Storm Data and Unusual Weather Phenomena - October 2013

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

OKLAHOMA, Panhandle

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

	10/01/13 00:00 CST	0	Drought
	10/31/13 23:59 CST	8M	

The month of October saw few precipitation events and the precipitation coverage was much more isolated than September. This led to near steady state of drought conditions across the Oklahoma Panhandle. Guymon recorded 1.00 inch of precipitation (0.57 inch below normal) for the month of October. The U.S. Drought Monitor showed near steady state conditions for the month of October. Only portions of Texas County remain in the Extreme (D3) Drought rating, while the remainder of the Oklahoma Panhandle falls into the Severe Drought (D2) rating.

October brought to an end the growing and wet season across the Oklahoma Panhandle. Some reports have been received stating decent summer crop yields from across the Panhandle from both irrigated and some dryland fields. However, a drier October and more isolated precipitation events has led to upper soil zones degrading to 10 to 40 percent of normal. Deeper soil zones continue to range from 50 to 150 percent of normal. The Palmer Drought Severity Index showed slight improvement with the Oklahoma Panhandle now rated at Near Normal. Water watches remain in effect for several public water systems through October while voluntary to mandatory water restrictions have been enacted.

Economic losses due to the drought through October were estimated near $2 million (D2)/$5 million (D3)/$10 million (D4) a county, and were predominately the result of delayed growth of corn and cotton, marginal supplemental watering, reduction of cattle herd sizes, and supplemental feed for cattle in pastures and rangeland.

(OK-Z001) CIMARRON

	10/06/13 04:00 CST	0	Cold/Wind Chill
	10/06/13 06:00 CST	0	

Cimarron County experienced a freeze during the early morning hours of the 6th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures ranged from 27 degrees at the Oklahoma Mesonet site at 5 miles southeast of Kenton (Cimarron County) to 30 degrees at the Oklahoma Mesonet site 3 miles south-southeast of Boise City (Cimarron County). After sunrise on the 6th, temperatures quickly warmed above freezing by 6:00 AM CST.

(OK-Z001) CIMARRON

	10/10/13 16:20 CST	0	High Wind (MAX 58 kt)
	10/10/13 17:40 CST	0	

A combination of factors led to a brief window of high wind gusts in Cimarron County during the evening hours of the 10th. A 60 mph low level jet set up across the Oklahoma Panhandle during the evening hours as a surface low pressure system moved into southeastern Colorado which tightened the surface pressure gradient across the county. As virga showers moved out of eastern New Mexico and into Cimarron County, the additional downward motion below these storms combined with the low level jet and tight surface pressure gradient to produce high wind gusts at the surface. The Oklahoma Mesonet site 5 miles southeast of Kenton (Cimarron County) reported non-thunderstorm wind gusts of 65 mph at 5:20 PM CST, 67 mph at 5:25 PM CST, and 58 mph at 5:30 PM CST. The high wind gust potential ended as the line of virga showers moved into the central Oklahoma Panhandle.

TEXAS COUNTY --- 1.7 E GOODWELL [36.60, -101.60]

	10/10/13 19:00 CST	0	Thunderstorm Wind (MG 62 kt)
	10/10/13 19:01 CST	0	Source: Mesonet

An embedded thunderstorm within an eastward moving line of thunderstorms briefly intensified while moving across the Oklahoma Panhandle. This storm produced a 71 mph downburst 2 miles east of Goodwell (Texas County). The Oklahoma mesonet site 2 miles east of Goodwell was able to measure this downburst. After producing this downburst, the nocturnal inversion strengthened sufficiently to prevent any further downbursts during the evening hours of the 10th.

A line of thunderstorms developed over the central Oklahoma Panhandle along an eastward moving cold front during the evening hours of the 10th. The additional low level forcing provided by the cold front allowed the line to tap into marginal elevated instability. The access to elevated instability allowed embedded storms within the line to briefly reach severe levels. One such embedded storm was able to produce a 71 mph downburst in Texas County. After producing this downburst the nocturnal inversion strengthened which prevented any further downburst during the evening hours of the 10th.

(OK-Z003) BEAVER

	10/17/13 03:00 CST	0	Cold/Wind Chill
	10/17/13 08:00 CST	0	

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

Beaver County experienced a freeze during the early morning hours of the 17th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures dropped to 31 degrees across the city of Beaver (Beaver County). After sunrise on the 17th, temperatures quickly warmed above freezing by 8:00 AM CST.

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

	10/18/13 20:30 CST	0	Cold/Wind Chill
	10/19/13 08:30 CST	0	

A cold front that moved through the Oklahoma Panhandle during the daylight hours of the 18th allowed temperatures to reach freezing during the early evening hours of the 18th and persist into the morning hours of the 19th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures ranged from 25 degrees at the Oklahoma Mesonet site near Kenton (Cimarron County) to 32 degrees at the Oklahoma Mesonet site near Slapout (Beaver County). After sunrise on the 19th, temperatures quickly warmed above freezing by 8:30 AM CST.

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

	10/25/13 05:00 CST	0	Cold/Wind Chill
	10/25/13 08:00 CST	0	

A cold front that moved through the Oklahoma Panhandle during the daylight hours of the 24th allowed temperatures to reach freezing during the early morning hours of the 25th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures dropped to 32 degrees across Texas and Beaver Counties. After sunrise on the 17th, temperatures quickly warmed above freezing by 8:00 AM CST.

BEAVER COUNTY --- 0.7 S BEAVER [36.81, -100.52]

	10/28/13 22:00 CST	0	Hail (1.75 in)
	10/28/13 22:01 CST	0	Source: Emergency Manager

A cluster of thunderstorms moved over the city of Beaver during the late night hours of the 28th. While over the city, the Beaver County Emergency Manager reported golf ball size hail (1.75 inches) at the Sheriff's Office in town. The thunderstorms stalled over the city for two hours before moving into western Oklahoma before the midnight hour of the 29th.

BEAVER COUNTY --- 9.4 E FORGAN [36.89, -100.36]

	10/28/13 23:05 CST	0	Thunderstorm Wind (EG 61 kt)
	10/28/13 23:06 CST	0	Source: Public

A cluster of thunderstorms moved over eastern Beaver County during the late night hours of the 28th. As the cluster moved towards western Oklahoma, a member of the public reported a 70 mph downburst 9 miles west of Knowles. The downburst hit his vehicle which caused him to briefly lose control over the vehicle on the wet roadway. By 11:30 PM CST, the cluster of thunderstorms moved into western Oklahoma which brought the potential for severe weather across Beaver County to an end.

A weak upper level shortwave initiated thunderstorms across the central Texas Panhandle during the late evening hours of the 28th. These thunderstorms would move to the northeast into Beaver County and merged into a multi-cellular structure over eastern Beaver County. These thunderstorms intensified over northeastern Beaver County upon gaining access to a more elevated unstable environment. The storms were able to produce golf ball size hail before making a transition to a stationary heavy rain producers. The extra downward drag caused by the heavy rain produced a 70 mph thunderstorm wind gust shortly after the 11 PM CST. No further severe weather was reported after this gust.

BEAVER COUNTY --- 0.2 WSW BEAVER [36.82, -100.52], 0.2 ESE BEAVER [36.82, -100.52], 0.7 S BEAVER [36.81, -100.52], 0.7 S BEAVER [36.81, -100.52]

	10/28/13 22:33 CST	0	Flash Flood (due to Heavy Rain)
	10/28/13 23:30 CST	0	Source: Emergency Manager

A cluster of thunderstorms stalled over the city of Beaver (Beaver County) during the late night hours of the 28th. These thunderstorms were able to produce 1.55 inches of heavy rain with in a hour as reported by the KVII Schoolnet site at the Beaver High School (Beaver County). This heavy rain led to flash flooding across the city. The Beaver County Ememrgency Manager reported 6 to 8 inches of fast flowing water on Avenue E in front of the Sheriff's office, and on Douglas Ave. This was enough water to span the width of the road from curb to curb of both roads. This flash flooding quickly receded as thunderstorms moved in western Oklahoma.

A weak upper level shortwave initiated thunderstorms across the central Texas Panhandle during the late evening hours of the 28th. These thunderstorms would move to the northeast into Beaver County and merged into a multi-cellular structure over eastern Beaver County. These thunderstorms briefly intensified to severe levels over northeastern Beaver County before stalling and transitioning to a heavy rain producers. The heavy rain produced flash flooding across the town of Beaver as nearly 2 inches of rain was produced within one hour. The flash flooding persisted until thunderstorm activity moved into western Oklahoma around 11:30 PM CST.

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

TEXAS, North Panhandle

(TX-Z001) DALLAM, (TX-Z002) SHERMAN, (TX-Z003) HANSFORD, (TX-Z006) HARTLEY, (TX-Z007) MOORE, (TX-Z012) POTTER, (TX-Z013) CARSON

	10/01/13 00:00 CST	0	Drought
	10/31/13 23:59 CST	20M	

The month of October saw few precipitation events and the precipitation coverage was much more isolated than September. This led to near steady state of drought conditions across the Texas Panhandle. Portions of the northwest Texas Panhandle remain in Extreme (D3) Drought rating while the western half of the Texas Panhandle remains at the Severe (D2) Drought rating. The remainder of the Texas Panhandle has dropped below Severe (D2) Drought rating. Amarillo recorded 0.17 inch of precipitation for the month (1.49 inches below normal), Dalhart recorded 0.12 inch of precipitation (1.35 inches below normal), and Borger recorded 0.26 inch of precipitation (1.46 inches below normal).

October brought to an end the growing and wet season across the Texas Panhandle. The Texas A&M Agrilife Program received reports of decent summer crop yields from across the Panhandle from both irrigated and some dryland fields. However, a drier October and more isolated precipitation events has led to upper soil zones degrading to 10 to 40 percent of normal. Deeper soil zones continue to range from 50 to 150 percent of normal. The Palmer Drought Severity Index continues to rate the Texas Panhandle at Extreme Drought due to the impact from the long range drought from the past three years. Countywide burn bans continue to be supported in Moore, Roberts, Hemphill, and Armstrong Counties.

Reservoirs and stream flows across the majority of the Panhandle have remained at near normal flow, but some streams across the southern Texas Panhandle have dropped below normal. The reservoirs of Palo Duro and Greenbelt Lake are both below 15 percent capacity with Lake Meredith at zero percent capacity. Water watches for several public water systems persisted through October while voluntary to mandatory mild water restrictions have been enacted.

Economic losses due to the drought through October were estimated near $2 million (D2)/$5 million (D3)/$10 million (D4) a county, and were predominately the result of delayed growth of corn and cotton, marginal supplemental watering, reduction of cattle herd sizes, and supplemental feed for cattle in pastures and rangeland.

(TX-Z006) HARTLEY

	10/10/13 16:20 CST	0	High Wind (MAX 55 kt)
	10/10/13 17:40 CST	0	

A combination of factors led to a brief window of high wind gusts in Hartley County during the evening hours of the 10th. A 60 mph low level jet set up across the Texas Panhandle during the evening hours as a surface low pressure system moved into southeastern Colorado which tightened the surface pressure gradient across the county. As virga showers moved out of eastern New Mexico and into Hartley County, the additional downward motion below these storms combined with the low level jet and tight surface pressure gradient to produce high wind gusts at the surface. The Dalhart (Hartley County) ASOS reported a 63 mph non-thunderstorm wind gust at 4:20 PM. High wind gust potential ended as the line of virga showers moved into the central Texas Panhandle.

HANSFORD COUNTY --- 1.5 SSW GRUVER [36.25, -101.41]

	10/10/13 19:18 CST	0	Thunderstorm Wind (MG 51 kt)
	10/10/13 19:19 CST	0	Source: Broadcast Media

An embedded thunderstorm within an eastward moving line of thunderstorms briefly intensified while moving across the Oklahoma Panhandle. This storm produced a 59 mph downburst in the town of Gruver (Hansford County). The KVII Schoolnet site a Gruver High School was able to measure this downburst. After producing this downburst, the nocturnal inversion strengthened sufficiently to prevent any further downbursts during the evening hours of the 10th.

A line of thunderstorms developed over the central Texas Panhandle along an eastward moving cold front during the evening hours of the 10th. The additional low level forcing provided by the cold front allowed the line to tap into marginal elevated instability. The access to elevated instability allowed embedded storms within the line to briefly reach severe levels. One such embedded storm was able to produce a 59 mph downburst in Hansford County. After producing this downburst the nocturnal inversion strengthened which prevented any further downburst during the evening hours of the 10th.

(TX-Z001) DALLAM, (TX-Z006) HARTLEY

	10/17/13 03:00 CST	0	Cold/Wind Chill
	10/17/13 08:00 CST	0	

The northwest Texas Panhandle experienced a freeze during the early morning hours of the 17th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures dropped to 31 degrees across the city of

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Dalhart (Dallam and Hartley Counties). After sunrise on the 17th, temperatures quickly warmed above freezing by 8:00 AM CST.

(TX-Z001) DALLAM, (TX-Z002) SHERMAN, (TX-Z003) HANSFORD, (TX-Z004) OCHILTREE, (TX-Z005) LIPSCOMB, (TX-Z006) HARTLEY, (TX-Z007) MOORE, (TX-Z008) HUTCHINSON, (TX-Z009) ROBERTS, (TX-Z010) HEMPHILL, (TX-Z011) OLDHAM, (TX-Z012) POTTER, (TX-Z013) CARSON, (TX-Z014) GRAY, (TX-Z015) WHEELER, (TX-Z016) DEAF SMITH, (TX-Z017) RANDALL, (TX-Z018) ARMSTRONG, (TX-Z019) DONLEY

	10/18/13 20:30 CST	0	Cold/Wind Chill
	10/19/13 08:30 CST	0	

A cold front that moved through the Texas Panhandle during the daylight hours of the 18th allowed temperatures to reach freezing during the early evening hours of the 18th and persist into the morning hours of the 19th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures ranged from 24 degrees at Hereford (Deaf Smith County) to 32 degrees at Wheeler (Wheeler County). After sunrise on the 19th, temperatures quickly warmed above freezing by 8:30 AM CST.

(TX-Z003) HANSFORD, (TX-Z009) ROBERTS, (TX-Z010) HEMPHILL, (TX-Z019) DONLEY

	10/25/13 05:00 CST	0	Cold/Wind Chill
	10/25/13 08:00 CST	0	

A cold front that moved through the Texas Panhandle during the daylight hours of the 24th allowed temperatures to reach freezing during the early morning hours of the 25th. These subfreezing temperatures threatened sensitive vegetation during the growing season. Overnight low temperatures dropped to 32 degrees across multiple counties in the Texas Panhandle. After sunrise on the 17th, temperatures quickly warmed above freezing by 8:00 AM CST.