

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------

OKLAHOMA, Panhandle

(OK-Z001) CIMARRON, (OK-Z002) TEXAS, (OK-Z003) BEAVER

03/01/13 00:00 CST	0	Drought
03/31/13 23:59 CST	65M	

The slight relief brought by a late February blizzard got very little help during the month of March. Drought conditions across the Panhandle remained steady state with Exceptional (D4) drought for all of Cimarron and Texas County, and Beaver County remained in extreme (D3) drought. While there were a few precipitation events across the Panhandle, the Guymon observing station only recorded 0.14 inches of precipitation (1.29 inches below normal) for the month.

Limited dormant fuels remain in prime condition for the spread of fires across the Panhandle despite the scattered precipitation during the month. Texas County showed slight degradation now falling in the 600 to 800 range of the Keetch-Byram Drought Index. The remainder of the Oklahoma Panhandle remains in the 400 to 600 range.

The increased moisture during the previous month and scattered moisture during March helped the growth of dryland winter wheat and native grazing fields. Irrigated fields showed average growth with minor supplemental watering. The Palmer Drought Severity Index stayed steady state with a near normal rating for the Oklahoma Panhandle. Water watches remain in effect for several public water systems through March while voluntary to mandatory water restrictions have been enacted.

Economic losses due to the drought through March were estimated near \$15 million (D3)/\$25 million (D4) a county, and were predominately the result for poor growth of winter wheat, heavy supplemental watering, and supplemental feed for cattle in pastures and rangeland.

(OK-Z001) CIMARRON, (OK-Z002) TEXAS

03/09/13 22:05 CST	0	High Wind (MAX 52 kt)
03/10/13 03:10 CST	0	

Isolated high wind gusts occurred during the late night hours of the 9th and early morning hours of the 10th across the Oklahoma Panhandle. A shortwave trough of low pressure rotated around the base of an upper level trough over southwestern Kansas. The lift provided by this shortwave was sufficient to initiate light snow showers which moved southward across the Panhandle. The combination of the showers moving further way from the upper level forcing and moving into areas where low level dry layers existed cause the precipitation to evaporate before reaching the ground. The evaporative cooling brought stronger winds aloft briefly to the surface through subsidence. The Oklahoma Mesonet site in Boise City (Cimarron County) reported 58 MPH non-thunderstorm wind gust, and the site at Goodwell (Texas County) reported a 60 MPH non-thunderstorm wind gust. These isolated non-thunderstorm wind gusts ceased by 4 AM CDT due to the showers ending.

(OK-Z001) CIMARRON

03/09/13 23:00 CST	0	Winter Weather
03/10/13 12:45 CST	0	

Light snow flurries occurred across Cimarron County during the late night hours of the 9th and early morning hours of the 10th. A cold front had moved through the area earlier in the day to allow temperatures to drop below freezing overnight. A shortwave trough of low pressure rotated around the base of the main upper level trough provided the necessary forcing to initiate light snow flurries. The snow flurries moved southward across the county and produced 1 inch of snow two miles west of Wheelless (Cimarron County) before dissipating by 12:45 AM CDT. No vehicle accidents were reported in relation to accumulated snow on roadways.

(OK-Z001) CIMARRON, (OK-Z002) TEXAS, (OK-Z003) BEAVER

03/23/13 15:00 CST	0	Winter Weather
03/23/13 21:00 CST	0	

An upper level trough of low pressure moved through the Central Plains during the evening hours of the 23rd. The lift provided by this trough coupled with the lift from a 90 to 100 MPH jet stream to initiate precipitation across the Oklahoma Panhandle. A cold front had moved through the area earlier in the day and caused surface temperatures to rapidly drop below freezing. Snow showers moved from west to east quickly producing 1 to 3 inches of snow and causing some roadways to become slick. The Emergency Manager for Beaver County reported a vehicle rollover accident on US Highway 23, and another vehicle accident six miles south of the town of Balko (Beaver County). The Goodwell (Texas County) Fire and Rescue relayed multiple reports of vehicles sliding off highways across the county. Snow showers lessened in intensity as the evening progressed due to the upper level forcing moving further to the east, and all snow showers across the Panhandle ended by 10 PM CDT.

The following is a list of reported snow amounts: 1.0 inch of snow in Beaver (Beaver County); 1.5 inches of snow in Forgan (Beaver County); 1.5 inches of snow reported in Boise City (Cimarron County); 2.0 inches of snow in Guymon (Texas County); and 2.5 inches of

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------

snow in Goodwell (Texas County).

TEXAS, North Panhandle

(TX-Z001) DALLAM, (TX-Z002) SHERMAN, (TX-Z003) HANSFORD, (TX-Z004) OCHILTREE, (TX-Z005) LIPSCOMB, (TX-Z006) HARTLEY, (TX-Z007) MOORE, (TX-Z009) ROBERTS, (TX-Z010) HEMPHILL, (TX-Z011) OLDHAM, (TX-Z012) POTTER, (TX-Z016) DEAF SMITH, (TX-Z017) RANDALL	03/01/13 00:00 CST	0	0	Drought
	03/31/13 23:59 CST		0.13B	

The month of March did not see nearly as much improvement as seen during February, but scattered precipitation events allowed for a slight improvement for the Texas Panhandle. Exceptional (D4) drought continue to only affect Dallam County, Extreme (D3) drought affects most of the extreme northern Texas Panhandle, and Severe (D2) drought affects the southwestern Texas Panhandle and Hemphill County.

The Texas Panhandle would have been lucky to receive another month of above normal precipitation as seen in February, but the few precipitation events that occurred fell well short of making the average mark. Amarillo recorded 0.15 inches of precipitation for March (1.24 inches below normal), Dalhart recorded 0.06 inches (1.11 inches below normal), and Borger recorded 0.29 inches of precipitation (1.12 inches below normal).

Limited dormant fuels remain in prime condition for the spread of fires across the Panhandle despite scattered precipitation during March. However, the Keetch-Byram Drought Index showed areas of improvement and areas of degradation for the Texas Panhandle. The northern and western portions of the Texas Panhandle fall within the 600 to 800 range while the majority of the area stayed within the 400 to 600 range. The 200 to 400 range now only encompasses Roberts County. Countywide burn bans remain in effect for all of the Texas Panhandle except for Hansford, Roberts, Oldham, Gray, Wheeler, and Deaf Smith Counties.

The increased moisture during the previous month and scattered moisture from March helped the growth of dryland winter wheat and native grazing fields. Irrigated fields showed average growth with minor supplemental watering. Rangeland and pastures across the Texas Panhandle have remained in poor to very poor condition. The Palmer Drought Severity Index stayed steady state in the Moderate Drought rating for the Texas High Plains.

Reservoirs and stream flows across the Panhandles have remained at below normal levels with only a minor rise due to the recent precipitation. The reservoirs of Palo Duro and Greenbelt Lake are both below 13 percent capacity with Lake Meredith at zero percent capacity. Water watches for several public water systems persisted through March while voluntary to mandatory mild water restrictions have been enacted.

Economic losses due to the drought through March were estimated near \$5 million (D2)/\$15 million (D3)/\$25 million (D4) a county, and were predominately the result for poor growth of winter wheat, heavy supplemental watering, and supplemental feed for cattle in pastures and rangeland.

DEAF SMITH COUNTY --- 1.8 WNW HEREFORD [34.83, -102.43]

03/08/13 18:55 CST	0	Thunderstorm Wind (MG 50 kt)
03/08/13 18:57 CST	0	Source: Mesonet

A thunderstorm developed southwest of the city of Hereford (Deaf Smith County) around 6:30 PM CST and moved northeast across the city. As the thunderstorm moved over the city of Hereford (Deaf Smith County), the thunderstorm collapsed and produced an outflow which moved through the city. This outflow was measured to be 58 mph by the West Texas Mesonet site 2 miles west of Hereford (Deaf Smith County). No injuries or damage was reported in association with this thunderstorm.

CARSON COUNTY --- 0.6 E SKELLYTOWN [35.57, -101.17]

03/08/13 20:53 CST	0	Thunderstorm Wind (MG 57 kt)
03/08/13 20:54 CST	0	Source: Broadcast Media

A line of thunderstorms developed over Carson and Armstrong County around 815 PM CST, and moved to the northeast. At 8:45 PM CST, a rear inflow jet became evident on the lowest radar elevation scan from the NWS 88D in Amarillo (Potter County) over southeastern Carson County. This signature is a prime indicator that strong winds are coming in from behind the storm and caused the reflectivity to take on a bowed appearance. These stronger winds eventually reached the surface and were measured at 66 mph by the KVII Schoolnet site in Skellytown (Carson County). After moving into Gray and Roberts County, this line of storms diminished in strength and no longer produced any significant weather.

Conditions across the southern Texas Panhandle became favorable for the initiation of convection during the evening hours of the 8th. An upper level shortwave trough rotated around the base of an upper level closed low as it moved into southwestern Arizona. This shortwave trough would go on to move across the northwestern Texas Panhandle coupling with the synoptic lift also provided by the exit region of the jet stream. On the small scale, instability values were relatively low end ranging from 500 to 1000 J/Kg with deep layer

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------

shear values around 45 kt. Given these values the most likely hazards would be hail larger than a quarter and damaging winds higher than 58 mph. Thunderstorms quickly congealed into a broken linear structure and increased in strength as they moved east of the Interstate 27 and Interstate 40 Corridor (Potter and Randall County). At this point damaging wind in excess of 58 mph became the primary severe weather hazard, which was verified by a 66 mph thunderstorm wind gust in Skellytown (Carson County). By 9:00 PM CST, the upper level shortwave moved sufficiently northeast to greatly diminish the synoptic forcing for these storms. As a result convective coverage began to diminish and no further reports of significant weather were reported.

(TX-Z008) HUTCHINSON, (TX-Z017) RANDALL

03/10/13 00:38 CST	0	High Wind (MAX 54 kt)
03/10/13 03:40 CST	0	

Isolated high wind gusts occurred during the early morning hours of the 10th across the Texas Panhandle. A shortwave trough of low pressure rotated around the base of an upper level trough over southwestern Kansas. The lift provided by this shortwave was sufficient to initiate light snow showers which moved southward across the Panhandle. The combination of the showers moving further way from the upper level forcing and moving into areas where low level dry layers existed cause the precipitation to evaporate before reaching the ground. The evaporative cooling brought stronger winds aloft briefly to the surface through subsidence. The West Texas Mesonet site at Palo Duro Canyon (Randall County) reported a 62 mph non-thunderstorm wind gust, and the Borger (Hutchinson County) ASOS reported a non-thunderstorm wind gust of 58 mph. These isolated non-thunderstorm wind gusts ceased by 4 AM CDT due to the showers ending.

DEAF SMITH COUNTY --- 9.5 WSW WALCOTT [34.89, -102.99]

03/17/13 15:04 CST	0	Thunderstorm Wind (MG 50 kt)
03/17/13 15:05 CST	0	Source: Mesonet

The West Texas Mesonet site 11 miles west northwest of Bootleg (Deaf Smith County) reported a 58 mph thunderstorm wind gust from a line of thunderstorms as they moved eastward across Deaf Smith and Oldham Counties.

OLDHAM COUNTY --- 1.3 ENE ADRIAN [35.28, -102.66]

03/17/13 15:15 CST	0	Thunderstorm Wind (EG 52 kt)
03/17/13 15:16 CST	0	Source: Public

As a line of thunderstorms moved across Oldham and Deaf Smith County, tree limbs were blown down in Adrian (Oldham County). An estimation of 60 mph outflow winds from the thunderstorms was determined using radar.

DEAF SMITH COUNTY --- 9.5 WSW WALCOTT [34.89, -102.99]

03/17/13 15:28 CST	0	Thunderstorm Wind (MG 50 kt)
03/17/13 15:29 CST	0	Source: Mesonet

The West Texas Mesonet site 11 miles west northwest of Bootleg (Deaf Smith County) reported a 58 mph thunderstorm wind gust as convection moved across Deaf Smith County.

POTTER COUNTY --- 3.5 ENE BUSHLAND [35.19, -102.01]

03/17/13 16:07 CST	0	Thunderstorm Wind (MG 52 kt)
03/17/13 16:10 CST	0	Source: Broadcast Media

As a line of thunderstorms moved into Potter County, the KVII Schoolnet site at the Oasis RV Resort reported a 60 mph wind gust. The gust was caused by the outflow from these storms and persisted for several minutes.

DEAF SMITH COUNTY --- 1.8 WNW HEREFORD [34.83, -102.43]

03/17/13 16:10 CST	0	Thunderstorm Wind (MG 50 kt)
03/17/13 16:11 CST	0	Source: Mesonet

The West Texas Mesonet site 2 miles west northwest of Hereford (Deaf Smith County) reported a 58 mph thunderstorm wind gust from the outflow of a line of thunderstorms moving across the southwestern Texas Panhandle.

POTTER COUNTY --- 3.5 ENE BUSHLAND [35.19, -102.01]

03/17/13 16:12 CST	0	Thunderstorm Wind (EG 53 kt)
03/17/13 16:14 CST	0	Source: Broadcast Media

The KVII Schoolnet site at the Oasis RV Resort reported a 61 mph wind gust from the out flow of thunderstorms as they moved across Potter and Randall County.

MOORE COUNTY --- 0.7 N DUMAS [35.86, -101.97]

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
	03/17/13 16:14 CST		0	Thunderstorm Wind (EG 52 kt)
	03/17/13 16:15 CST		0	Source: Public

A member of the public estimated a 60 mph wind gust from an collapsing thunderstorm over the city of Dumas (Moore County). No damage or injuries were reported in relation to this storm.

RANDALL COUNTY --- 5.7 SW AMARILLO [35.14, -101.89]

03/17/13 16:17 CST	0	Thunderstorm Wind (EG 52 kt)
03/17/13 16:18 CST	0	Source: NWS Employee

An NWS Employee on the southwest side of Amarillo (Randall County) estimated a 60 mph thunderstorm wind gust as the line of thunderstorms moved over their location.

RANDALL COUNTY --- 4.5 NW TIMBERCREEK CANYON [35.10, -101.87]

03/17/13 16:20 CST	0	Thunderstorm Wind (EG 52 kt)
03/17/13 16:21 CST	0	Source: Public

A member of the public estimated a 60 mph wind gusts as the line of thunderstorms moved over their location in Timbercreek Canyon (Randall County).

POTTER COUNTY --- (AMA)AMARILLO INTL A [35.22, -101.72]

03/17/13 16:30 CST	0	Thunderstorm Wind (MG 52 kt)
03/17/13 16:32 CST	0	Source: ASOS

The Amarillo ASOS reported a 60 mph wind gust as the line of thunderstorms moved over the station. Also visibilities were briefly reduced to a 1/2 mile due to dust with the initial outflow.

POTTER COUNTY --- 3.9 NNW (AMA)AMARILLO INTL A [35.27, -101.75]

03/17/13 16:30 CST	0	Thunderstorm Wind (EG 51 kt)
03/17/13 16:32 CST	0	Source: Broadcast Media

The outflow produced from a line of thunderstorms across both Potter and Randall County blew power lines and power poles over on the northeast side of Loop 335 in Amarillo (Potter County).

HUTCHINSON COUNTY --- HUTCHINSON CO ARPT [35.70, -101.40]

03/17/13 17:06 CST	0	Thunderstorm Wind (MG 50 kt)
03/17/13 17:07 CST	0	Source: ASOS

The outflow from a collapsed thunderstorm caused the Borger (Hutchinson County) ASOS to observe a 58 mph wind gust.

During the afternoon hours of the 17th an upper level shortwave trough moved across the Texas Panhandle. This trough provided sufficient synoptic forcing to cause convection to develop along a surface trough moving into the Texas Panhandle from central New Mexico. While midlevel moisture was sufficient for convection to form, there remained a deep dry layer leading to a damaging wind threat. This threat was verified as multiple 58 mph or higher thunderstorm wind gusts were reported from across the southern Texas Panhandle. As the convection moved through the central portion of the Panhandle, a visible decrease in intensity and coverage could be seen in both radar data and satellite imagery. The decrease in intensity was due to the storms moving east of the instability axis, and into a more stable environment. While some damage was reported no injuries were related to thunderstorm activity.

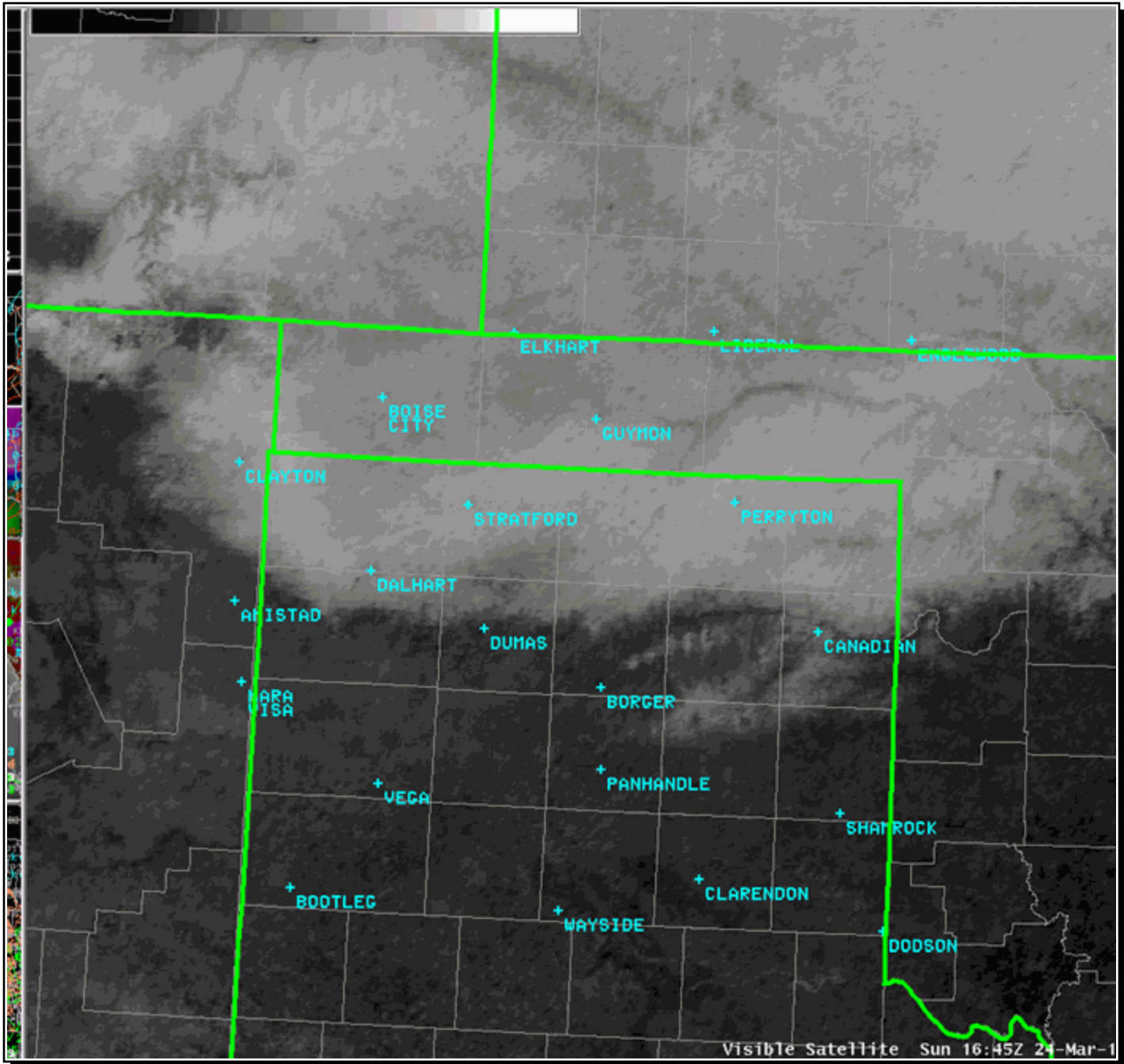
(TX-Z001) DALLAM, (TX-Z002) SHERMAN, (TX-Z003) HANSFORD, (TX-Z004) OCHILTREE, (TX-Z005) LIPSCOMB, (TX-Z006) HARTLEY, (TX-Z009) ROBERTS, (TX-Z010) HEMPHILL

03/23/13 15:00 CST	0	Winter Weather
03/23/13 21:00 CST	0	

An upper level trough of low pressure moved through the Central Plains during evening hours of the 23rd. The lift provided by this trough coupled with the lift of a 90 to 100 MPH jet stream to initiate precipitation across the northern Texas Panhandle during the early evening. A cold front had moved through the area earlier in the day and caused surface temperatures to rapidly drop below freezing. Snow showers moved from west to east quickly producing 1 to 3 inches of snow and causing some roadways to become slick. Snow showers lessened in intensity as the evening progressed due to the upper level forcing moving further to the east, and all snow showers across the Panhandle ended by 10 PM CDT.

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------



Satellite imagery from the morning of the 24th showing the snow cover across the northern Texas and Oklahoma Panhandles.

(TX-Z011) OLDHAM, (TX-Z012) POTTER, (TX-Z016) DEAF SMITH, (TX-Z017) RANDALL

03/23/13 15:30 CST	0	High Wind (MAX 58 kt)
03/23/13 18:20 CST	0	

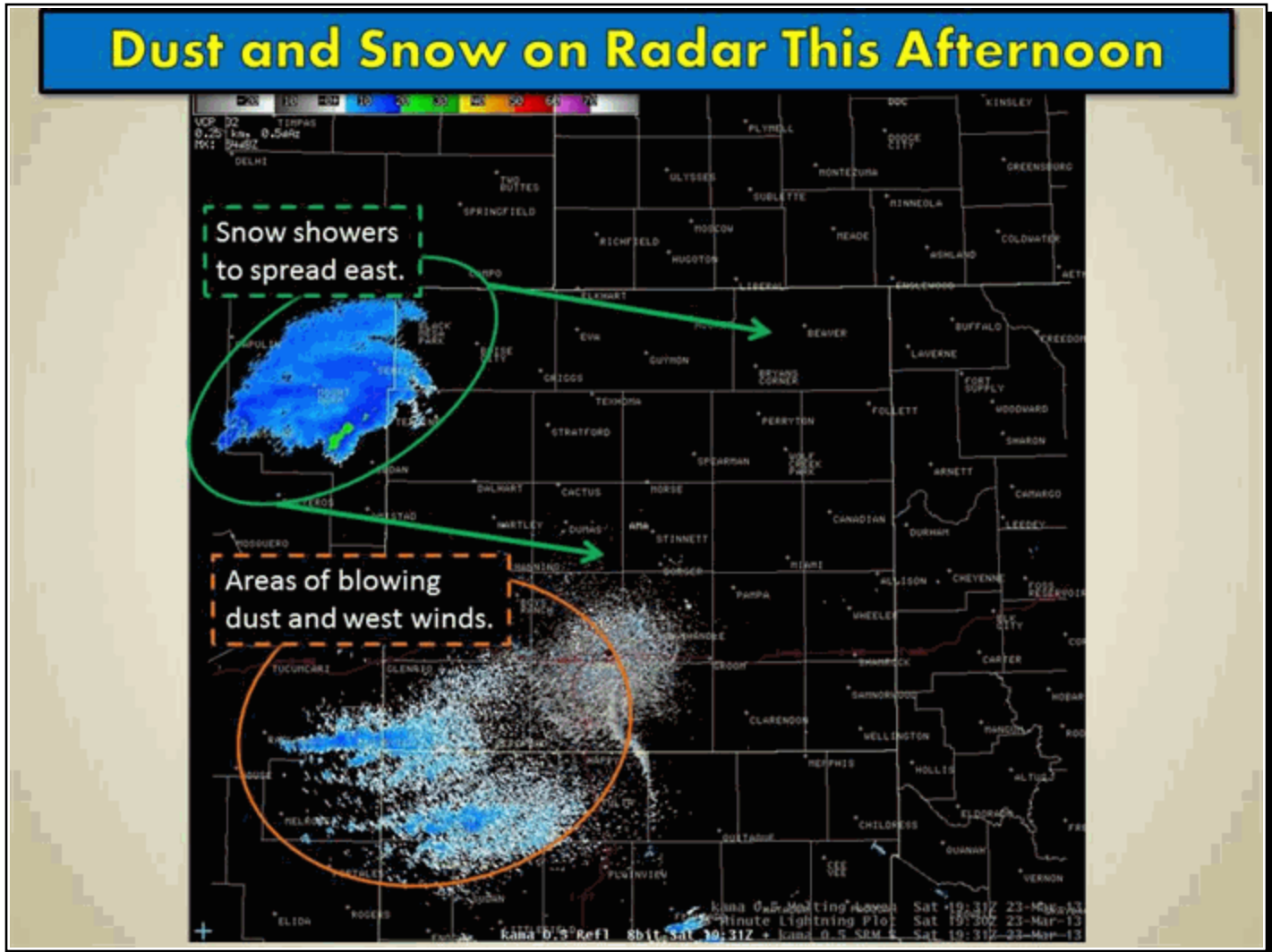
The combination of a strong surface pressure gradient behind a cold front and strong winds aloft mixing to the surface, which caused a period of high winds across the southwestern Texas Panhandle during the afternoon of the 23rd. In Oldham County, a semi-tractor trailer on Interstate 40 east of the town of Wildorado (Oldham County) was blown over by an estimated non-thunderstorm wind gust of 65 MPH. In Deaf Smith County, several observations sites reported sustained winds of 45 MPH with the highest gust of 67 mph occurring at the West Texas Mesonet site at Bootleg (Deaf Smith County). These high winds blew a roof off of a mobile home in the southern part of the town of Hereford (Deaf Smith County), and the roof was blown into power lines causing several residents to lose power. In Randall County, an estimated wind gust of 60 mph downed small tree limbs and knocked out power for a portion of southwest Amarillo

Storm Data and Unusual Weather Phenomena - March 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------

(Randall County). Also the KVII Schoolnet weather station at Lakeview Elementary in Timbercreek Canyon (Randall County) observed a 58 mph non-thunderstorm wind gust. In Potter County, high winds flipped a wooden shed in Bushland (Potter County) and blew a roof off of a trailer on the northwest side of Amarillo (Potter County). The Bushland KVII Schoolnet site reported a non-thunderstorm wind gust of 64 MPH, and a trained spotter measured a 61 MPH non-thunderstorm winds gust on the west side of Amarillo (Potter County). By 6 PM CDT, the surface pressure gradient had decreased sufficiently to bring an end to high winds for the southwestern Texas Panhandle.

The following is a list of the highest non-thunderstorm wind gusts reported: 11 miles west northwest of Bootleg (Deaf Smith County) 67 MPH; 1 mile north northwest of Hereford (Deaf Smith County) 59 MPH; 2 miles west northwest of Hereford (Deaf Smith County) 61 MPH; 1 mile east of Wildorado (Oldham County) 65 MPH; 5 miles west southwest of Amarillo (Randall County) 60 MPH; 2 miles north of Canyon (Randall County) 59 MPH; 5 miles east northeast Hereford (Deaf Smith County) 59 MPH; 1 east Bushland (Potter County) 64 MPH; 5 miles west of Timbercreek Canyon (Randall County) 58 MPH; 4 miles west northwest of Amarillo (Potter County) 58 MPH; 7 miles north of Bootleg (Deaf Smith County) 60 MPH; and 4 miles west of Amarillo (Potter County) 61 MPH.



Radar image from the afternoon of the 23rd showing an area of the high winds blowing dust across the southwestern Texas Panhandle while snow was moving into the northern Texas and western Oklahoma Panhandle.