

**2023 KANSAS
SEVERE WEATHER AWARENESS
Information Packet**



SEVERE WEATHER AWARENESS WEEK

March 6-10, 2023

TORNADO SAFETY DRILL

Tuesday, March 7, 2023

10AM CST/9AM MST

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2022 Kansas Tornado Overview

Tornadoes: 56 5 below the 1950-2022 average of 61
 29 below the past 30 year average of 85
 11 below the past 10 year average of 67

Fatalities: 0 **Injuries:** 3

Longest track: 21.76 miles (Dickinson/Morris, April 29, EF1)

Strongest: EF3 (Sedgwick/Butler, April 29)

Most in a county: 8 (Thomas)

Tornado days: 17 (Days with 1 or more tornadoes)

Most in one day: 14 (April 29)

Most in one month: 22 (June)

First tornado of the year: March 29 (Jefferson Co., 6:56PM CST, EF1, 9.86 mile length, 10 yard width)

Last tornado of the year: Aug 29 (Ford Co., 3:29PM CST, EF0, 1.72 mile length, 30 yard width)

Length of tornado season: 154 days (Days between first and last tornado)

----- 2022 Monthly Tornado Totals -----

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
EF5	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF4	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF3	0	0	0	1	0	0	0	0	0	0	0	0	1	1.8%
EF2	0	0	0	0	0	1	0	0	0	0	0	0	1	1.8%
EF1	0	0	1	11	0	8	0	0	0	0	0	0	20	35.7%
EF0	0	0	0	4	2	4	0	1	0	0	0	0	11	19.6%
Unknown	0	0	0	3	5	9	6	0	0	0	0	0	23	41.1%
Total	0	0	1	19	7	22	6	1	0	0	0	0	56	100%
Percent	0.0%	0.0%	1.8%	33.9%	12.5%	39.3%	10.7%	1.8%	0.0%	0.0%	0.0%	0.0%		

Violent (EF4—EF5) in red, Strong (EF2-EF3) in yellow, Weak (EF0-EF1) in green, Unknown in orange. Monthly totals in gray. Tornadoes not causing damage ranked as unknown due to insufficient data to assign a rating. (Percent values may not add to 100% due to rounding)

Annual Highlights: The 2022 tornado season was more active than the previous two years combined for the state of Kansas. A total of 56 tornadoes were recorded during the year, up from 37 tornadoes in 2021 and 17 tornadoes in 2020. The strongest tornado reported in Kansas during the 2022 season was an EF-3 occurring in Sedgwick and Butler counties on April 29th. The tornado initially formed in Sedgwick County causing damage to a manufactured home and injuring two occupants; estimated damages were placed at 4.5 million dollars. This tornado then crossed into Butler County where it further strengthened into an EF-3 resulting in around 37 million dollars in damage and one injury. In total, 14 tornadoes occurred during the April 29th outbreak across the state of Kansas.

Despite the large number of tornadoes from the 29th, June recorded the most Kansas tornadoes with 22. Of the June tornadoes, seven occurred on June 11th and another six were reported from storms on the 23rd. The longest tornado track for the year was 21.76 miles where the tornado developed in Dickinson County and traveled 6.8 miles before crossing into Morris County. The tornado continued another 14.96 miles bringing damage to several farmsteads before dissipating near Parkerville.

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Kansas Tornado Statistics

by County

1950 - 2022

TORNADOES, FATALITIES, AND INJURIES

Legend: Tor = Tornado | Fat = Fatalities | Inj = Injuries

County	Tor	Fat	Inj	County	Tor	Fat	Inj	County	Tor	Fat	Inj
Allen	27	0	4	Greenwood	47	0	18	Pawnee	54	0	1
Anderson	15	3	12	Hamilton	33	0	1	Phillips	41	0	1
Atchison	16	0	11	Harper	64	0	1	Pottawatomie	37	1	5
Barber	41	0	2	Harvey	50	1	63	Pratt	74	3	10
Barton	107	2	40	Haskell	33	0	10	Rawlins	51	0	4
Bourbon	19	0	7	Hodgeman	59	0	4	Reno	87	0	22
Brown	46	0	5	Jackson	34	4	17	Republic	63	0	3
Butler	90	28	226	Jefferson	42	0	101	Rice	50	0	6
Chase	41	0	2	Jewell	43	0	2	Riley	32	0	51
Chautauqua	21	0	0	Johnson	46	0	12	Rooks	53	0	6
Cherokee	41	4	66	Kearny	46	0	0	Rush	53	0	8
Cheyenne	46	0	0	Kingman	67	0	1	Russell	81	1	7
Clark	42	0	0	Kiowa	61	11	74	Saline	48	0	66
Clay	45	1	31	Labette	43	1	29	Scott	58	1	1
Cloud	52	1	8	Lane	48	0	2	Sedgwick	90	13	362
Coffey	24	0	5	Leavenworth	31	2	30	Seward	39	0	15
Comanche	44	0	2	Lincoln	35	0	2	Shawnee	56	18	528
Cowley	85	77	293	Linn	14	0	3	Sheridan	45	0	0
Crawford	37	4	43	Logan	35	0	0	Sherman	114	0	0
Decatur	51	0	5	Lyon	50	7	222	Smith	45	0	2
Dickinson	43	1	17	Marion	51	1	2	Stafford	73	3	5
Doniphan	20	0	2	Marshall	41	0	1	Stanton	24	0	0
Douglas	43	1	64	McPherson	55	1	16	Stevens	25	1	5
Edwards	56	0	7	Meade	57	0	0	Sumner	88	5	14
Elk	26	2	8	Miami	23	4	10	Thomas	58	0	1
Ellis	66	0	6	Mitchell	51	0	5	Trego	63	5	101
Ellsworth	51	0	0	Montgomery	36	1	1	Wabaunsee	44	1	26
Finney	100	1	41	Morris	36	0	7	Wallace	41	0	4
Ford	113	0	2	Morton	20	1	2	Washington	41	2	12
Franklin	30	3	34	Nemaha	40	0	3	Wichita	35	0	4
Geary	21	0	3	Neosho	31	0	4	Wilson	16	0	0
Gove	59	0	3	Ness	53	0	4	Woodson	12	0	8
Graham	43	0	0	Norton	30	0	0	Wyandotte	10	2	36
Grant	26	0	9	Osage	48	17	6				
Gray	55	0	3	Osborne	46	0	13				
Greeley	42	0	0	Ottawa	35	2	12	Total	4919	237	2953

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Kansas Tornadoes 2022

Cheyenne	Rawlins	Decatur	Norton	Phillips	Smith	Jewell	Republic	Washington	Marshall	Nemaha	Brown	Doniphan
		3					1		5			
Sherman	Thomas	Sheriden	Graham	Rooks	Osborne	Mitchell	Cloud	Clay	Pottawatomie	Jackson	Atchison	Leavenworth
	8	2	1						3	1		Wyandotte
Wallace	Logan	Gove	Trego	Ellis	Russell	Lincoln	Ottawa	Dickinson	Riley	Shawnee	Jefferson	
	1	2	1			2			2		1	
Greeley	Wichita	Scott	Lane	Ness	Rush	Barton	Ellsworth	Saline	Geary	Wabaunsee	Douglas	Johnson
								2	3	1		1
Hamilton	Kearny	Finney	Hodgeman	Pawnee	Stafford	Reno	Rice	McPherson	Marion	Lyon	Osage	Franklin
									4			2
Stanton	Grant	Haskell	Gray	Ford	Kiowa	Pratt	Kingman	Harvey	Butler	Greenwood	Coffey	Anderson
				2				1	3	2		Linn
Morton	Stevens	Seward	Meade	Clark	Comanche	Barber	Harper	Sedgwick	Cowley	Elk	Wilson	Neosho
					2			1	3			Crawford
								Sumner	Cowley	Chautauqua	Montgomery	Labette
									3			Cherokee

56 tornadoes impacting 29 counties

7 tornadoes crossed county lines

Kansas Tornado Facts

Days with more than 20 tornadoes

Date	#Tornadoes
05/23/08	70
04/14/12	43
06/15/92	39
05/05/07	36
05/24/16	34
06/04/55	33
05/29/04	28
10/26/06	28
05/25/97	25
06/09/05	25
05/15/91	24
07/07/04	23
05/06/15	22
04/26/91	21
06/15/09	21

Kansas Tornado Count by Decade

1950s:	560
1960s:	457
1970s:	303
1980s:	339
1990s:	789
2000s:	1192
2010s:	768
2020s:	110

Most Tornadoes in One Episode

May 23, 2008	70 Tornadoes
April 14, 2012	43 Tornadoes
June 15-16, 1992	41 Tornadoes

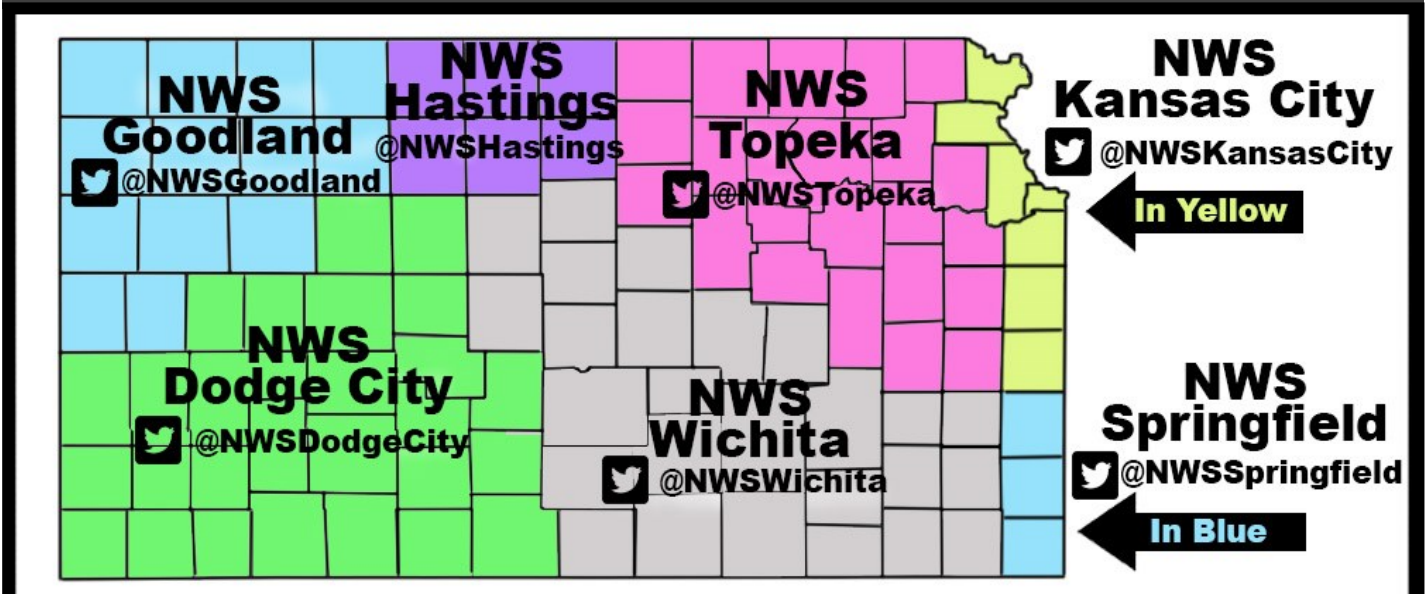
Did you know...

There are seven National Weather Service offices that serve portions of Kansas!

National Weather Service (NWS) offices serving Kansas are located in Goodland; Dodge City; Wichita; Topeka; Hastings, Nebraska; Pleasant Hill (Kansas City), Missouri; and Springfield, Missouri. Each office is staffed by a team of highly trained meteorologists, technicians, electronics technicians, information technology specialists, hydrologists, and administrative assistants. The NWS offices are staffed 24 hours a day, seven days a week, 365 days a year.

Contact the NWS office in your area to learn more about weather, weather safety, NOAA Weather Radio, office tours, or to learn more about careers in meteorology in the NWS or in NOAA.

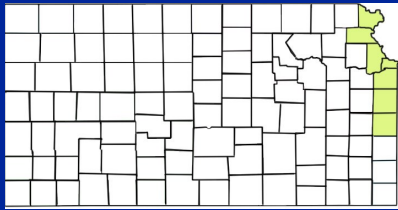
We are here to serve you!



The following pages contain 2022 severe weather summaries for each NWS office. Here is severe weather terminology you may encounter.

- **Severe Thunderstorm** – The National Weather Service issues severe thunderstorm warnings for storms that are currently or are capable of producing winds of 58 mph or stronger and/or hail one inch in diameter or larger. Severe thunderstorms are often much stronger than this minimum criteria, so it is a good idea to take severe thunderstorm warnings seriously.
- **Tornado** – A tornado is a violently rotating column of air in contact with the ground either as a pendant from a cumuliform cloud or underneath a cumuliform cloud, and it is often (but not always) visible as a funnel cloud. A funnel cloud is a condensation cloud typically funnel-shaped and extending outward from a cumuliform cloud and is associated with a rotating column of air that may or may not be in contact with the ground.
- **Flash Flood** – A flash flood is flooding that occurs very rapidly and usually within six hours of heavy rainfall. Flash flooding may occur along creeks, rivers or streams. It can also occur in low lying or urban areas where drainage is poor. Water levels can rise very quickly during flash flooding including locations that did not receive the heavy rainfall but are located downstream from areas that received an extreme amount of rainfall. Flash flooding can occur in the winter months when rain falls on existing snowpack and causes it to melt rapidly. Flooding is the number one severe weather killer in the U.S.

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2022 Severe Weather Summary Extreme East Central and Northeast Kansas National Weather Service - Pleasant Hill, MO

2022 Far Northeast Kansas Severe Weather Stats by the Numbers

Number of Severe Wind, Hail,
Flooding Reports: 32

Tornado: 3

Largest Hail: 1.5" (Atchison
County, May 30th)

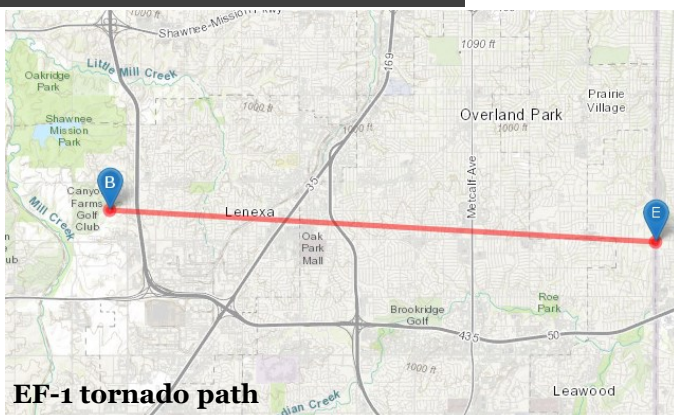
Strongest Wind: 70 mph (Linn
& Miami counties, July 8th)

Most reports received:
Johnson County (17)

Severe weather was limited across eastern Kansas last year as drought conditions prevailed through much of severe weather season. However, a few widespread severe weather events did occur in 2022. Most notable of these events was the June 8th event where a line of storms moved through east central Kansas with a few embedded tornadoes along the line. In addition to that event there were a few events that produced damaging winds and large hail. Due to drought conditions, flooding was not much of an issue during the severe weather season of 2022.

June 8th 2022, EF-1 and EF-0 Tornadoes and Strong Winds

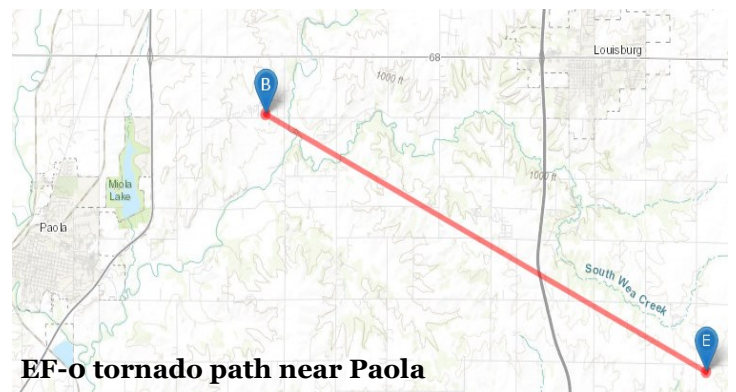
Strong to severe thunderstorms in eastern Kansas developed late on June 7th and continued to evolve into a complex of strong to severe thunderstorms as they moved into east central Kansas between 12:30 – 1AM on the 8th. These storms resulted in numerous wind damage reports as well as three confirmed tornadoes. The strongest of the 3 tornadoes was an EF-1 that developed on the west side of Lenexa (Johnson County) embedded within the larger line of thunderstorms moving across the west side of the Kansas City Metro. This tornado travelled east into Overland Park varying in strength before dissipating after it crossed into Missouri. The estimated peak wind was 100 MPH with a path length of 9.53 miles and a width of 125 yards. The other two tornadoes were EF-0 tornadoes that developed along the southern end of a larger line of storms in Miami County near the towns of Louisburg and Paola. The tornadoes had path lengths of 9.74 miles and 9.55 mile respectively; they were both 75 yards wide and had estimated peak winds of 85 MPH. The Louisburg tornado damaged the historic Louisburg Cider Mill (image on next page).



EF-1 tornado path



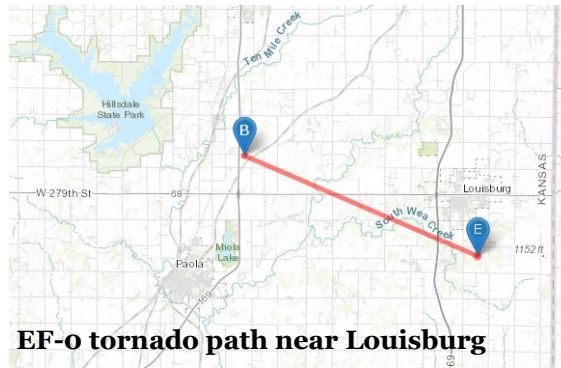
Damage from EF-1 tornado to Colonial Presbyterian Church in southern Kansas City.



EF-0 tornado path near Paola

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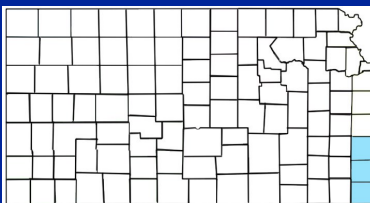
In addition to the June 8th event, northeastern and east central Kansas had 8 additional days in which severe weather events were reported. The first of these widespread severe weather events occurred on April 29th where reports of one inch or quarter sized hail and wind gusts up to 65 mph were reported in Linn, Wyandotte, Doniphan and Leavenworth counties. On May 15th, a widespread severe wind event occurred where there were several reports on 60 to 65 mph winds in Leavenworth, Wyandotte and Johnson Counties. The last widespread severe weather event occurred on June 21st again producing damaging winds in Doniphan, Leavenworth and Johnson counties where 60 to 65 mph winds occurred.



EF-0 tornado path near Louisburg



Damage to Louisburg Cider Mill from EF-0 tornado.



2022 Severe Weather Summary Southeast Kansas National Weather Service - Springfield, MO

2022 Far Southeast Kansas Severe Weather Stats by the Numbers

Number of Severe Wind, Hail, Flooding Reports: 17

Tornadoes: 0

Largest Hail: 1.5" (Bourbon County, April 21)

Strongest Wind: 64 mph (Bourbon County, August 3)

Most reports received: Bourbon & Cherokee counties (7)

Like 2021, 2022 was a quiet year for extreme southeastern Kansas with regards to severe weather, partially due to the development of drought that began in June. Severe storms were witnessed only in April, May, June, August and October with only a handful of severe weather events reported then. There were no tornadoes, and no other events were overly extreme with the highest wind gust occurring as a cold front moved through southeastern Kansas producing winds up to 64 mph on August 3rd.

The largest hail reported only reached ping pong ball size which occurred on April 21st near Marmaton. Otherwise there were a handful of other hail reports of quarter to half dollar size during the spring and fall. Flooding rainfall was even less frequent. Only a few reports of flooding occurred in May. Most of the reported flooding was street and urban flooding; however, Highway 160 in Crawford County was flooded after between 4 and 6 inches of rain fell.

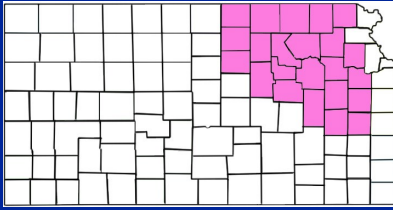
Relatedly, drought conditions developed in June and continued through the end of the year. The combination of heat and dry conditions allowed a deterioration to D4, Exceptional Drought conditions. Reports of near total crop and hay losses resulted. Rainfall in the fall and early winter helped mitigate the severity of the drought conditions.

Check out these additional resources

[Helpful Weather Websites](#) [Seasonal Safety Campaigns](#)

[Lightning Safety Toolkits](#) [StormReady Program](#)

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2022 Severe Weather Summary Northeast and East Central Kansas National Weather Service - Topeka, KS

2022 Northeast Kansas Severe Weather Stats by the Numbers

**Number of Severe Wind,
Hail, Flooding Reports:** 268

Tornadoes: 18

Largest Hail: 4" (Dickinson
County, April 29)

Strongest Wind: 115 mph
(Riley County, June 11)

Most reports received: Dick-
inson County (39)

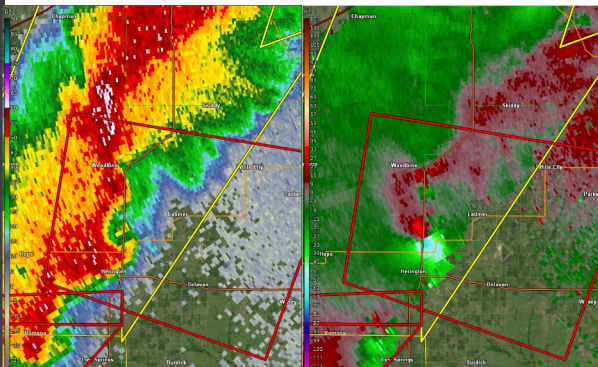
The 2022 severe weather season across north central and northeast Kansas featured 15 tornadoes. That was the highest number for the NWS Topeka service area since 2008. Thankfully there were no fatalities and no serious injuries from the tornadoes. The busiest day for tornadoes was June 11th when a single supercell thunderstorm spawned seven tornadoes. The strongest of those seven was a brief EF2 tornado that produced significant damage to a few homes on the east side of Manhattan. The longest track tornado was an EF1 that tracked nearly 15 miles across rural areas of Morris County on April 29th. The majority of documented tornadoes occurred on just two days in 2022. There were five documented tornadoes on April 29th and seven documented tornadoes from a single supercell thunderstorm on June 11th. Two other EF1 tornadoes were documented on June 7th while the first tornado of the year was documented on March 29th which was also an EF1.

April 29th tornadoes – On the same day that an EF3 tornado struck Andover Kansas, other supercell thunderstorms developed across parts of central and northeast Kansas. These storms produced five different documented tornadoes. Thankfully most of the tornadoes occurred in rural areas and that helped to limit the overall extent of damage. All of the tornadoes were rated EF0 or EF1 with the longest track tornado estimated at around 15 miles across eastern Dickinson and Morris counties.



*Tornado development NW of Herington.
Courtesy of Jim Ladue.*

The photo on the left was taken by Jim Ladue. It shows the development of the longer track tornado that began northwest of Herington and then proceeded to move ENE for approximately 15 miles through rural areas of Morris County. This tornado was rated an EF1.



*Radar imagery of tornado. Reflectivity is
on the right. Storm relative velocity is on
the left.*

The radar image to the left captured the early stages of this tornado as it moved north of the city of Herington and eventually ENE into Morris County. The left image is called reflectivity and depicts precipitation intensity while the image on the right is called storm relative velocity and depicts the direction and strength of wind speeds within the thunderstorm.



June 11th long lived supercell and associated seven tornadoes – A single long-lived supercell thunderstorm produced seven different documented tornadoes during the afternoon and evening of June 11th. The supercell tracked almost due south as it moved out of Nebraska through Marshall County where four different tornadoes were documented.

Courtesy of Charles Peek

The supercell proceeded to move south into western Pottawatomie and eastern Riley counties. This storm produced three more tornadoes including a brief but strong EF2 tornado on the east side of Manhattan. This storm eventually moved south into Lyon and Chase counties producing damaging winds and large hail.

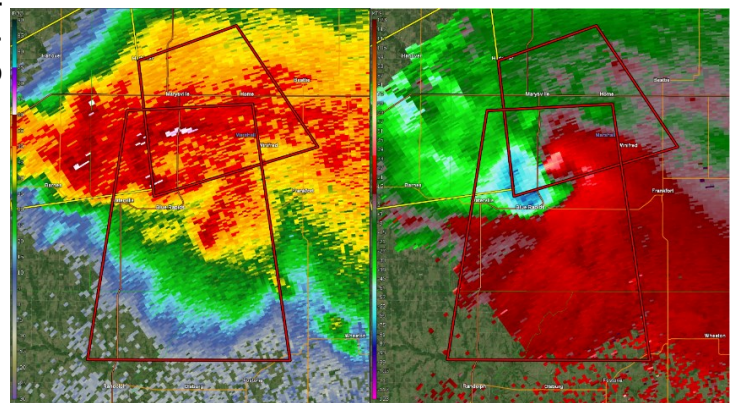
The photo at right was taken by Jared Leighton looking west along Highway 36 toward Marysville. It shows a distinct funnel cloud extending toward the ground. This funnel did become a brief tornado and did sporadic damage just northeast of Marysville in Marshall County. Another small tornado was located further west at this time but is obscured by rain from this perspective. That small tornado also did damage to structures on the west side of Marysville. This funnel and eventual tornado was one of seven documented tornadoes that occurred with this supercell thunderstorm.



Funnel cloud looking west along U.S. Highway 36 towards Marysville.

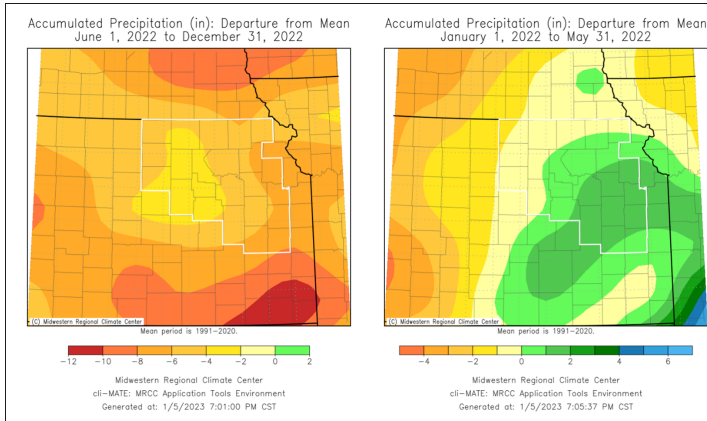
Courtesy of Jared Leighton.

The radar image at right shows the high precipitation (HP) supercell with reflectivity at left and storm relative velocity at right. A large area of damaging winds can be inferred (blue colors) in what is called the rear flank downdraft region of the storm. The widespread extent of the rainfall around the circulation made any visual confirmation of a tornado very difficult.



Radar imagery with reflectivity on left and storm relative reflectivity on right.

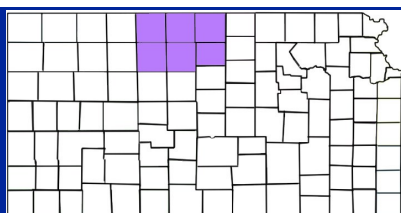
2022 was also a year of extremes for northeast Kansas especially when looking at the precipitation patterns. May saw the most intense rain of the year with over one-third of the year's total. In fact, it was the 3rd wettest May on record at Topeka and then dry conditions followed through the rest of the year. While skewed a little by the very wet May (6.5" above normal for the month), from **January through May, Topeka was 4.22" above normal for precipitation.** From **June through the end of the year, Topeka was**



8.52" inches below normal. This is seen in the graphics below that show precipitation departures for Topeka. It was wet in the first half of the year then very dry for the second half of the year.

Finally, northeast Kansas experienced brief but very cold temperatures at the end of the year in December. An Arctic cold front passing on December 21 brought temperatures of 0 to -5 from sunrise of December 22 through midday of December 23 with wind chill values from -20 to -40. The wind chills were the lowest many areas had experienced in around 30 years. The cold did not

last long; however, by midday on December 29 temperatures returned to the 60s making it feel almost 95 degrees warmer than a week earlier! Notable that Topeka broke or tied 17 warm temperature records and only one cold temperature record in 2022.



2022 Severe Weather Summary North Central Kansas National Weather Service - Hastings, NE

2022 North Central Kansas Severe Weather Stats by the Numbers

Number of Severe Wind, Hail, Flooding Reports: 45

Tornadoes: 0

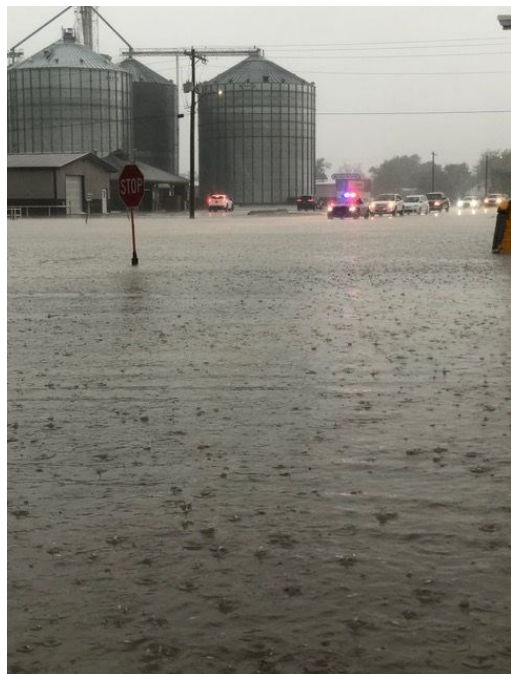
Largest Hail: 2.75" (Phillips County, May 14)

Strongest Wind: 75 mph (Osborne County, May 17)

Most reports received: Phillips County (16)

After what turned out to be a fairly wet winter season, the spring and summer severe weather season brought its usual barrage of hail and wind but was lacking one thing: tornadoes. This marked the third straight season with no confirmed tornadoes in north central Kansas. The last confirmed tornado was on May 28, 2019 in Mitchell and Osborne counties.

Ironically as drought conditions worsened in 2022, there were two flood events which were the most notable events of the season. The first was in an isolated part of Phillips County centered about 5-10 miles north of Phillipsburg. On April 28th, the "one-storm-show" dumped an isolated but very large area of 4-6 inches of rain. Unofficially, up to nine inches of rain was reported to have fallen in this area. Flood damage within the heaviest rain area was widespread. A weather observer about six miles east of Phillipsburg along the Big Creek reported flooding despite receiving only about 0.10 of an inch of rainfall at his location. Hail to the



U.S. Highway 183 in Stockton on June 5, 2022.

Courtesy of the Stockton Sentinel

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Flooding southwest of Phillipsburg (West Limestone Road) on April 28, 2022. Courtesy of Phillips County Emergency Management

size of golf balls accompanied the heavy rain across much of northern Phillips County.

A little over a month later, on June 5th to be exact, heavy rain and hail pummeled the Stockton area in Rooks County. Although the rain amounts weren't quite as high, roughly around four inches, some streets became impassable in the Stockton area including U.S. Highway 183. Water flowed over numerous roads in town; county roads were damaged, and several basements flooded in the area.

Aside from the two flooding events, a mixture of wind and hail impacted north central Kansas in 2022 in the late spring and early summer. There were several reports of hail and wind gusts to 60 mph during the last week or so of April. In mid-May, thunderstorms rumbled through Phillips and Osborne counties bringing hail to the size of ping-pong balls and winds estimated as high as 75 mph. In the first part of June, activity picked up again, but this time included Smith County where 70+ mph winds caused roof damage to a local business and livestock shed at Smith Center on June 12th. A few more thunderstorms brought hail and 60 mph winds on the 22nd and 30th.

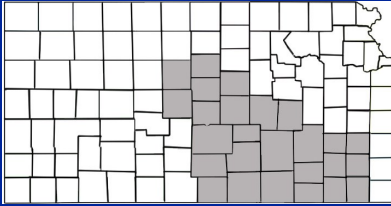
The last half of the summer and fall were quiet in terms of severe weather across north central Kansas as the early season moisture gave way to the heat of summer and dryness often associated with fall. By the end of September, severe drought had returned to parts of Rooks, Osborne and Phillips coun-

Check out a storm identification and weather safety training presentation near you this spring!

Each spring, the National Weather Service offices that serve the state of Kansas conduct storm identification and weather safety training sessions in most counties in the state. The sessions are free and open to the public. You are not required to become a storm spotter nor will you have to take a test; however, the presentations provide a great deal of information on severe weather in Kansas. They cover severe weather safety and ways to get weather information from the National Weather Service. You can also meet a meteorologist from your local National Weather Service office.

The schedule for storm identification training sessions varies in each community, please check out www.weather.gov and click your location for more information on a training session in your area. Otherwise use this [link](https://bit.ly/40ksxUg): <https://bit.ly/40ksxUg>

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2022 Severe Weather Summary Central, South Central & Southeast Kansas National Weather Service - Wichita, KS

2022 Central, South Central and Southeast Kansas Severe Weather Stats by the Numbers

**Number of Severe Wind,
Hail, Flooding Reports: 282**

Tornadoes: 19 (Average 19)

**Largest Hail: 3.25" (Marion
County, May 31)**

**Strongest Wind: 111 mph
(Greenwood County: April 29
estimated)**

**Most reports received: Sedg-
wick County (67)**

April 29th Severe Weather

Scattered to numerous strong to severe thunderstorms developed during the evening of April 29th across portions of central, south-central and southeast Kansas, along and ahead of a strong dryline and cold front approaching from the west. Notable severe weather reports across Wichita's forecast area included nine tornadoes, hail up to the size of tennis balls, and damaging straight-line winds reaching 111 mph. This was a highly anticipated severe weather day due to high amounts of instability and strong vertical wind shear. Storms were initially slow to develop along the preceding dryline due to a modest capping inversion in place. However, numerous convective attempts over a two to three-hour period eventually eroded the cap sufficiently for strong to severe thunderstorms to ensue.

Probably one of the most notable thunderstorms of the night was a supercell that tracked northeast from southeast Sedgwick County then across Butler and Greenwood counties. This supercell produced three tornadoes; the most notable was an EF3 that tracked northeast 12.7 miles across southeast Sedgwick County through west and northwest Butler County. Hardest hit was Andover



*Tornado tracking through Andover.
Courtesy of Josh Wells*

where winds up to 155 mph produced a swath of damage up to 440 yards wide. Severe damage occurred to both residential and commercial areas with estimated property damage of \$41,500,000. The YMCA took a direct hit causing extensive damage to the facility.

Prompt safety actions taken by the YMCA staff prior to the tornado's impact likely prevented numerous injuries at the facility and possibly even saved lives. The tornado also caused damage to Prairie Creek Elementary school, but fortunately it hit well after the school day ended. Furthermore,



Damage to the YMCA in Andover. Damage to a home in an Andover neighborhood.



**KANSAS SEVERE WEATHER AWARENESS WEEK
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a Dillon’s grocery store and a large apartment complex were near-misses just to the west. Three people were injured in this tornado.

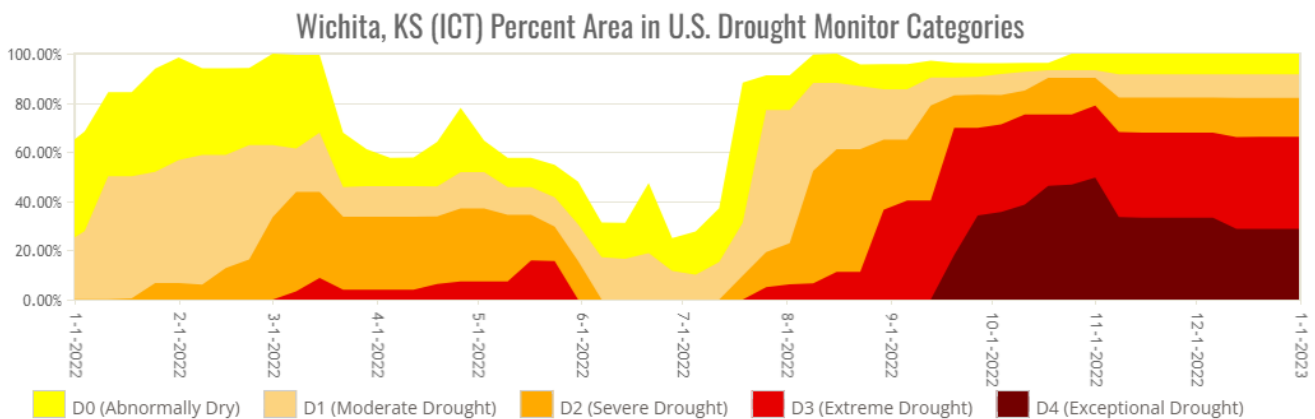
The supercell continued tracking east-northeast producing another tornado near Rosalia in eastern Butler County. This tornado traveled 8.1 miles, reached a path width of 100 yards, and had estimated peak winds of 100 mph, giving it an EF1 rating. Agricultural buildings and trees incurred damage west-southwest of Rosalia. Fortunately, no one was injured.

Meanwhile, further west-northwest, thunderstorms rapidly developed southwestward along an eastward advancing cold front. While these storms were not initially supercells, the strong updrafts combined with the strong cold front to produce several relatively short-lived “landspout” tornadoes across Marion County, more specifically near Tampa, Durham, Lehigh, and Hillsboro. Estimated winds from these tornadoes were 70 to 96 mph (EF0 and EF1 ratings) with track lengths up to 0.9 miles. Relatively minor damage was inflicted to some outbuildings and trees.

The largest reported hail that evening was tennis ball sized hail near El Dorado Lake, and the strongest estimated non-tornado thunderstorm wind gust was 111 mph west of Eureka which snapped tree trunks as well as four electric transmission poles and downed tree limbs.

Very Dry Second Half of 2022

After near to above average precipitation dominated much of central, south-central and southeast Kansas from January through June, Mother Nature turned off the spigot the second half of 2022 especially July through October. The lack of precipitation was most pronounced across portions of central and southern Kansas where some locations tallied July through December deficits over 10 inches below average and recorded one of their driest July through December periods on record. The ongoing lack of precipitation and resultant warmer than average temperatures supported worsening drought conditions across much of central, south-central and southeast Kansas.



Depiction of drought through 2022. Courtesy of the U.S. Drought Monitor

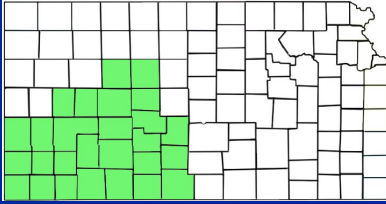


2022 Precipitation July – December

Site	Precipitation (Inches)	Departure from Average	Rank	Wettest/Driest Since
Wichita Eisenhower	7.43	-9.33	8th Driest	Driest Since 1988
Chanute Airport	9.50	-10.21	3rd Driest	Driest Since 2002
Russell Airport	4.36	-8.49	2nd Driest	Driest Since 2017
Winfield COOP	8.18	-11.20	5th Driest	Driest Since 1980
Newton COOP	9.51	-7.01	13th Driest	Driest Since 1988
Anthony COOP	5.65	-9.76	Tied 6th Driest	Driest Since 2014
Sedan COOP	8.52	-10.17	15th Driest	Driest Since 2001

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2022 Severe Weather Summary Southwest Kansas National Weather Service - Dodge City, KS



2022 Southwest Kansas Severe Weather Stats by the Numbers

**Number of Severe Wind,
Hail, Flooding Reports: 195**

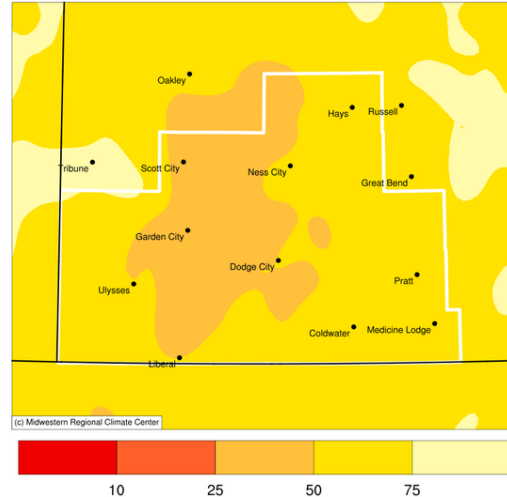
Tornadoes: 4

**Largest Hail: 4" (Hodgeman &
Pawnee counties, June 6)**

**Strongest Wind: 100 mph
(Morton County, June 19)**

**Most reports received: Ford
County (28)**

Accumulated Precipitation (in): Percent of 1991-2020 Normals
January 01, 2022 to December 31, 2022



Drought

The main weather phenomenon and most concerning to local agriculture was the drought that enveloped western Kansas. None of the county warning area (CWA) fell under Exceptional Drought (D4) conditions when the year began; however, by year's end over 90 percent was solidly classified as D4. In fact, a majority of the CWA only received 50 percent or less of its yearly normal precipitation.

Winds, Wildfires, and Dust

Continuing with the trend that began in late 2021, southwest Kansas experienced numerous High Wind Warning events through the year. One notable event occurred on April 6th and 7th where strong northwest winds created blowing dust across much of western Kansas. Visibilities dipped to near zero in some places and very dry conditions contributed to several wildfires during the afternoon hours. Another major wind event occurred on December 2nd when a strong cold front moved through the region. As the leading edge of the air mass scoured drought-stricken terrain, a huge wall of dust raced down from the northwest. Blowing dust with reduced visibility commenced in the early afternoon and continued well into the night hours. Throughout the year, there were a total of 38 days when the Dodge City Regional Airport gusted above 50 mph, reaching a new record.



GOES Satellite



*Dodge City on December 2nd at
4:40PM.*

**KANSAS SEVERE WEATHER AWARENESS WEEK
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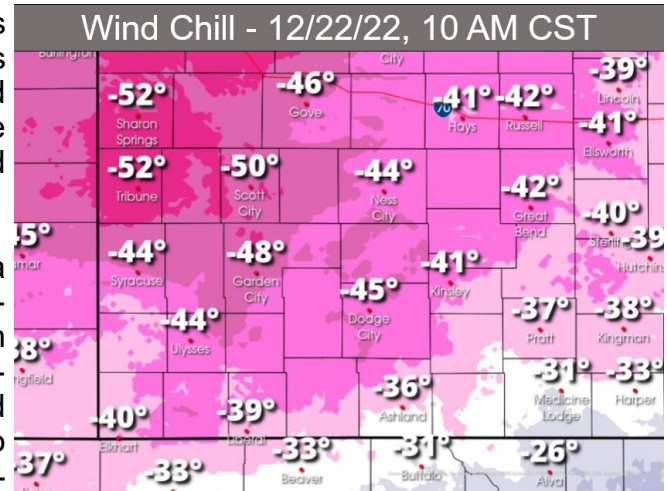
Severe Thunderstorms

Severe convective outbreaks were below normal in 2022, but of the few storms that occurred, some were very intense. The largest hailstone reported in Dodge City's CWA in 2022 was 4 inches on June 6th near Hanston, Kansas. The strongest wind gust measured during the year was 92 mph on June 8th near Elkhart, Kansas. Only four tornadoes were reported, and these all occurred in Ford and Comanche counties.

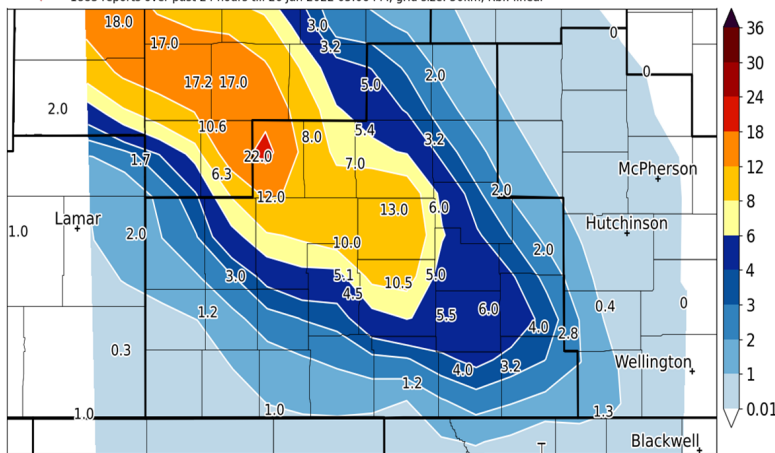
Arctic Air

A large swing in temperature was observed across southwest Kansas February 22nd into the 23rd. Highs on the 22nd reached near 70 degrees before a cold front moved through the area that evening. Lows the morning after dipped to around zero degrees with wind chills in the negative 20s.

The end of the year was also very cold as a result of a strong cold front moving down through the snow covered Northern Plains and into southwest Kansas on the night of December 21st. Lows in the negative single digits were observed on the morning of the 22nd with highs only reaching into the single digits to around zero degrees that afternoon. The cold air advection continued that night with lows dipping into the negative single digits to low teens. Strong northerly winds gusting in the 50 mph range was observed behind this system allowing for wind chills to dip into the -30 to -50 degree range both mornings.



NWS Local Storm Report & COOP Snowfall Total Analysis
1883 reports over past 24 hours till 26 Jan 2022 05:06 PM, grid size: 50km, Rbf: linear



Heavy Snow

During a year of abnormally low precipitation, the most significant snow storm occurred on January 25th where over a foot of snow fell across portions of west central Kansas. Snowfall totals reached 22 inches in Scott County when a strong mesoscale band formed. This snowpack persisted for several days after this system moved out of the area creating a pocket of much cooler temperatures over west central Kansas.



Be sure to find your local NWS office on Social Media

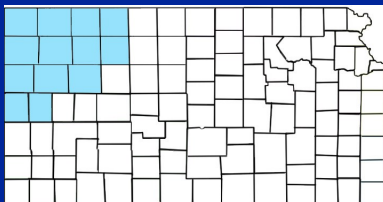
NWSDodgeCity
NWSGoodland
NWSHastings
NWSKansasCity

NWSSpringfield
NWSTopeka
NWSWichita

Also be sure to check if your county emergency manager has a facebook page for your county.

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2022 Severe Weather Summary Northwest Kansas National Weather Service - Goodland, KS



2022 Northwest Kansas Severe Weather Stats by the Numbers

**Number of Severe Wind,
Hail, Flooding Reports: 180**

Tornadoes: 15

Largest Hail: 2.75" (Wichita
Co. April 22, Decatur Co.
June 7, Norton Co. June 9)

Strongest Wind: 100 mph
(Thomas Co. April 22, Decatur
Co. April 23)

**Most reports received: De-
catur County (28)**

Northwest Kansas experienced several severe weather events during 2022, although the season as a whole can be classified as having below-normal severe thunderstorm activity. All modes of severe weather were reported including tornadoes, damaging thunderstorm winds, large hail, flooding, and dust storms. One oddity of the 2022 severe weather season was the lack of flooding reported. Only three reports of a flood were received, much lower than normal. However, this can be easily explained by the lack of thunderstorm activity in general along with the long-duration drought conditions that the region is still currently experiencing. Despite the below normal occurrence of severe events, a total of 15 tornadoes were reported across northwest Kansas.

April 22nd, 2022 Severe Thunderstorms and Tornadoes

A significant weather event struck the High Plains on April 22nd. This event brought daytime wind gusts over 70 mph as well as dust storm conditions and the threat for sig-



Damage to a KDOT facility in Sharon Springs.

nificant wildfires. Later in the afternoon, a first round of severe thunderstorms developed producing numerous reports of large hail, up to the size of baseballs, and damaging wind gusts as they moved across northwest Kansas.

A more significant round of storms developed late that evening across eastern Colorado moving across northwest Kansas during the overnight hours. A total of five tornadoes occurred, including one in particular that struck Sharon Springs. This particular tornado was rated an EF-1 with maximum wind speeds of 110 mph due to significant damage to several buildings in town, downing numerous trees and power lines, breaking windows, rolling a variety of trailers, and other associated damage. These tornadoes were of the quasi-linear convective system (QLCS) variety, or in other words tornadoes that form within a squall line/line of storms, not the isolated supercells that Kansas is so familiar with. In terms of reports and damage, this was the most significant event to strike northwest Kansas in 2022.

July 22nd Thunderstorms



Zoomed in picture of a supercell moving across NW KS. Courtesy of Kody Wilson

During the afternoon of July 22nd, a broken line of storms formed across northwest Kansas and into southwest Nebraska. Initially these storms produced six landspout tornadoes across mainly southwestern Thomas County. Eventually the group of storms started to progress slowly to the southeast at which point damaging winds and large hail became the predominant weather threats. Golf ball sized hail and wind gusts as high as 90 mph occurred. The automated weather sensor in Hill City reported a wind gust of 82 mph. The municipal airport in Hoxie took a substantial hit from the straight-line winds resulting in damage to an airplane hangar.

**KANSAS SEVERE WEATHER AWARENESS WEEK
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Be a Force of Nature

Help Build a Weather-Ready Nation™

Do you know what to do in a severe weather emergency? Each year, people in this country are killed or seriously injured by all types of extreme weather, despite advance warning.

NOAA's Weather-Ready Nation (WRN) initiative is about helping our nation become more resilient to increasing extreme weather, water and climate events. NOAA is working to keep these threats from becoming disasters with greater accuracy in forecasts and warnings, evolving services to community decision makers, and better ways to communicate risk to stakeholders and the public.

As part of the WRN initiative, NOAA partners with emergency management officials, businesses, and the media to motivate individuals and communities to prepare for a potential weather disaster. And these actions can save lives – at home, in schools, and in the workplace.

What Does a Weather-Ready Nation Look Like?



A Weather-Ready Nation takes well-informed communities, businesses and individuals that are ready, responsive and resilient to extreme events. Key actions include:

- **Know your risk** by discovering the weather risks where you live and closely following National Weather Service forecasts and warnings.



- **Take action** by creating a family emergency plan and kit, and making sure you can receive emergency messages (e.g., NOAA Weather Radio, wireless emergency alerts).
- **Be an example** by using social media to share important hazard information.

How Your Organization Can Help Build a Weather-Ready Nation

Building a WRN requires the participation and commitment of a vast nationwide network of “Ambassadors” – organizations contributing in the best ways they can:

- Broadcasters advocating preparedness on-air
- Schools/universities teaching about the risks associated with severe weather and resiliency best practices
- Companies within the weather enterprise building the technological infrastructure for weather information and alerts
- Insurance companies providing discount incentives to policyholders who meet certain mitigation criteria

By becoming a **WRN Ambassador**, your organization can serve a pivotal role in affecting societal change by:

- Promoting Weather-Ready Nation messages
- Collaborating with NOAA
- Sharing your success stories
- Serving as an example



Enroll Here to Become an Ambassador
www.weather.gov/wrn/amb-tou

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