bags.
- Battery-powered radio, flashlight, and extra batteries.
- Special items for infant, elderly, or disabled family members.

## When a Severe Thunderstorm or Tornado WATCH is issued—

- Listen to NOAA Weather Radio, local radio and TV stations for further updates.
- Be alert to changing weather conditions.

## When a Severe Thunderstorm or Tornado WARNING is issued—

- If you are inside, go to the safe place you picked to protect yourself from glass and other flying objects.
- If you are outside, hurry to the basement of a nearby sturdy building or lie flat in a ditch or low-lying area.
- If you are in a car or mobile home, get out immediately and head for safety (as above).

## After the Severe Thunderstorm or Tornado passes—

- Watch out for fallen power lines and stay out of the damaged area.
- Listen to the radio for information and instructions.
- Use a flashlight to inspect your home for damage.

## Conduct periodic Severe Weather drills so everyone remembers what to do. Stay tuned for warnings—

- Listen to your local radio and TV stations for updated storm information.
- Be especially alert to the weather when Severe Thunderstorm and Tornado WATCHES are in effect and take action when WARNINGS are issued.
- Know what a Severe Thunderstorm or Tornado WATCH and WARNING means:
  - A Tornado/Severe Thunderstorm WATCH means a Tornado/Severe Thunderstorm is possible in your area.
  - A Tornado/Severe Thunderstorm WARNING means a Tornado/Severe Thunderstorm has been detected and may be headed for your area. Go to a safe location immediately.