

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
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### OKLAHOMA, Panhandle

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

08/01/13 00:00 CST	0	Drought
08/31/13 23:59 CST	27M	

Several widespread precipitation events during the month of August provided continued relief in drought conditions across the Oklahoma Panhandle. Guymon recorded near average precipitation for the month of August with 2.77 inches of precipitation (0.98 inch above normal). This August ranked as the 48th coolest and the 8th wettest August for the Oklahoma Panhandle on record. The U.S. Drought Monitor showed slight improvements but the vast majority of the Panhandle remains in Extreme (D3) Drought rating. With that being said, there are small portions of the far western and far eastern Panhandle that have improved to the Severe Drought (D2) rating.

The widespread precipitation during the month has provided significant short-term improvement in upper zone soils, and has helped in deeper soil moisture. Many farmers were able to take advantage of the increased moisture by cutting back on the amount of supplemental watering during a period of higher water demand by crops. The Palmer Drought Severity Index showed improvement during the month of August with the Oklahoma Panhandle now rated as Moderate Drought. For the second month in a row dryland crops showed signs of improvement. However, water watches remain in effect for several public water systems through August while voluntary to mandatory water restrictions have been enacted.

Economic losses due to the drought during August were estimated near \$10 million (D3)/\$5 million (D2) a county, and were predominately the result for poor growth of summer crops, marginal supplemental watering, reduction of cattle herd sizes, and supplemental feed for cattle in pastures and rangeland.

#### TEXAS COUNTY --- 0.4 ESE HARDESTY [36.62, -101.19], 1.2 SE HARDESTY [36.61, -101.18]

08/06/13 17:15 CST	0	Hail (1.00 in)
08/06/13 17:18 CST	0	Source: Public

A thunderstorm developed over central Texas County during the evening hours of the 6th. The thunderstorm briefly intensified as it approached the city of Hardesty (Texas County). A member of the public reported quarter size hail (1.00 inch) as the thunderstorm passed over their residence. The thunderstorm continued moving to the southeast across the county before dissipating prior to exiting the county.

#### BEAVER COUNTY --- 3.5 SE SLAPOUT [36.58, -100.08]

08/06/13 17:34 CST	0	Thunderstorm Wind (EG 52 kt)
08/06/13 17:36 CST	0	Source: Emergency Manager

A thunderstorm developed over southern Beaver County during the evening hours of the 6th. The thunderstorm briefly intensified as it approached the city of Slapout (Beaver County). The Beaver County Emergency Manager reported that the thunderstorm produced a 60 mph gust. The thunderstorm produced this gust while collapsing.

#### BEAVER COUNTY --- 3.9 SE SLAPOUT [36.58, -100.07]

08/06/13 17:34 CST	0	Thunderstorm Wind (EG 52 kt)
08/08/13 17:36 CST	0	Source: Emergency Manager

A thunderstorm developed over southern Beaver County during the evening hours of the 6th. The thunderstorm briefly intensified as it approached the city of Slapout (Beaver County). The Beaver County Emergency Manager reported that the thunderstorm produced a gust which broke 2 inch to 2 1/2 inch tree limbs off trees. The thunderstorm produced this gust while collapsing.

#### BEAVER COUNTY --- 5.7 SE SLAPOUT [36.56, -100.05], 3.8 NE SLAPOUT [36.65, -100.06]

08/06/13 17:34 CST	0	Hail (1.00 in)
08/08/13 17:36 CST	0	Source: Emergency Manager

A thunderstorm developed over southern Beaver County during the evening hours of the 6th. The thunderstorm briefly intensified as it approached the city of Slapout (Beaver County). The Beaver County Emergency Manager reported quarter size hail (1.00 inch) while the thunderstorm was 4 miles southeast of town. After producing this hail the thunderstorm collapsed.

#### BEAVER COUNTY --- 6.2 SSE SLAPOUT [36.54, -100.08], 2.4 ENE SLAPOUT [36.63, -100.08]

08/06/13 17:34 CST	0	Hail (0.75 in)
08/08/13 17:36 CST	0	Source: Emergency Manager

A thunderstorm developed over southern Beaver County during the evening hours of the 6th. The thunderstorm briefly intensified as it approached the city of Slapout (Beaver County). The Beaver County Emergency Manager reported penny size hail (0.75 inch) while the thunderstorm was 4 miles southeast of town. After producing this hail the thunderstorm collapsed.

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Scattered thunderstorms developed along stationary boundaries across the Oklahoma Panhandle during the evening hours of the 6th. These thunderstorms formed in a moderately unstable environment with marginal deep layer shear. The lack of deep layer shear kept storm intensity limited as updrafts quickly became laden with precipitation and collapsed upon themselves. However, this limited intensification didn't prevent a few storms from producing quarter size hail across the Oklahoma Panhandle. Also, brief thunderstorm wind gusts were reported as thunderstorms collapsed upon themselves. Thunderstorm activity across the panhandle ended shortly before 9 PM CST as the nocturnal inversion strengthened and outflow boundaries cut off access to low level unstable air.

**CIMARRON COUNTY --- 3.8 NNW BOISE CITY [36.78, -102.55], 4.9 N BOISE CITY [36.80, -102.51]**

08/07/13 16:10 CST	0	Hail (2.75 in)
08/07/13 16:12 CST	0	Source: Emergency Manager

A discrete thunderstorm developed across western Cimarron County during the early evening hours of the 7th. The thunderstorm quickly intensified and after initially on a northward track the storm turned to the east. The Cimarron County Emergency Manager reported at the thunderstorm produced baseball size hail (2.75 inches) 4 miles north-northwest of Boise City (Cimarron County). After producing this hail the thunderstorm continued moving to the east before dissipating over western Texas County.

**CIMARRON COUNTY --- 3.0 SSE BOISE CITY [36.69, -102.50]**

08/07/13 16:50 CST	0	Thunderstorm Wind (MG 55 kt)
08/07/13 16:52 CST	0	Source: Mesonet

A developing squall line moved into the western Oklahoma Panhandle during the early evening hours of the 7th. The Oklahoma Mesonet site 3 miles south-southeast of Boise City (Cimarron County) reported a 63 mph thunderstorm wind gust as the squall line moved overhead. This squall line would go on to move eastward across the entire panhandle.

**CIMARRON COUNTY --- 2.6 W KEYES [36.81, -102.30], 7.5 NE BOISE CITY [36.81, -102.43]**

08/07/13 17:04 CST	0	Hail (1.75 in)
08/07/13 17:06 CST	0	Source: Law Enforcement

A discrete thunderstorm developed across western Cimarron County during the early evening hours of the 7th. The thunderstorm quickly intensified and after initially on a northward track the storm turned to the east. A local law enforcement officer 7 miles west of Keyes (Cimarron County) reported golf ball size hail (1.75 inches). After producing this hail the thunderstorm continued moving to the east before dissipating over western Texas County.

**CIMARRON COUNTY --- 1.1 SW KEYES [36.81, -102.27], 0.7 SSE KEYES [36.81, -102.24]**

08/07/13 17:15 CST	0	Hail (1.75 in)
08/07/13 17:17 CST	0	Source: Law Enforcement

A discrete thunderstorm developed across western Cimarron County during the early evening hours of the 7th. The thunderstorm quickly intensified and after initially on a northward track the storm turned to the east. As the thunderstorm moved over the town of Keyes (Cimarron County), a Cimarron County Sheriff's Deputy reported golf ball size hail (1.75 inches) in town. After producing this hail the thunderstorm continued moving to the east before dissipating over western Texas County.

**CIMARRON COUNTY --- 0.9 SW KEYES [36.81, -102.26], 0.8 SSE KEYES [36.81, -102.24]**

08/07/13 17:29 CST	0	Hail (1.75 in)
08/07/13 17:30 CST	0	Source: Trained Spotter

A discrete thunderstorm developed across western Cimarron County during the early evening hours of the 7th. The thunderstorm quickly intensified and after initially on a northward track the storm turned to the east. As the thunderstorm moved over the town of Keyes (Cimarron County), a Cimarron County Sheriff's Deputy reported golf ball size hail (1.75 inches) in town. After producing this hail the thunderstorm continued moving to the east before dissipating over western Texas County.

**CIMARRON COUNTY --- 1.0 SSW KEYES [36.81, -102.26], 0.9 SSE KEYES [36.81, -102.25]**

08/07/13 17:30 CST	16K	Hail (2.75 in)
08/07/13 17:32 CST	0	Source: Law Enforcement

A discrete thunderstorm developed across western Cimarron County during the early evening hours of the 7th. The thunderstorm quickly intensified and after initially on a northward track the storm turned to the east. As the thunderstorm moved over the town of Keyes (Cimarron County), a Cimarron County Sheriff's Deputy reported baseball size hail (2.75 inches) broke out 8 county vehicle windshields. After producing this hail the thunderstorm continued moving to the east before dissipating over western Texas County.

**TEXAS COUNTY --- 3.1 SSW TYRONE [36.91, -101.09], 4.0 NNE BAKER [36.93, -101.00]**

08/07/13 18:07 CST	0	Hail (1.50 in)
08/07/13 18:09 CST	0	Source: Trained Spotter

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A discrete thunderstorm developed over the eastern portion of Texas County during the early evening hours of the 7th. The thunderstorm quickly intensified and slowly moved eastward across the county. A trained storm spotter reported that the thunderstorm produced ping pong size hail (1.50 inches) 3 miles southeast of the town of Tyrone (Texas County) and a funnel cloud. The thunderstorm continued a slow eastward track across Texas County before entering Beaver County shortly before 7 PM CST.

**TEXAS COUNTY --- BAKER [36.87, -101.02]**

08/07/13 18:25 CST		3K	Thunderstorm Wind (EG 52 kt)
08/07/13 18:26 CST		0	Source: Public

A discrete thunderstorm developed over the eastern portion of Texas County during the early evening hours of the 7th. The thunderstorm quickly intensified and slowly moved eastward across the county. A member of the public in the town of Baker (Texas County) reported that a wind gust produced by the thunderstorm caused roof damage to a farm building. After producing this damage the thunderstorm continued a slow eastward track across Texas County before entering Beaver County shortly before 7 PM CST.

**TEXAS COUNTY --- 2.9 SSW TYRONE [36.91, -101.08], 2.9 NNE BAKER [36.91, -101.01]**

08/07/13 18:34 CST		0	Hail (1.50 in)
08/07/13 18:36 CST		0	Source: Emergency Manager

A discrete thunderstorm developed over the eastern portion of Texas County during the early evening hours of the 7th. The thunderstorm quickly intensified and slowly moved eastward across the county. The Texas County Emergency Manager reported that the thunderstorm produced ping pong ball size hail (1.50 inches) 3 miles north-northwest of Baker (Cimarron County). After producing this hail the thunderstorm continued a slow eastward track across Texas County before entering Beaver County shortly before 7 PM CST.

**CIMARRON COUNTY --- 3.0 SSE BOISE CITY [36.69, -102.50]**

08/07/13 18:35 CST		0	Thunderstorm Wind (MG 56 kt)
08/07/13 18:37 CST		0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Cimarron County, the Oklahoma Mesonet site 3 miles south-southeast of Boise City (Cimarron County) reported a 64 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

**BEAVER COUNTY --- 3.5 WSW TURPIN [36.85, -100.94]**

08/07/13 18:36 CST		0	Tornado (EF0, L: 0.11 mi , W: 25 yd)
08/07/13 18:42 CST		0	Source: NWS Storm Survey

A weak EF0 tornado touched down 3.5 miles west-southwest of Turpin, Oklahoma during the evening hours of the 7th. A supercell thunderstorm spawned the tornado, which lasted for 6 minutes but produced no damage. The maximum wind speed was estimated to be 65 mph.

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

08/07/13 20:00 CST		0	Thunderstorm Wind (MG 57 kt)
08/07/13 20:02 CST		0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the Oklahoma Mesonet site 2 miles east of Goodwell (Texas County) reported a 66 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

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

08/07/13 20:05 CST		0	Thunderstorm Wind (MG 59 kt)
08/08/13 20:06 CST		0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the Oklahoma Mesonet site 2 miles east of Goodwell (Texas County) reported a 68 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

**TEXAS COUNTY --- 0.9 SW HOOKER [36.86, -101.23]**

08/07/13 20:30 CST		0	Thunderstorm Wind (MG 56 kt)
08/07/13 20:31 CST		0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the Oklahoma Mesonet site 1 mile west of Hooker (Texas County) reported a 65 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

**TEXAS COUNTY --- 2.4 NNE HOOKER [36.90, -101.20]**

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	08/07/13 20:32 CST		0	Thunderstorm Wind (MG 51 kt)
	08/07/13 20:33 CST		0	Source: Broadcast Media

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the KVII Schoolnet site at Hooker Junior High School 3 miles north-northeast of Hooker (Texas County) reported a 59 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

### TEXAS COUNTY --- 0.9 SW HOOKER [36.86, -101.23]

08/07/13 20:35 CST	0	Thunderstorm Wind (MG 56 kt)
08/07/13 20:36 CST	0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the Oklahoma Mesonet site 1 mile west of Hooker (Texas County) reported a 65 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

### TEXAS COUNTY --- 0.9 SW HOOKER [36.86, -101.23]

08/07/13 20:40 CST	0	Thunderstorm Wind (MG 52 kt)
08/07/13 20:41 CST	0	Source: Mesonet

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Texas County, the Oklahoma Mesonet site 1 mile west of Hooker (Texas County) reported a 60 mph thunderstorm wind gust. The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

### BEAVER COUNTY --- TURPIN [36.87, -100.88]

08/07/13 21:34 CST	0	Thunderstorm Wind (EG 52 kt)
08/07/13 21:35 CST	0	Source: Emergency Manager

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved into Beaver County, the Beaver County Emergency Manager reported an estimated 60 mph thunderstorm wind gust in the town of Turpin (Beaver County). The squall line continued to move to the east after producing this gust and exited the panhandle by midnight of the 8th.

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

08/07/13 22:08 CST	0.20K	Thunderstorm Wind (EG 52 kt)
08/07/13 22:09 CST	0	Source: Emergency Manager

A squall line moved across the Oklahoma Panhandle during the late night hours of the 7th. As the squall line moved across Beaver County the county Emergency Manager reported that 3 to 4 inch diameter tree branches were blown down in the town of Beaver (Beaver County). The squall line continued to move to the east after producing this damage and exited the panhandle by midnight of the 8th.

**The combination of a moderately unstable atmosphere, decent deep layer shear, and the presence of a stalled frontal boundary led to a severe weather outbreak during the evening and overnight hours of the 7th. The 6 PM CST upper air soundings out of Amarillo, Texas and Dodge City, Kansas showed surface based instability between 1700 and 2500 J/kg with deep layer shear around 32 kt across the Oklahoma Panhandle. As daytime heating maximized during the early afternoon discrete thunderstorms began developing across the western Texas and Oklahoma Panhandle. After briefly moving to the north these discrete thunderstorms turn to the right and began moving to the east across the panhandle. These discrete thunderstorms would produce hail across the Oklahoma Panhandle up to the size of baseballs. One discrete thunderstorm over eastern Texas County and western Beaver County developed near enough to the stationary boundary for the additional low level wind shear to help develop a brief tornado. The tornado lasted less than ten minutes and the parent thunderstorms quickly diminished as it moved eastward into Beaver County. By 7 PM CST, discrete thunderstorms over the western Oklahoma Panhandle began forming into a squall line. This line would go on to traverse the Oklahoma Panhandle producing 60 to 70 mph gusts and ping pong ball size hail before entering western Oklahoma by midnight of the 8th.**

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*Photo evidence of the tornado near Turpin, Oklahoma*

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<b>CIMARRON COUNTY --- 0.7 S KEYES [36.81, -102.25], 3.3 NW KEYES [36.86, -102.29], 5.2 W STURGIS [36.87, -102.14], 6.3 E KEYES [36.82, -102.14]</b>				
	08/07/13 18:30 CST	0		Flash Flood (due to Heavy Rain)
	08/07/13 20:30 CST	0		Source: Emergency Manager

The combination of heavy rain from a discrete thunderstorm and squall line lead to flash flooding north and east of the city of Keyes (Cimarron County). This flash flooding washed out several county roads as reported by the Cimarron County Emergency Manager. Once precipitation ended over this portion of the county, the flooding quickly receded. No swift water rescues or stranded motorist were reported in association to this flash flooding.

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<b>TEXAS COUNTY --- 1.5 N (GUY)GUYMON MUNI ARP [36.70, -101.50], 2.2 NNE GUYMON [36.71, -101.46], 1.1 ESE GUYMON [36.67, -101.46], 0.6 SE (GUY)GUYMON MUNI ARP [36.67, -101.49]</b>				
	08/07/13 20:00 CST	0		Flash Flood (due to Heavy Rain)
	08/07/13 21:29 CST	0		Source: Fire Department/Rescue

Heavy rain from a squall line led to flash flooding in the town of Guymon (Texas County). The Guymon Fire Department reported that low lying roads were closed due to flash flooding making them impassable. Once precipitation ended over this portion of the county, the flooding quickly receded. No swift water rescues or stranded motorist were reported in association to this flash flooding.

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<b>TEXAS COUNTY --- 6.5 W HOOKER [36.87, -101.34], 3.8 SSW TYRONE [36.90, -101.09], 4.1 E HARDESTY [36.61, -101.13], 5.2 S OPTIMA [36.67, -101.34]</b>				
	08/07/13 21:00 CST	0		Flash Flood (due to Heavy Rain)
	08/08/13 00:30 CST	0		Source: Department of Highways

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Heavy rain from a squall line led to flash flooding across eastern Texas County. The Oklahoma Department of Transportation reported that flash flooding caused the closure of roads across the eastern portion of the county as they had become impassable. Once precipitation ended over this portion of the county, the flooding slowly receded with some roads still flooded after midnight of the 8th. No swift water rescues or stranded motorist were reported in association to this flash flooding.				

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<b>BEAVER COUNTY --- 3.6 WSW BOYD [36.68, -100.88], 0.7 N BOYD [36.71, -100.82], 2.6 S BOYD [36.66, -100.81], 3.3 NW BRYANS CORNER [36.66, -100.85]</b>	08/07/13 21:58 CST	0		Flash Flood (due to Heavy Rain)
	08/07/13 23:00 CST	0		Source: Emergency Manager

Heavy rain from a squall line led to flash flooding over the western portion of Beaver County. The Beaver County Emergency Manager reported that flash flooding was covering U.S. Highway 83 13 miles south of Turpin (Beaver County). Once precipitation ended over this portion of the county, the flooding quickly receded. No swift water rescues or stranded motorist were reported in association to this flash flooding.

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<b>BEAVER COUNTY --- 0.4 W BEAVER [36.82, -100.53], 0.5 ENE BEAVER [36.82, -100.51], 3.3 S BEAVER [36.77, -100.51], 3.3 S BEAVER [36.77, -100.53]</b>	08/07/13 22:17 CST		30K	Flash Flood (due to Heavy Rain)
	08/08/13 01:37 CST	0		Source: Emergency Manager

Heavy rain from a squall line led to flash flooding in the town of Beaver (Beaver County). The Beaver County Emergency Manager reported that 4 inches of rain fell in Beaver over a short period of time. This led to flash flooding in town and on U.S. Highway 270 5 miles south of Beaver (Beaver County). Some roads in Beaver had 4 to 6 inches of water covering the road, and that flood waters had gotten into homes, businesses, and the courthouse. Once precipitation ended over this portion of the county, the flooding slowly receded. No swift water rescues or stranded motorist were reported in association to this flash flooding.

**Discrete thunderstorms and a squall line moved across the Oklahoma Panhandle during the evening and overnight hours of the 7th. These severe storms not only had ample instability to fuel them but also a marginally above average moist atmosphere. The 6 PM CST upper air soundings out of Amarillo, Texas and Dodge City, Kansas showed Precipitable Water values between 1.24 inches and 1.40 inches. This is around the climatologically 75th percentile, which is an indication that thunderstorms forming in this environment will have the potential to produce very heavy to flash flooding rain. Many locations across the panhandle experienced flash flooding and heavy rain before the squall line moved into western Oklahoma by midnight of the 8th.**

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<b>TEXAS COUNTY --- 3.9 SSE HOOKER [36.82, -101.20]</b>	08/07/13 19:00 CST	0		Heavy Rain
	08/07/13 23:00 CST	0		Source: Department of Highways

A squall line moved across Texas County during the evening hours of the 7th. The heavy rain produced by this squall line caused minor flooding on State Highway 94 5 miles south of the town of Hooker (Texas County) as reported by the Oklahoma Department of Transportation. Once precipitation ended over this portion of Texas County, flood waters slowly receded. No swift water rescues or stranded motorists were reported in association to this minor flooding.

**Discrete thunderstorms and a squall line moved across the Oklahoma Panhandle during the evening and overnight hours of the 7th. These severe storms not only had ample instability to fuel them but also a marginally above average moist atmosphere. The 6 PM CST upper air soundings out of Amarillo, Texas and Dodge City, Kansas showed Precipitable Water values between 1.24 inches and 1.40 inches. This is around the climatologically 75th percentile, which is an indication that thunderstorms forming in this environment will have the potential to produce heavy rain. Many locations across the panhandle experienced heavy rain before the squall line moved into western Oklahoma by midnight of the 8th.**

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<b>TEXAS COUNTY --- 12.0 N TEXHOMA [36.67, -101.78]</b>	08/12/13 15:00 CST	0		Heavy Rain
	08/12/13 18:00 CST	0		Source: Trained Spotter

Near stationary thunderstorms developed along a northward moving thunderstorm outflow boundary during the afternoon hours of the 12th. Thunderstorms over Texas County produced heavy rain while remaining over generally the same area. A trained storm spotter 12 miles north of Texhoma (Texas County) reported a storm total accumulation of 2.94 inches. No swift water rescues or stranded motorist were reported in association to this heavy rain.

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<b>TEXAS COUNTY --- GUYMON [36.68, -101.48]</b>	08/12/13 15:00 CST	0		Heavy Rain
	08/12/13 18:00 CST	0		Source: Trained Spotter

Near stationary thunderstorms developed along a northward moving thunderstorm outflow boundary during the afternoon hours of the 12th. Thunderstorms over Texas County produced heavy rain while remaining over generally the same area. The Texas County Emergency Manager reported that a few streets in Guymon (Texas County) were flooded and that Main Street was forced to close. No swift water rescues or stranded motorist were reported in association to this flooding.

**Scattered showers and thunderstorms developed along a surface trough draped across the southern Texas Panhandle during the**

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afternoon hours of the 12th. An thunderstorm outflow boundary was sent northward from these thunderstorms which initiated thunderstorms across the Oklahoma Panhandle. As the thunderstorms moved into the Oklahoma Panhandle, they slowed and became nearly stationary. Couple the near stationary storm motion with unseasonably high Precipitable Water values of 1.4 inches resulted in periods of heavy rain. The heavy rain caused localized flooding in the city of Guymon (Texas County) before the thunderstorms dissipated by 5 PM CST.

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### TEXAS COUNTY --- GUYMON [36.68, -101.48]

08/14/13 14:55 CST	0	Heavy Rain
08/14/13 18:00 CST	0	Source: Emergency Manager

A supercell thunderstorm produced heavy rain over the city of Guymon (Texas County) during the evening hours of the 14th. The Texas County Emergency Manager reported street flooding around the city with water running into the Emergency Management offices. The Emergency Manager reported this was the first time this had happened in 4 years. After the thunderstorm which produced this heavy rain moved into the Texas Panhandle, the minor flooding diminished.

A severe thunderstorm moved across the Oklahoma Panhandle during the evening hours of the 14th. While this thunderstorm did not remain over one location for an extended period of time, it produced very intense rain rates due to the access of an above climatologically normal amount of Perceptible Water. The intense rain rates proved sufficient to produce localize flooding in areas not designed to handle excessive amounts of rain. This thunderstorm quickly moved into the northern Texas Panhandle shortly after 5 PM CST which allowed the minor flooding to recede.

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### TEXAS COUNTY --- 9.3 ESE EVA [36.76, -101.74]

08/14/13 15:50 CST	0	Thunderstorm Wind (EG 56 kt)
08/15/13 16:01 CST	0	Source: Emergency Manager

A discrete supercell moved across Texas County during the early evening hours of the 14th. The Texas County Emergency Manager reported that this thunderstorm produced a 65 to 70 mph wind gust which lasted several minutes 5 miles east southeast of the town of Eva (Texas County). After producing this prolonged gust, it continued moving to the south and exited the Oklahoma Panhandle.

Scattered showers and thunderstorms developed over the eastern Colorado Plains during the early afternoon hours of the 14th. These storms formed along a stalled frontal boundary that had moved across the Southern Plains the previous day. A strengthening jet streak moving across western Kansas provided the large scale forcing needed to initiate storms along the stalled front. After a brief track east of the front the storms turned to the right and began moving due south. As they moved southward one of the storms became a dominate supercell among a couple weaker storms and intensified significantly as it moved across the Oklahoma Panhandle. This supercell quickly moved into the northern Texas Panhandle shortly after 5 PM CST.

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## TEXAS, North Panhandle

(TX-Z001) DALLAM, (TX-Z002) SHERMAN, (TX-Z003) HANSFORD, (TX-Z004) OCHILTREE, (TX-Z006) HARTLEY, (TX-Z007) MOORE, (TX-Z008) HUTCHINSON, (TX-Z009) ROBERTS, (TX-Z011) OLDHAM, (TX-Z012) POTTER, (TX-Z013) CARSON, (TX-Z018) ARMSTRONG, (TX-Z019) DONLEY	0	Drought
08/01/13 00:00 CST		
08/31/13 23:59 CST	90M	

Several widespread precipitation events during the month of August provided continued relief in drought conditions across the Texas Panhandle. Amarillo recorded 1.42 inches of precipitation for the month (1.49 inches below normal), Dalhart recorded 1.64 inches of precipitation (0.01 inch below normal), and Borger recorded 2.73 inches of precipitation (0.44 inch below normal). This August ranked as the 39th warmest and the 49th wettest August for the Texas High Plains region. The vast majority of the Texas Panhandle showed a one category improvement during the month of August with only Moore County remaining in Exceptional (D4) Drought rating. Extreme (D3) drought rating persists across the northwest Panhandle while Severe Drought rating affects the majority of the Texas Panhandle. The extreme southwestern Counties and eastern counties have dropped below Severe Drought rating for the month of August.

The widespread and frequent precipitation chances through the month of August have helped to both provided short-term relief and has helped to counteract some long-term drought impacts. The upper zone soil moisture across the majority of the Texas Panhandle has improved to greater than 40 percent full. For the second month in a row the increased moisture provided relief to farmers during a period of higher water demand by crops. The Palmer Drought Severity Index showed improvement during the month of August with the Texas Panhandle now rated as Severe Drought. Rangeland and Pastures continued to improve after the rains and cattle were in good condition as observed by the Texas Crop and Weather Report. Countywide burn bans were supported in Moore, Potter, and Armstrong Counties.

Reservoirs and stream flows across the Panhandle have improved to normal or much above normal levels. The reservoirs of Palo Duro and Greenbelt Lake are both below 15 percent capacity with Lake Meredith at zero percent capacity. On the 7th, Lake Meredith reached a record low depth of 26.14 feet. Water watches for several public water systems persisted through August while voluntary to mandatory mild water restrictions have been enacted.

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
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Economic losses due to the drought through August were estimated near \$5 million (D2)/\$10 million (D3)/\$15 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.

### DALLAM COUNTY --- TEXLINE [36.38, -103.02]

	08/07/13 17:30 CST	0	Thunderstorm Wind (EG 52 kt)
	08/07/13 17:31 CST	0	Source: Trained Spotter

A discrete thunderstorm moved along the western edge of Dallam County during the evening hours of the 7th. As the thunderstorm moved over the town of Texline (Dallam County), a trained storm spotter reported an estimated 60 mph wind gust. This thunderstorm continued moving to the north before merging with a developing squall line along the Oklahoma and New Mexico state line.

The combination of a moderately unstable atmosphere and decent deep layer shear led to an isolated severe thunderstorm during the evening hour of the 7th. The 6 PM CST upper air soundings out of Amarillo, Texas and Dodge City, Kansas showed surface based instability between 1700 and 2500 J/kg with deep layer shear around 32 kt across the northern Texas Panhandle. As daytime heating maximized the thunderstorm developed along the Texas and New Mexico state lines. This thunderstorm moved to the north along the state lines before producing a severe gust over Dallam County. This thunderstorm would continue moving to the north until it merged with a developing squall line along the Oklahoma and New Mexico state line.

### HARTLEY COUNTY --- DALHART [36.07, -102.52]

	08/07/13 19:35 CST	0	Heavy Rain
	08/07/13 20:41 CST	0	Source: Law Enforcement

A cluster of thunderstorms producing heavy rain moved over the city of Dalhart (Hartley County) during the evening hours of the 7th. The heavy rain led to minor flooding at the intersection of U.S. Highway 87 and 16th Street in town as reported by the Hartley County Sheriff's Office in Dalhart. The minor flooding quickly receded once precipitation ended, and not swift water rescues or stranded motorists were reported in association to this flooding.

A cluster of thunderstorms moved across the western Texas Panhandle during the evening hours of the 7th. This cluster of storms developed in an area of marginally above average atmospheric moisture as shown on the 6 PM CST upper air soundings out of Amarillo. This showed a Precipitable Water value of 1.24 inches which is the climatologically 75th percentile. This cluster moved over Hartley County and produced a brief period of heavy rain which led to minor flooding. The minor flooding receded quickly once thunderstorm activity moved eastward across the northern Texas Panhandle.

### CARSON COUNTY --- PANTEX [35.33, -101.57]

	08/08/13 18:30 CST	0	Heavy Rain
	08/08/13 21:00 CST	0	Source: Other Federal Agency

A discrete thunderstorm moved across Carson County during the early evening hours of the 8th. As the thunderstorm moved over Pantex (Carson County), it produced 0.95 inch of rain. The majority of this rain fell over the span of a half hour. No swift water rescues or stranded motorists were reported in association to this heavy rain.

### HUTCHINSON COUNTY --- STINNETT [35.82, -101.45]

	08/08/13 19:40 CST	0	Heavy Rain
	08/08/13 20:30 CST	0	Source: Emergency Manager

A line of thunderstorms moved across Hutchinson County during the late evening hours of the 8th. The line produced heavy rain over the city of Stinnett (Hutchinson County) which caused minor flooding of city streets. The Hutchinson County Emergency manager reported that the Stinnett Fire Department was conducting traffic control for the affected streets. The minor flooding receded quickly once the line moved away from the city. No swift water rescues or stranded motorists were reported in association to this flooding.

### POTTER COUNTY --- 1.0 W AMARILLO [35.20, -101.84]

	08/08/13 19:40 CST	0	Heavy Rain
	08/08/13 20:30 CST	0	Source: Broadcast Media

A discrete thunderstorm moved across Potter County during the early evening hours of the 8th. The KVII Studio in downtown Amarillo (Potter County), reported 0.28 inch of heavy rain. The station meteorologist reported that 0.22 inch of the total fell within 5 minutes. No swift water rescues or stranded motorists were reported in association to this heavy rain.

### POTTER COUNTY --- 2.0 WSW AMARILLO [35.19, -101.85]

	08/08/13 19:40 CST	0	Heavy Rain
	08/08/13 20:30 CST	0	Source: Broadcast Media

A discrete thunderstorm moved across Potter County during the early evening hours of the 8th. The KVII Schoolnet site at Amarillo College (Potter County) reported 0.50 inch of heavy rain. No swift water rescues or stranded motorists were reported in association to this heavy rain.

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
<b>WHEELER COUNTY --- SHAMROCK [35.22, -100.25]</b>				
	08/08/13 20:00 CST		0	Heavy Rain
	08/08/13 23:30 CST		0	Source: Law Enforcement
<p>Both discrete thunderstorms and a line of thunderstorms moved across Wheeler County during the late evening hours of the 8th. Both produced heavy rain in Shamrock (Wheeler County) which lead to minor flooding in and around the city as reported by local law enforcement. No swift water rescues or stranded motorist were reported in association to this flooding. The minor flooding quickly dissipated as the heavy rain moved out of the city.</p>				
<b>OCHILTREE COUNTY --- PERRYTON [36.40, -100.80]</b>				
	08/08/13 20:30 CST		0	Heavy Rain
	08/08/13 23:20 CST		0	Source: Storm Chaser
<p>Both a discrete thunderstorm and a line of thunderstorms moved across Ochiltree County during the late evening hours of the 8th. Both produced heavy rain in Perryton (Ochiltree County) which lead to minor flooding in and around the city. A storm chaser in Perryton (Ochiltree County) reported that 19th Street, Jefferson Street, 9th Street, Main Street, Eton Street, and parts of State Highway 15 had water covering the roadway. This flooding caused some issues for traffic through Perryton, but no swift water rescues or stranded motorist were reported in association to this flooding. The flood waters quickly receded as the heavy rain moved out of the city.</p>				
<p><b>A weak mid-level trough of low pressure coupled with moderately unstable conditions across the Texas Panhandle and unseasonably high Precipitable Water values bring a combination of severe weather and heavy rain to the Texas Panhandle. While there were two distinct modes of convection, discrete and linear, both held the potential to produce periods of intense rainfall rates. One report from Amarillo (Potter County) showed that 0.22 inches of rain fell in a span of 5 minutes, which extrapolates to 2.64 inches per hour rainfall rates. Flash flooding was not reported in association with this heavy rain given the speed at which the storms moved across the area. However, the heavy rain was effective at causing typically flood prone areas to become flooded in Hutchinson, Wheeler, and Ochiltree Counties. Heavy rain moved out of the Texas Panhandle shortly after 11:30 PM CST.</b></p>				
<b>DEAF SMITH COUNTY --- 1.1 E WALCOTT [34.93, -102.81]</b>				
	08/08/13 19:01 CST		0	Thunderstorm Wind (MG 52 kt)
	08/08/13 19:02 CST		0	Source: Broadcast Media
<p>A broken line of thunderstorms moved eastward out of New Mexico and into Deaf Smith County during the evening hours of the 8th. While the line was still developing, a broken segment north of Bootleg (Deaf Smith County) decayed and produced a localized downburst. The KVII Schoolnet site at Walcott School 7 miles north of Bootleg (Deaf Smith County) measured the speed of the downburst at 60 mph. After producing this downburst the line of thunderstorms filled in the decayed portion of the line and moved eastward across the county.</p>				
<b>HUTCHINSON COUNTY --- 1.3 N FRITCH [35.65, -101.60], 2.8 N FRITCH [35.67, -101.60]</b>				
	08/08/13 19:20 CST		0	Hail (1.75 in)
	08/08/13 19:23 CST		0	Source: Trained Spotter
<p>A discrete thunderstorm moved northward across Hutchinson County during the evening hours of the 8th. A trained storm spotter reported golf ball (1.75 inches) size hail as the thunderstorm moved north of the city of Fritch (Hutchinson County). The thunderstorm continued to move to the north before merging with a line of thunderstorms moving eastward across the Texas Panhandle.</p>				
<b>HUTCHINSON COUNTY --- 1.3 ENE FRITCH [35.64, -101.58]</b>				
	08/08/13 19:23 CST		0	Hail (1.25 in)
	08/08/13 19:24 CST		0	Source: Trained Spotter
<p>A discrete thunderstorm moved northward across Hutchinson County during the evening hours of the 8th. A trained storm spotter one mile east-southeast of Fritch (Ochiltree County) reported half dollar (1.25 inches) size hail as the thunderstorm moved overhead. The thunderstorm continued to move to the north before merging with a line of thunderstorms moving eastward across the Texas Panhandle.</p>				
<b>HUTCHINSON COUNTY --- 0.7 N FRITCH [35.64, -101.60], 1.4 N FRITCH [35.65, -101.60]</b>				
	08/08/13 19:26 CST		0	Hail (1.25 in)
	08/08/13 19:28 CST		0	Source: Law Enforcement
<p>A discrete thunderstorm moved northward across Hutchinson County during the evening hours of the 8th. Local law enforcement reported half dollar (1.25 inches) size hail as the thunderstorm moved over the city of Fritch (Hutchinson County). The thunderstorm continued to move to the north before merging with a line of thunderstorms moving eastward across the Texas Panhandle.</p>				
<b>DEAF SMITH COUNTY --- 1.5 SSW HEREFORD [34.80, -102.41]</b>				
	08/08/13 19:32 CST		0.50K	Thunderstorm Wind (EG 55 kt)
	08/08/13 19:33 CST		0	Source: Public

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
A line of thunderstorms moved eastward across Deaf Smith County during the evening hours of the 8th. As the line moved towards the town of Hereford (Deaf Smith County), an embedded core descended and produced a localized downburst. This downburst knocked limbs off of trees and broke a skylight of a house 2 miles south-southwest of Hereford (Deaf Smith County). The line continued moving eastward across the county after producing this downburst, and no injuries were reported in association to this damage.				

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

08/08/13 19:37 CST	0	Thunderstorm Wind (MG 55 kt)
08/08/13 19:38 CST	0	Source: Mesonet

A line of thunderstorms moved eastward across Deaf Smith County during the evening hours of the 8th. As the line moved towards the town of Hereford (Deaf Smith County), an embedded core descended and produced a localized downburst. The Hereford AWOS 2 miles west-northwest of Hereford (Deaf Smith County) measured the speed of this downburst at 63 mph. The line continued moving eastward across the county after producing this downburst, and no injuries were reported in association to this damage.

**GRAY COUNTY --- 2.1 NNW PAMPA [35.56, -100.98], 2.1 SSE PAMPA LEFORS ARPT [35.59, -100.98]**

08/08/13 19:39 CST	0	Hail (1.50 in)
08/08/13 19:42 CST	0	Source: Emergency Manager

A splitting discrete thunderstorm moved northward across Gray County during the evening hours of the 8th. The Gray County Emergency Manager reported ping pong ball size hail (1.50 inches) as the thunderstorm moved over the northwest portion of Pampa (Gray County). The thunderstorm continued to move to the north before dissipating over northern Ochiltree County.

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

08/08/13 19:40 CST	0	Thunderstorm Wind (MG 67 kt)
08/08/13 19:41 CST	0	Source: Mesonet

A line of thunderstorms moved eastward across Deaf Smith County during the evening hours of the 8th. As the line moved towards the town of Hereford (Deaf Smith County), another embedded core descended and produced a localized downburst. The Hereford AWOS 2 miles west-northwest of Hereford (Deaf Smith County) measured the speed of this downburst at 77 mph. The line continued moving eastward across the county after producing this downburst, and no injuries were reported in association to this damage.

**GRAY COUNTY --- 1.5 NNE PAMPA [35.55, -100.96], 3.5 NNE PAMPA [35.58, -100.96]**

08/08/13 19:42 CST	0	Hail (1.00 in)
08/08/13 19:44 CST	0	Source: Law Enforcement

A splitting discrete thunderstorm moved northward across Gray County during the evening hours of the 8th. The Gray County Sheriff's Office reported quarter size hail (1.00 inch) as the thunderstorm moved over the northern portion of Pampa (Gray County). The thunderstorm continued to move to the north before dissipating over northern Ochiltree County.

**DEAF SMITH COUNTY --- HEREFORD [34.82, -102.40]**

08/08/13 19:44 CST	2K	Thunderstorm Wind (EG 61 kt)
08/08/13 19:45 CST	0	Source: Emergency Manager

A line of thunderstorms moved eastward across Deaf Smith County during the evening hours of the 8th. As the line moved towards the town of Hereford (Deaf Smith County), another embedded core descended and produced a downburst. This downburst knocked power lines down across the city of Hereford (Deaf Smith County) as reported by the Deaf Smith County Emergency Manager. The line continued moving eastward across the county after producing this downburst, and no injuries were reported in association to this damage.

**ARMSTRONG COUNTY --- 15.2 S GOODNIGHT [34.81, -101.18]**

08/08/13 21:16 CST	0	Thunderstorm Wind (MG 54 kt)
08/08/13 21:18 CST	0	Source: Broadcast Media

A line of thunderstorms moved across Armstrong County during the evening hours of the 8th. As the southern portion of this line neared Goodnight (Armstrong County), the line took on a bowed appearance and a rear-inflow notch was evident on radar. A KVII Schoolnet site 15 miles south of Goodwell (Armstrong County) at JA Ranch reported a 62 mph thunderstorm gust as the bowed line moved overhead. The bowed line weakened after producing this gust and moved into the southeastern Texas Panhandle.

**A weak mid-level trough of low pressure coupled with moderately unstable conditions across the Texas Panhandle during the evening hours of the 8th to bring severe weather. The Texas Panhandle saw both discrete thunderstorms and a line of thunderstorms over the course of a few hours. Discrete thunderstorms initiated during the early evening hours near Lubbock, where a cold front which had moved through the Panhandle the previous day had become stationary. These discrete thunderstorms moved to the north and entered the southeastern portion of the Texas Panhandle. During this same time frame, scattered thunderstorms over eastern New Mexico were slowly merging into a linear structure. Shortly after 6 PM CST, the broken line entered the western most portion of the Texas Panhandle as the discrete thunderstorms moved into over the eastern edge of the Caprock Escarpment. By 7 PM CST, the broken line of**

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
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thunderstorms began producing severe level wind gusts while a discrete thunderstorm over Hutchinson County produced hail up to the size of golf balls. The line moved quickly across the Texas Panhandle reaching the central point of the panhandle around 9 PM CST. By this point discrete thunderstorms had transitioned from hail producers to heavy rain producers. The line of thunderstorms remained a severe gust producer as it moved across the panhandle. By 10 PM CST, the line moved into an area of lower instability and the effects of the nocturnal inversion became evident as the line began breaking apart. By this point, what remained of the former line of thunderstorms transitioned to a heavy rain producer.

**POTTER COUNTY --- 7.0 ENE VALLE DE ORO [35.49, -102.00]**

	08/12/13 12:00 CST	0	Heavy Rain
	08/12/13 15:00 CST	0	Source: Broadcast Media

Slow moving thunderstorms developed over Potter County during the early afternoon hours of the 12th. These thunderstorms moved slowly and produced heavy rain. A KVII Schoolnet site at Lahey Creek, 7 miles east-northeast of Valley De Oro, (Potter County) reported 2.52 inches of storm total precipitation. No swift water rescues or stranded motorist were reported in association to this heavy rain.

**DONLEY COUNTY --- 11.0 N CLARENDON [35.09, -100.90]**

	08/12/13 14:00 CST	0	Heavy Rain
	08/12/13 17:00 CST	0	Source: Broadcast Media

Slow moving thunderstorms developed over Donley County during the early afternoon hours of the 12th. These thunderstorms moved slowly and produced heavy rain. A KVII Schoolnet site at Matthews Ranch, 11 miles north of Clarendon, (Donley County) reported 4.01 inches of storm total precipitation. No swift water rescues or stranded motorist were reported in association to this heavy rain.

**DONLEY COUNTY --- 2.0 E CLARENDON [34.93, -100.87]**

	08/12/13 14:00 CST	0	Heavy Rain
	08/12/13 17:00 CST	0	Source: Broadcast Media

Heavy rain over Donley County indirectly caused a fatal car wreck around 3 pm CST 2 miles east of Clarendon (Donley County). A 2012 Cadillac SRX was traveling in the eastbound lane of U.S. Highway 287 when it encountered heavy rain from a thunderstorm. Visibility was restricted to the point of the driver of the Cadillac stopped on the highway. An eastbound 2005 Ford F-250 pickup truck struck the rear of the Cadillac. The driver of the Cadillac was pronounced deceased at the scene and the passenger of the Cadillac was transported to a local hospital in critical condition. The status of the pickup driver is unknown at the time of this report.

**DONLEY COUNTY --- 2.3 NNW CLARENDON [34.96, -100.92], 1.1 ESE CLARENDON [34.92, -100.88]**

	08/12/13 14:00 CST	0	Heavy Rain
	08/12/13 17:00 CST	0	Source: Storm Chaser

Slow moving thunderstorms developed over the city of Clarendon (Donley County) during the early afternoon hours of the 12th. These thunderstorms moved slowly and produced heavy rain. A storm chaser in Clarendon (Donley County) reported this heavy rain caused minor flooding in the city of Clarendon (Donley County) on U.S. Highway 287 and U.S. Highway 70. No swift water rescues or stranded motorist were reported in association to this flooding.

**Scattered showers and thunderstorms developed along a surface trough draped across the southern Texas Panhandle during the afternoon hours of the 12th. These thunderstorms moved very slowly and stayed over one area for a prolonged period of time. This slow movement coupled with unseasonably high Precipitable Water values of 1.4 inches lead to periods of heavy rain across the southern Texas Panhandle. In the most intense downpours, visibility was greatly limited which made traveling on local roadway extremely difficult and dangerous. The surface trough which provided the focus for thunderstorm development moved south of the Texas Panhandle by 6 PM CST which lead to the dissipation of precipitation across the panhandle.**

**POTTER COUNTY --- 4.2 WNW AMARILLO [35.22, -101.89]**

	08/12/13 13:36 CST	0	Thunderstorm Wind (MG 50 kt)
	08/12/13 13:37 CST	0	Source: Broadcast Media

A brief thunderstorm merger over Potter County provided the additional vertical motion to result in a 58 mph thunderstorm wind gust during the early afternoon hours of the 12th. The KVII Schoolnet site at Saint Hyacinth Church (Potter County) recorded the thunderstorm wind gust. No other severe wind gusts were reported in association to the thunderstorm activity on the 12th.

**Scattered showers and thunderstorms developed along a surface trough draped across the southern Texas Panhandle during the afternoon hours of the 12th. The evening upper air sounding from Amarillo, Texas showed very little instability which kept most of these thunderstorms to remain below severe levels. One brief cell merger over Potter County provided enough additional vertical motion to allow one thunderstorm to produce a brief severe gust. No other severe gusts or hail were reported in association to these thunderstorms.**

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

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
	08/13/13 19:41 CST		0	Thunderstorm Wind (MG 50 kt)
	08/13/13 19:42 CST		0	Source: Mesonet

A thunderstorm developed over Deaf Smith County during the evening hours of the 13th. As it moved to the southeast across the county it merged with several other developing storms. This provided a brief intensification before the core of the storm descended. The West Texas Mesonet site 11 miles west-northwest of Bootleg (Deaf Smith County) measure a 58 mph downburst wind gust which was produced as the core descended to the surface. The storm continued to weaken and was eventually ingested by another thunderstorm south of the Texas Panhandle.

**Scattered thunderstorms developed ahead of a southward moving cold front during the afternoon and evening hours of the 13th. While most of the thunderstorms remained below severe levels, one storm over Deaf Smith County was able to produce one severe gust before diminishing. The cold front moved south of the Texas Panhandle by 10 PM CST which brought an end to thunderstorm activity.**

### SHERMAN COUNTY --- 12.9 SSW TEXHOMA [36.34, -101.82]

08/14/13 16:45 CST	0	Tornado (EF0, L: 1.00 mi , W: 50 yd)
08/14/13 16:48 CST	0	Source: Public

At 4:45 PM CST, a brief and weak tornado was observed by the public 14 miles east of Stratford near Texas Highway 15 (Sherman County). Witnesses accounts indicate the tornado appeared as a dust whirl associated with a rotating wall cloud. The tornado remained over open country for three minutes and resulted in no damage. The maximum wind speed for this tornado was 65 mph.

### SHERMAN COUNTY --- 11.3 E LAUTZ [36.25, -101.83]

08/14/13 16:55 CST	1K	Thunderstorm Wind (EG 52 kt)
08/14/13 16:56 CST	0	Source: Public

A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. A member of the public reported that horse trailers were blown over by a thunderstorm wind gust 15 miles east-southeast of Stratford (Sherman County). The thunderstorm continued moving southward after producing this gust.

### HUTCHINSON COUNTY --- 6.7 W PRINGLE [35.95, -101.57]

08/14/13 17:40 CST	0	Tornado (EF0, L: 0.11 mi , W: 40 yd)
08/14/13 17:41 CST	0	Source: Trained Spotter

A weak and brief tornado was photographed by spotters near Pringle (Hutchinson County). The tornado lasted 20 seconds and no damage was reported. The maximum wind speed was estimated at 65 mph.

### HANSFORD COUNTY --- 0.8 SE MORSE [36.06, -101.47], 0.9 SE MORSE [36.06, -101.47]

08/14/13 17:43 CST	0	Hail (1.00 in)
08/14/13 17:44 CST	0	Source: Trained Spotter

A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. A trained storm spotter reported quarter size hail (1.00 inch) near the town of Morse (Hansford County). The supercell thunderstorm continued moving southward after producing this hail.

### HUTCHINSON COUNTY --- 2.9 WNW STINNETT [35.83, -101.50], 2.8 W STINNETT [35.81, -101.50]

08/14/13 17:55 CST	0	Hail (1.75 in)
08/14/13 17:56 CST	0	Source: Broadcast Media

A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. A local broadcast station reported golf ball size hail (1.75 inches) 3 miles west of Stinnett (Hutchinson County). The supercell thunderstorm continued moving southward after producing this hail.

### HUTCHINSON COUNTY --- 6.9 WNW STINNETT [35.85, -101.57], 6.8 W STINNETT [35.84, -101.57]

08/14/13 17:57 CST	0	Hail (1.00 in)
08/14/13 17:58 CST	0	Source: Law Enforcement

A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Hutchinson County Sheriff's Office reported quarter size hail (1.00 inches) 7 miles west of Stinnett (Hutchinson County). The supercell thunderstorm continued moving southward after producing this hail.

### HUTCHINSON COUNTY --- 3.4 WSW SANFORD [35.70, -101.53], 3.5 SW SANFORD [35.70, -101.53]

08/14/13 18:17 CST	0	Hail (1.75 in)
08/14/13 18:18 CST	0	Source: Emergency Manager

A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Hutchinson County Emergency Manager reported golf ball size hail (1.75 inches) in Sanford (Hutchinson County). The supercell thunderstorm continued moving southward after producing this hail.

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Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
<b>HUTCHINSON COUNTY --- 2.5 SSW SANFORD [35.70, -101.50], 3.2 SSW SANFORD [35.69, -101.50]</b>				
	08/14/13 18:21 CST		10K	Hail (1.75 in)
	08/14/13 18:22 CST		0	Source: Emergency Manager
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Hutchinson County Emergency Manager reported golf ball size hail (1.75 inches) 2 miles east-southeast of Sanford (Hutchinson County). This hail damaged several vehicle windshields. The supercell thunderstorm continued moving southward after producing this hail.				
<b>HUTCHINSON COUNTY --- 1.2 WSW BORGER [35.66, -101.40], 1.4 SW BORGER [35.66, -101.40]</b>				
	08/14/13 18:25 CST		0	Thunderstorm Wind (EG 52 kt)
	08/14/13 18:26 CST		0	Source: Amateur Radio
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. An amateur radio operator reported a 60 mph wind gust as the storm moved over the town of Borger (Hutchinson County). The supercell thunderstorm continued moving southward after producing this wind gust.				
<b>HUTCHINSON COUNTY --- 0.7 N FRITCH [35.64, -101.60]</b>				
	08/14/13 18:29 CST		0	Hail (1.00 in)
	08/14/13 18:30 CST		0	Source: Emergency Manager
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Hutchinson County Emergency Manager reported quarter size hail (1.00 inches) near the town of Fritch (Hutchinson County). The supercell thunderstorm continued moving southward after producing this hail.				
<b>HUTCHINSON COUNTY --- 0.7 N FRITCH [35.64, -101.60]</b>				
	08/14/13 18:29 CST		0	Thunderstorm Wind (EG 65 kt)
	08/14/13 18:30 CST		0	Source: Fire Department/Rescue
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Fritch Fire Department reported a 75 mph thunderstorm gust near the town of Fritch (Hutchinson County). The supercell thunderstorm continued moving southward after producing this hail.				
<b>HUTCHINSON COUNTY --- 0.7 N FRITCH [35.64, -101.60]</b>				
	08/14/13 18:29 CST		30K	Thunderstorm Wind (EG 61 kt)
	08/14/13 18:30 CST		0	Source: Emergency Manager
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. The Hutchinson County Emergency Manager reported a thunderstorm gust damaged carports and weak structures in the Lake Meredith area (Hutchinson County). The supercell thunderstorm continued moving southward after producing this gust.				
<b>HUTCHINSON COUNTY --- 2.4 SSW BORGER [35.64, -101.40]</b>				
	08/14/13 18:34 CST		0	Thunderstorm Wind (EG 56 kt)
	08/14/13 18:35 CST		0	Source: Trained Spotter
A supercell thunderstorm moved southward across the Texas Panhandle during the evening hours of the 14th. A trained storm spotter reported a 65 mph thunderstorm gust 1 mile south of Borger (Hutchinson County). The supercell thunderstorm continued moving southward after producing this gust.				
<b>CARSON COUNTY --- PANHANDLE [35.35, -101.38]</b>				
	08/14/13 19:10 CST		0	Hail (1.00 in)
	08/14/13 19:12 CST		0	Source: Trained Spotter
A cluster of thunderstorms moved southward across the southern Texas Panhandle during the evening hours of the 14th. A trained storm spotter reported quarter size hail (1.00 inch) near the town of Panhandle (Carson County). The thunderstorms continued moving southward after producing this hail.				
<b>ARMSTRONG COUNTY --- 0.9 SW CLAUDE [35.11, -101.38]</b>				
	08/14/13 19:45 CST		0	Hail (0.88 in)
	08/14/13 19:46 CST		0	Source: Trained Spotter
A cluster of thunderstorms moved southward across the southern Texas Panhandle during the evening hours of the 14th. A trained storm spotter reported nickel size hail (0.88 inch) 1 mile west of Claude (Carson County). The thunderstorms continued moving southward after producing this hail.				
<b>ARMSTRONG COUNTY --- 0.9 SW CLAUDE [35.11, -101.38]</b>				

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
	08/14/13 19:45 CST		0	Thunderstorm Wind (EG 52 kt)
	08/14/13 19:46 CST		0	Source: Trained Spotter

A cluster of thunderstorms moved southward across the southern Texas Panhandle during the evening hours of the 14th. A trained storm spotter reported a 60 mph gust 1 mile west of Claude (Armstrong County). The thunderstorms continued moving southward after producing this gust.

**ARMSTRONG COUNTY --- 0.9 SE CLAUDE [35.11, -101.36]**

08/14/13 20:00 CST	0	Hail (1.50 in)
08/14/13 20:01 CST	0	Source: Emergency Manager

A cluster of thunderstorms moved southward across the southern Texas Panhandle during the evening hours of the 14th. The Armstrong County Emergency Manager reported ping pong ball size hail (1.50 inch) near the town of Claude (Armstrong County). The thunderstorms continued moving southward after producing this hail.

**ARMSTRONG COUNTY --- 8.7 ENE WAYSIDE [34.83, -101.41]**

08/14/13 20:25 CST	0	Hail (1.50 in)
08/14/13 20:26 CST	0	Source: Emergency Manager

A cluster of thunderstorms moved southward across the southern Texas Panhandle during the evening hours of the 14th. The Armstrong County Emergency Manager reported ping pong ball size hail (1.50 inches) 8 miles east-northeast of Wayside (Armstrong County). The thunderstorms continued moving southward after producing this hail.

**Scattered showers and thunderstorms developed over the eastern Colorado Plains during the early afternoon hours of the 14th. These storms formed along a stalled frontal boundary that had moved across the Southern Plains the previous day. A strengthening jet streak moving across western Kansas provided the large scale forcing needed to initiate storms along the stalled front. After a brief track east of the front the storms turned to the right and began moving due south. As they moved southward one of the storms became a dominate supercell among a couple weaker storms and intensified significantly as it moved across the Oklahoma Panhandle. This supercell ingested weaker storms as it moved southward which allowed it to sustain a discrete appearance as it moved into the northern Texas Panhandle. While over the northern Texas Panhandle, this supercell produced two brief tornadoes over undeveloped land. As this storm moved across the central and southern Texas Panhandle, the storm structure took on a more multi-cell linear appearance. These storms moved quickly south of the Texas Panhandle by 9 PM CST.**

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
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*Photo evidence of tornado near Pringle, Texas.*

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**HUTCHINSON COUNTY --- 4.9 S SANFORD [35.66, -101.49], 4.8 SW HUTCHINSON CO ARPT [35.66, -101.47], 5.5 WSW BORGER [35.64, -101.47], 6.3 E FRITCH [35.63, -101.49]**

08/14/13 17:40 CST	0	Flash Flood (due to Heavy Rain)
08/14/13 18:40 CST	0	Source: Emergency Manager

A supercell thunderstorm produced a period of intense rainfall over Hutchinson County. This heavy rain led to a foot of flowing water over intersection of U.S. Highway 136 and Farm-to-Market Road 1559. This flash flooding receded after the supercell which produced the heavy rain moved south of the area.

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**RANDALL COUNTY --- 3.1 SE AMARILLO [35.17, -101.78], 2.9 ESE AMARILLO [35.18, -101.78], 1.8 SE AMARILLO [35.18, -101.80], 2.5 SSE AMARILLO [35.17, -101.80]**

08/14/13 20:00 CST	23K	Flash Flood (due to Heavy Rain)
08/14/13 21:00 CST	0	Source: Broadcast Media

A supercell thunderstorm produced a period of intense rainfall over Randall County. This heavy rain led a car becoming stalled in floodwaters at the intersection of Grand Street and 34th Ave. The driver was able to escape the vehicle unassisted and the vehicle was recovered once the floodwaters receded.

**Severe thunderstorms moved across the Texas Panhandle during the evening hours of the 14th. While these thunderstorms did not remain over one location for an extended period of time, they produced very intense rain rates due to the access of an above climatologically normal amount of Perceptible Water. The intense rain rates proved sufficient to produce flash flooding in urban areas in the southern Texas Panhandle. These thunderstorms quickly moved into northwest Texas which allowed flood waters to recede.**

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**ARMSTRONG COUNTY --- 8.0 ENE CLAUDE [35.16, -101.24]**

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
	08/14/13 18:00 CST		0	Heavy Rain
	08/14/13 19:22 CST		0	Source: Emergency Manager

A cluster of thunderstorms produced a period of intense rainfall over Armstrong County during the evening hours of the 14th. These thunderstorms led to water collecting on U.S. Highway 287 in the town of Claude (Armstrong County). This minor flooding receded once the thunderstorm which produced the heavy rain moved south of the city.

### ARMSTRONG COUNTY --- 8.0 ENE WAYSIDE [34.82, -101.42]

08/14/13 18:00 CST	0	Heavy Rain
08/14/13 19:22 CST	0	Source: Emergency Manager

A cluster of thunderstorms produced a period of intense rainfall over Armstrong County during the evening hours of the 14th. These thunderstorms led to water rising to the underside of the bridge of U.S. Highway 207 at the Prairie Dog Town Fork of the Red River. This minor flooding receded once the thunderstorm which produced the heavy rain moved south of the city.

### HUTCHINSON COUNTY --- 2.0 WSW BORGER [35.66, -101.41]

08/14/13 18:00 CST	0	Heavy Rain
08/14/13 18:59 CST	0	Source: Public

A supercell thunderstorm produced a period of intense rainfall over Hutchinson County during the evening hours of the 14th. This thunderstorm produced 1.66 inches of heavy rain 2 miles west-southwest of Borger (Hutchinson County).

### HUTCHINSON COUNTY --- FRITCH [35.63, -101.60]

08/14/13 18:00 CST	0	Heavy Rain
08/14/13 18:59 CST	0	Source: Emergency Manager

A supercell thunderstorm produced a period of intense rainfall over Hutchinson County during the evening hours of the 14th. This heavy rain led to minor flooding of streets in the town of Fritch (Hutchinson County). This minor flooding receded once the thunderstorm which produced the heavy rain moved south of the city.

### HUTCHINSON COUNTY --- FRITCH [35.63, -101.60]

08/14/13 18:00 CST	0	Heavy Rain
08/14/13 18:59 CST	0	Source: Public

A supercell thunderstorm produced a period of intense rainfall over Hutchinson County during the evening hours of the 14th. This thunderstorm produced 2.00 inches of heavy rain in the town of Fritch (Hutchinson County).

### HUTCHINSON COUNTY --- BORGER [35.67, -101.38]

08/14/13 18:20 CST	0	Heavy Rain
08/14/13 18:25 CST	0	Source: Amateur Radio

A supercell thunderstorm produced a period of intense rainfall over Hutchinson County during the evening hours of the 14th. This thunderstorm produced 0.37 inch of rain in 5 minutes as reported by an Amateur Radio Operator in Borger (Hutchinson County).

### POTTER COUNTY --- 3.0 NE AMARILLO [35.23, -101.78]

08/14/13 19:01 CST	0	Heavy Rain
08/14/13 20:15 CST	0	Source: Broadcast Media

A cluster of thunderstorms produced a period of intense rainfall over Potter County during the evening hours of the 14th. These thunderstorms produced 1.00 inch of rainfall. Also this heavy rain led to minor flooding of 24th Ave and Eastern Road in Amarillo (Potter County). This minor flooding receded once the thunderstorm which produced the heavy rain moved south of the city.

**Severe thunderstorms moved across the Texas Panhandle during the evening hours of the 14th. While these thunderstorms did not remain over one location for an extended period of time, they produced very intense rain rates due to the access of an above climatologically normal amount of Perceptible Water. The intense rain rates proved sufficient to produce minor flooding in areas not designed to handle excessive rainfall. The flooding quickly receded once precipitation moved out of the area.**

### COLLINGSWORTH COUNTY --- SAMNORWOOD [35.05, -100.28]

08/16/13 00:56 CST	0	Heavy Rain
08/16/13 07:55 CST	0	Source: Broadcast Media

Training thunderstorms moved over Collingsworth County during the early morning hours of the 16th. The KVII Schoolnet site in Samnorwood (Collingsworth County) reported a storm total accumulation of 3.47 inches. No swift water rescues or stranded motorist were reported in association to this heavy rain.

## Storm Data and Unusual Weather Phenomena - August 2013

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
<b>COLLINGSWORTH COUNTY --- WELLINGTON [34.85, -100.22]</b>				
	08/16/13 00:56 CST		0	Heavy Rain
	08/16/13 07:55 CST		0	Source: Law Enforcement

Training thunderstorms moved over Collingsworth County during the early morning hours of the 16th. The Collingsworth County Sheriff's office in Wellington (Collingsworth County) reported some minor street flooding, but brief periods with no rain allowed the minor flooding to recede. However, portions of U.S. Highway 83 between Lutie (Collingsworth County) and Wellington had a couple inches of water covering the road. Due to poor lighting in those areas, it was difficult for motorist to see the minor flooding before reaching the affected locations. No swift water rescues or stranded motorist were reported in association to this heavy rain.

<b>COLLINGSWORTH COUNTY --- WELLINGTON [34.85, -100.22]</b>				
	08/16/13 00:56 CST		0	Heavy Rain
	08/16/13 07:55 CST		0	Source: Broadcast Media

Training thunderstorms moved over Collingsworth County during the early morning hours of the 16th. The KVII Schoolnet site in Wellington (Collingsworth County) reported a storm total accumulation of 4.59 inches. No swift water rescues or stranded motorist were reported in association to this heavy rain.

<b>WHEELER COUNTY --- 1.5 NNW TWITTY [35.34, -100.24], 2.0 S TWITTY [35.29, -100.24]</b>				
	08/16/13 00:56 CST		0	Heavy Rain
	08/16/13 07:55 CST		0	Source: Trained Spotter

Training thunderstorms moved over Wheeler County during the early morning hours of the 16th. The Wheeler Sheriff's Office reported that low spots on U.S. Highway 83 near Twitty (Wheeler County) had water covering the highway. No swift water rescues or stranded motorist were reported in association to this heavy rain.

<b>WHEELER COUNTY --- 4.2 NW BRISCOE [35.62, -100.34]</b>				
	08/16/13 00:56 CST		0	Heavy Rain
	08/16/13 07:55 CST		0	Source: Trained Spotter

Training thunderstorms moved over Wheeler County during the early morning hours of the 16th. A trained storm spotter 7 miles northeast of Gageby (Wheeler County) reported 1.5 inches of storm total accumulation as thunderstorms moved over their residence. No swift water rescues or stranded motorist were reported in association to this heavy rain.

**An isolated thunderstorm developed over northwestern Oklahoma shortly before midnight of the 16th in response to a moderately unstable environment and an upper level trough. The thunderstorm back built to the northwest and entered the Texas Panhandle shortly after midnight. Other thunderstorms developed south of this thunderstorm and began moving to the south. Precipitable Water values on the upper air sounding in Amarillo, Texas (Potter County) showed near average values for this time of year. However, the thunderstorms began training over the same area over an extended period of time. This allowed for moderate precipitation accumulations across the eastern Texas Panhandle. Storm total accumulation radar estimations showed that the eastern Texas Panhandle received between 1.5 inches to near 7 inches of precipitation over a 10 hour period. Ground truth could not be ascertained to verify the higher end rain totals, but the highest total verified was over 4 and a half inches. Precipitation ended shortly after 8 am as the upper level trough moved over coastal Texas.**

<b>HEMPHILL COUNTY --- 8.1 NE GAGEBY [35.69, -100.22], 6.5 ENE GAGEBY [35.64, -100.22]</b>				
	08/16/13 01:10 CST		0	Hail (1.75 in)
	08/16/13 01:13 CST		0	Source: Public

An intensifying thunderstorm moved across Hemphill County during the early morning hours of the 16th. A member of the public reported golf ball size hail (1.75 inches) 7 miles northeast of Briscoe (Hemphill County) as the thunderstorm moved near town. No other reports of hail were reported in association to this thunderstorm.

**An isolated thunderstorm developed over northwestern Oklahoma shortly before midnight of the 16th. The thunderstorm developed in response to moderate instability across the eastern Texas Panhandle and western Oklahoma. The thunderstorm back built to the northwest and entered the Texas Panhandle shortly after midnight. Other thunderstorms developed south of this thunderstorm and began moving to the south. One storm intensified as it moved to the south and produced large hail in Hemphill County. As the early morning hours progressed, the instability weakened as storms transitioned into heavy rain producers.**