2021 KANSAS SEVERE WEATHER AWARENESS Information Packet

SEVERE WEATHER AWARENESS WEEK

March 1-5, 2021

TORNADO SAFETY DRILL

Tuesday, March 2, 2021

10am CST/9am MST

Table of Contents

Page Number

2020 Kansas Tornado Overview

Tornadoes: 17 — 45 below the 1950-2020 average of 62
71 below the past 30 year average of 88
55 below the past 10 year average of 72

Fatalities: 0 **Injuries**: 0

Longest track: 6.2 miles (Seward, July 1, EF1)

Strongest: EF1 (Seward, July 1)

Most in a county: 3 (Greeley, Hamilton)

Tornado days: 8 (Days with 1 or more tornadoes)

Most in one day: 6 (May 21)

Most in one month: 11 (May)

First tornado of the year: May 14 (Lyon Co., 7:05pm CST, EFU 2.66 mile length, 25 yard width)

Last tornado of the year: Aug 14 (Greeley Co., 2:54pm CST, EFU, 1.34 mile length, 100 yard width)

Length of tornado season: 92 days (Days between first and last tornado)

2020 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	0	0	0	0	0	0	0	0	0	0	0%
EF2	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF1	0	0	0	0	0	0	1	0	0	0	0	0	1	6%
EF0	0	0	0	0	5	1	0	0	0	0	0	0	6	35%
Unknown	0	0	0	0	6	2	0	2	0	0	0	0	10	59%
Total	0	0	0	0	11	3	1	2	0	0	0	0	17	100%
Percent	0.0%	0.0%	0.0%	0.0%	64.7%	17.6%	5.9%	11.8%	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: Tornadoes were few and far between in 2020 with a statewide total of 17. This is a small fraction of the average (88) over the past 30 years. This is a noticeable decrease in tornadoes from the past two years, 45 in 2018 and 89 in 2019. The majority of the tornadoes reported this year occurred in May and no strong or violent tornadoes were observed.

The strongest tornado of the year occurred on July 1st in Seward County. The EF-1 tornado traveled 6.2 miles across the county leaving damage to irrigation pivots, power poles and crops. This proved to be the costliest tornado of the 2020 season, with an estimated damage value of $200,000.

No tornado related injuries or fatalities occurred in 2020.

May was the most active month for tornadoes this season with 11 reported. May 21st accounted for nearly one-third of the yearly total number of tornadoes with six reported. Four tornadoes occurred on May 14th with the 11th and final tornado for May occurring on the 23rd as an EF-U in Sherman County.

Tornadoes leaving behind no noticeable damage are given an EF-U or EF-Unknown rating. Tornadoes are given a rating based on estimated wind speed. When a tornado does not leave behind damage, it is difficult to near impossible to make a correct wind speed estimate.

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021

Kansas Tornado Statistics

by County

1950 - 2020

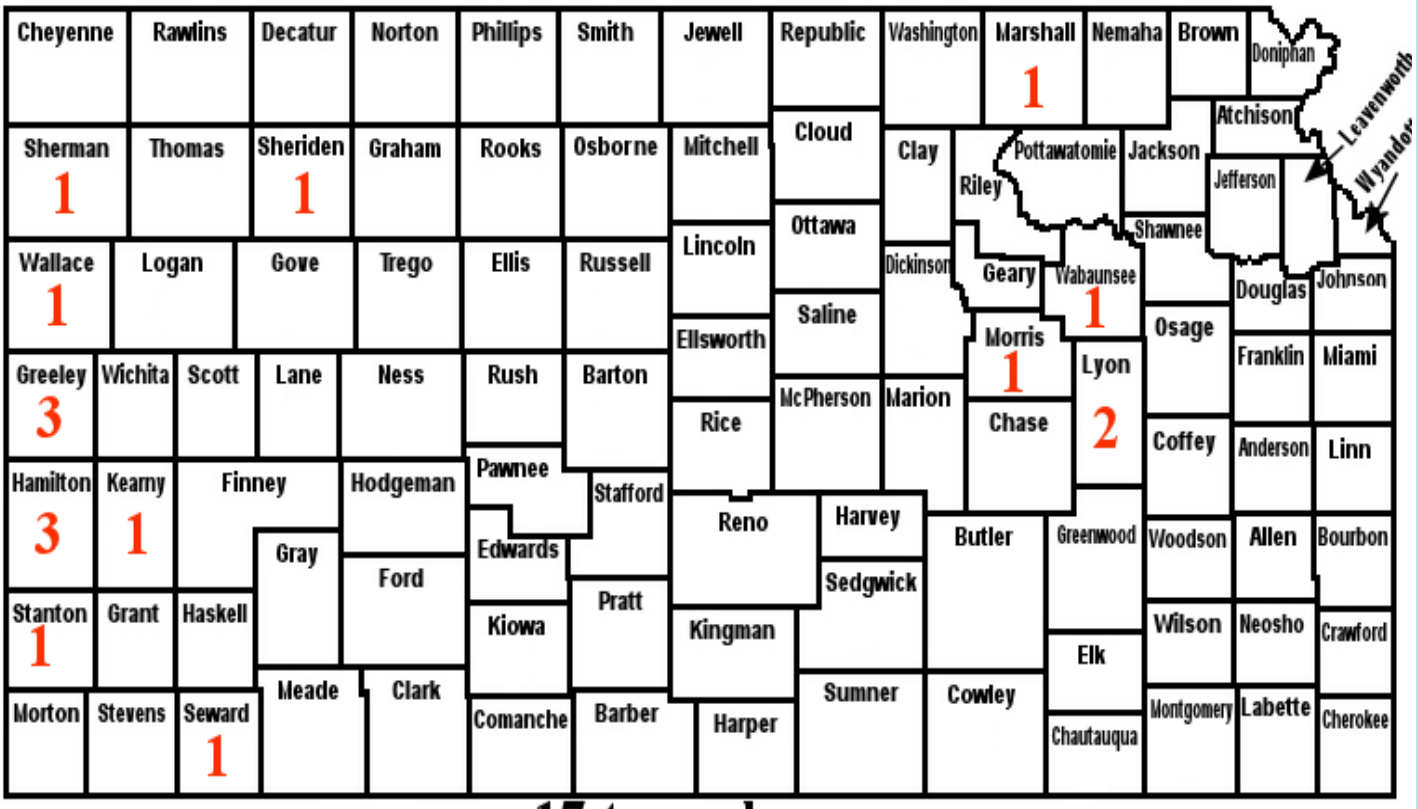
TORNADOES, FATALITIES, AND INJURIES

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

County	Tor	Fat	Inj	County	Tor	Fat	Inj	County	Tor	Fat	Inj
Allen	27	0	4	Greenwood	45	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	34	1	5
Barber	41	0	2	Harvey	49	1	63	Pratt	74	3	10
Barton	105	2	40	Haskell	32	0	10	Rawlins	48	0	4
Bourbon	19	0	7	Hodgeman	57	0	4	Reno	86	0	22
Brown	46	0	5	Jackson	33	4	17	Republic	62	0	3
Butler	87	28	225	Jefferson	41	0	101	Rice	49	0	6
Chase	41	0	2	Jewell	43	0	2	Riley	30	0	51
Chautauqua	21	0	0	Johnson	44	0	12	Rooks	53	0	6
Cherokee	40	4	66	Kearny	46	0	0	Rush	53	0	8
Cheyenne	46	0	0	Kingman	67	0	1	Russell	79	1	7
Clark	42	0	0	Kiowa	59	11	74	Saline	46	0	66
Clay	45	1	31	Labette	43	1	29	Scott	58	1	1
Cloud	52	1	8	Lane	48	0	2	Sedgwick	89	13	360
Coffey	24	0	5	Leavenworth	31	2	30	Seward	39	0	15
Comanche	42	0	2	Lincoln	33	0	2	Shawnee	56	18	528
Cowley	82	77	293	Linn	14	0	3	Sheridan	42	0	0
Crawford	37	4	43	Logan	32	0	0	Sherman	113	0	0
Decatur	47	0	5	Lyon	50	7	222	Smith	45	0	2
Dickinson	40	1	17	Marion	47	1	2	Stafford	73	3	5
Doniphan	19	0	2	Marshall	36	0	1	Stanton	23	0	0
Douglas	42	1	64	McPherson	55	1	16	Stevens	25	1	5
Edwards	54	0	7	Meade	57	0	0	Sumner	87	5	14
Elk	26	2	8	Miami	21	4	10	Thomas	47	0	1
Ellis	64	0	6	Mitchell	51	0	5	Trego	63	5	101
Ellsworth	51	0	0	Montgomery	36	1	1	Wabaunsee	43	1	26
Finney	100	1	41	Morris	35	0	7	Wallace	37	0	4
Ford	107	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	58	0	3	Ness	53	0	4	Woodson	12	0	8
Graham	42	0	0	Norton	30	0	0	Wyandotte	10	2	36
Grant	26	0	9	Osage	48	17	6				
Gray	53	0	3	Osborne	46	0	13	Total			
Greeley	42	0	0	Ottawa	35	2	12		4818	237	2950

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021

Kansas Tornadoes 2020



17 tornadoes

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: 17

Most Tornadoes in One Episode

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

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021

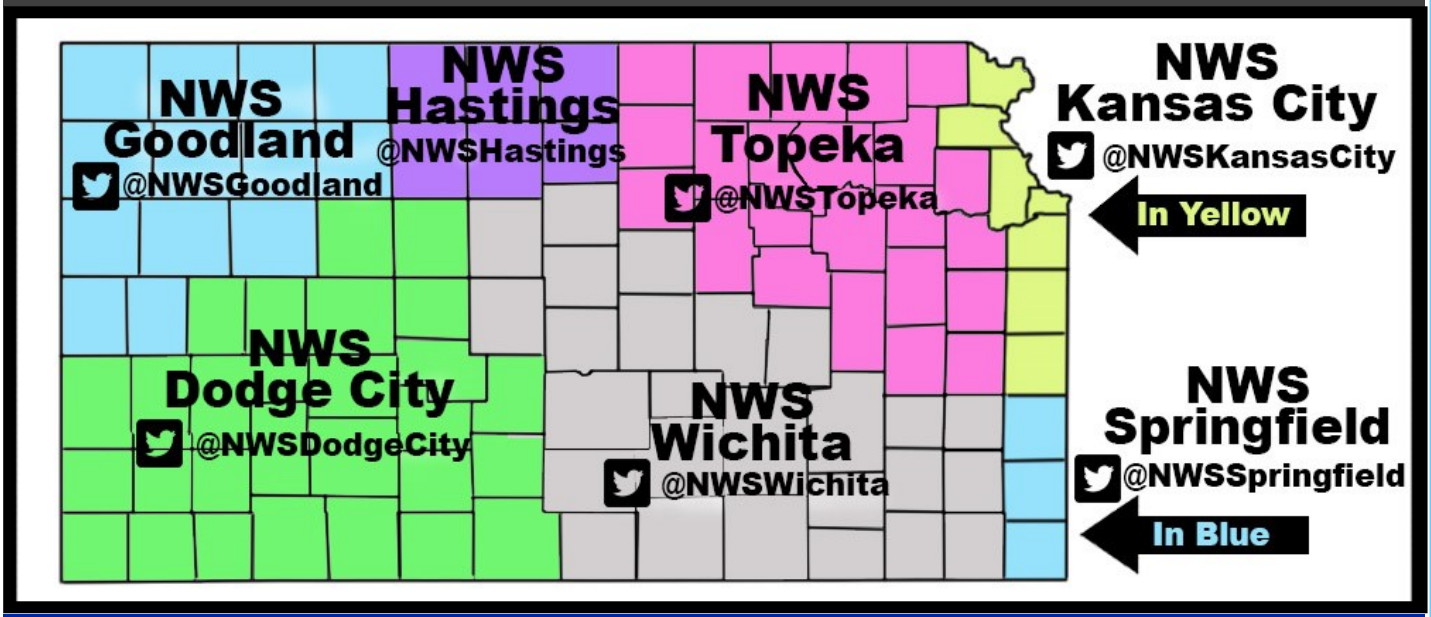
Did you know...

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

National Weather Service (NWS) offices in 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.

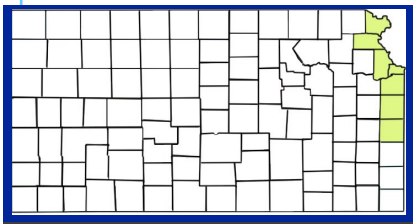
Contact the NWS office in your area to learn more about weather, weather safety, NOAA Weather Radio, office tours, or to learn more about careers in meteorology in the NWS or in NOAA.

We are here to serve you!



The following pages contain 2020 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.



2020 Severe Weather Summary
Extreme East Central and Northeast Kansas
National Weather Service - Pleasant Hill, MO

2020 Far Northeast Kansas Severe Weather Stats By The Numbers

Number of Severe Wind, Hail, Flooding Reports: 39 (2019: 79)

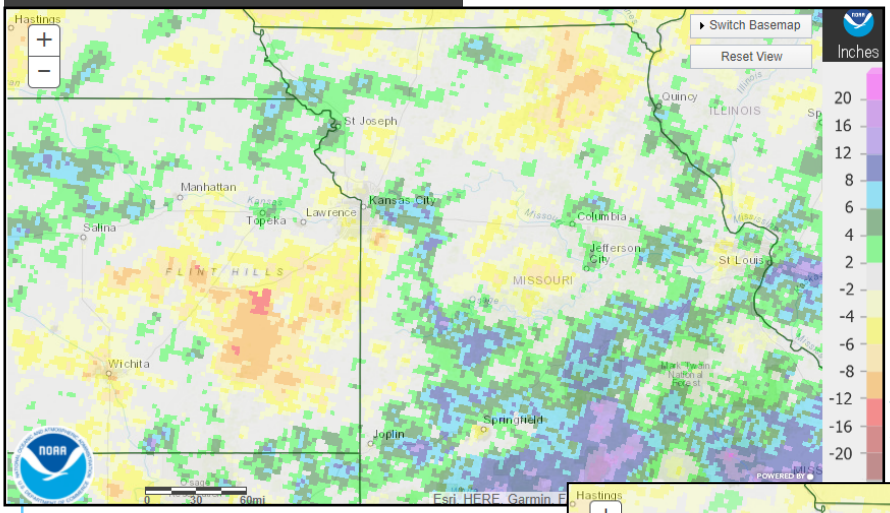
Tornado: 0 Confirmed

Largest Hail: 1.75" (Johnson County, March 27, 2020)

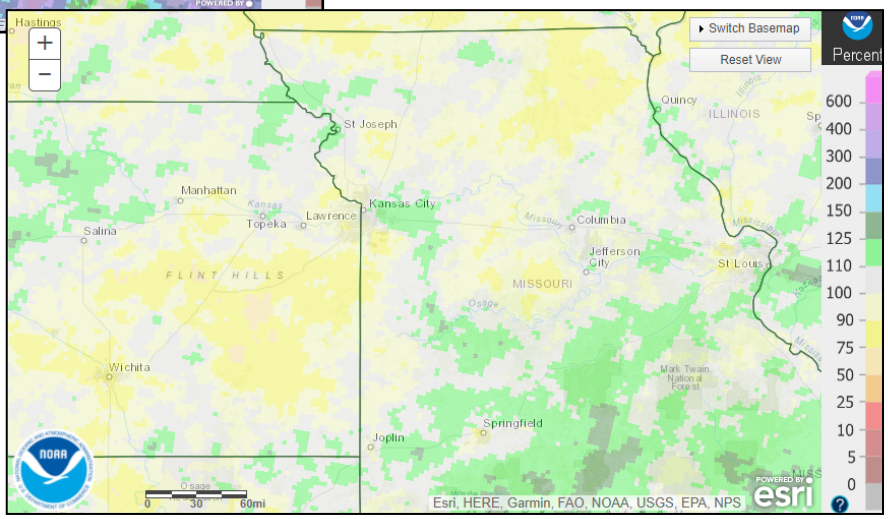
Strongest Wind: 78 mph (Johnson County) May 4, 2020

The 2020 severe weather season across eastern and northeastern Kansas was pretty quiet as fewer than 40 reports of severe weather came to our office from the seven Kansas counties we represent and serve. Equally notable there were no confirmed tornadoes in any of those seven counties for the entire severe weather season in 2020 for the first time since 2016 and for the 5th time in the last 20 seasons. Perhaps the most significant event of the 2020 season was caused by a complex of merged supercells that came through eastern Kansas in the morning and afternoon hours on May 4th. These storms caused large hail across eastern Kansas and strong winds into western Missouri. These winds were widespread 60-70 mph across eastern Kansas with the max wind report being 78 mph in Johnson County.

To further illustrate the lack of severe weather activity across eastern Kansas the precipitation deficit map indicates a multiple inch shortcoming of moisture. The area received roughly 70 to 90 percent of the yearly rainfall which would explain the lack of flooding and to some extent the lack of severe weather reports.

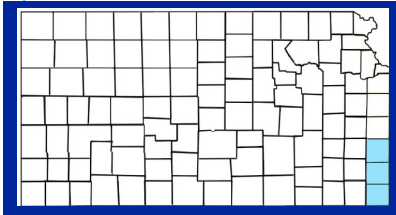


Left: The moisture deficit map (inches) indicates where areas came up short of yearly precipitation (warm shading), which would add to the likelihood of sub-average severe weather occurrence.



Right: The moisture percentage deficit map (percentage of normal) indicates where areas came up short of yearly precipitation (warm shading), which would add to the likelihood of sub-average severe weather occurrence.

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021



2020 Severe Weather Summary
Southeast Kansas
National Weather Service - Springfield, MO

2020 Southeast Kansas Severe Weather Stats By The Numbers

Number of Severe Wind, Hail, Flooding Reports: 45 (2019: 92)

Tornadoes: 0

Largest Hail: 2.75" (Cherokee County) May 4, 2020

Strongest Wind: 70 mph (Cherokee County) April 28, May 4, July 11, Aug 10 & Aug 29 (Crawford County) August 29, 2020

Most reports received: Cherokee (31)

Looking back at 2020, severe weather over far southeast Kansas was rather quiet compared with recent years. Of particular note, no tornadoes impacted far southeast Kansas.

Isolated severe storms produced heavy rain and isolated flooding along with 70 mph severe winds near Sherwin in Cherokee County early in the spring. Severe storms on May 3rd and 4th produced the largest hail of the year near Baxter Springs when baseball sized hail was reported. Additional storms in May produced heavy rain and isolated flooding on the 12th and again near the end of the month on the 20th.

Outside of a severe storm that produced 70 mph winds and golf ball sized hail near Melrose in Cherokee County, June and July were virtually severe storm-free. Part of a derecho that started in Iowa on August 10th led to impacts in Cherokee County that included reports of 70 mph winds east of Oswego and trees down near Hallowell. Additional severe storms on the 15th produced large hail in several locations including tennis ball sized hail in Riverton and Columbus in Cherokee County. On the 29th an overnight storm complex produced widespread severe winds with 70 mph reports in West Mineral in Cherokee County and Frontenac in Crawford County.

Overall, Cherokee County took the brunt of severe weather in 2020 with 31 reports.

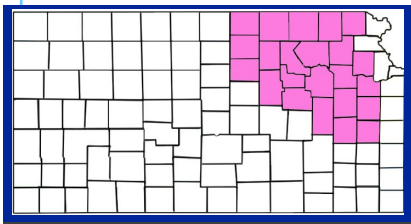
Like tornadoes, what was missing again this past year was wintry weather as yet another winter passed without a significant winter storm over far southeast Kansas.

Be sure to find your local NWS office on Social Media

NWSDodgeCity
NWSGoodland
NWSHastings
NWSKansasCity
NWSSpringfield
NWSTopeka
NWSWichita

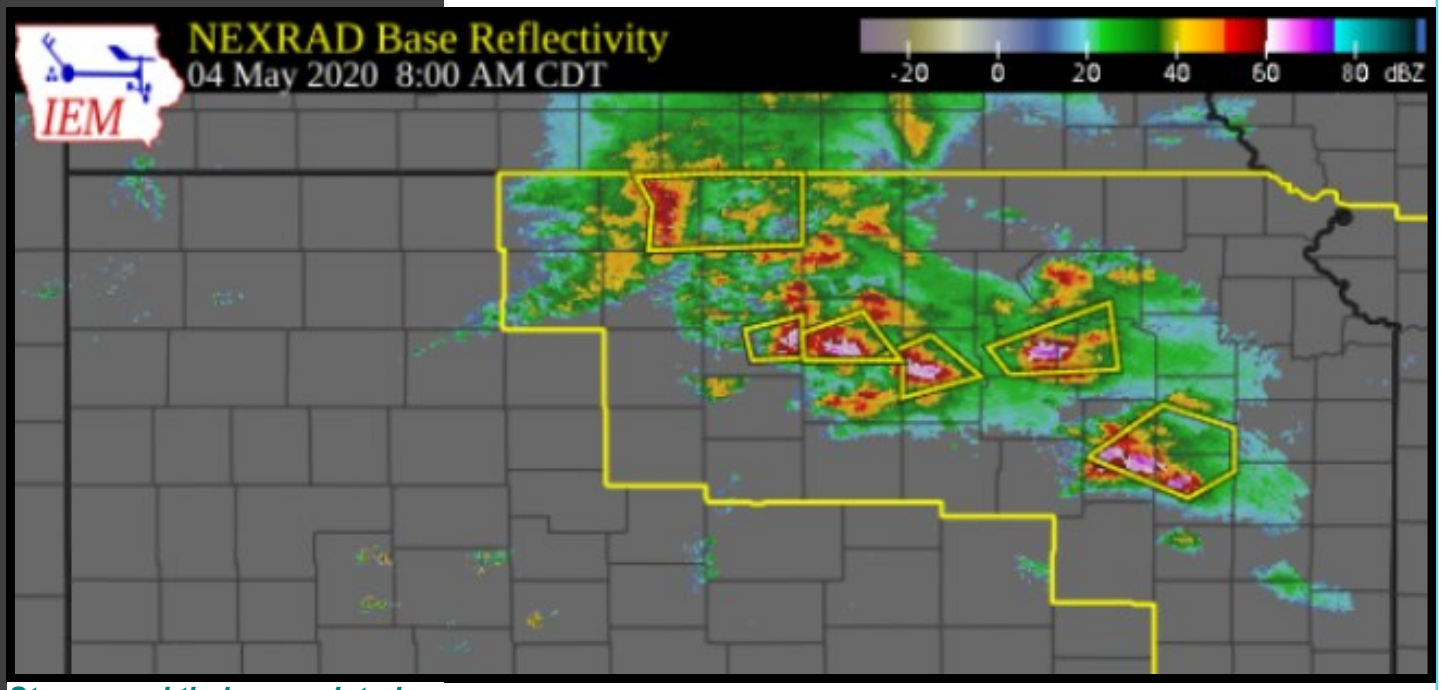
Also be sure to check if your county emergency manager has a facebook page for your county.

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021



2020 Severe Weather Summary
Northeast and East Central Kansas
National Weather Service - Topeka, KS

Although it was a quiet weather year for tornadoes across the state of Kansas (5 documented tornadoes in the NWS Topeka service area and only 17 across the entire state which was the lowest number since 1976) there were some high impact severe weather events that were remarkable for hail and rainfall across parts of northeast Kansas during the spring and summer months. One such event occurred very early in the day on May 4th when supercell thunderstorms developed around 6AM and proceeded to track southeast across much of the NWS Topeka service area. The storms developed just northeast of a warm front where air temperatures were only in the 40s and 50s; however, ample instability above the cool surface air and strong wind shear combined to help organize and sustain the thunderstorms. The image below shows the t-storms mainly in the form of discrete supercells that feature rotating updrafts which can foster large hail production. The image below shows the storms and associated warnings at 8 AM on May 4.

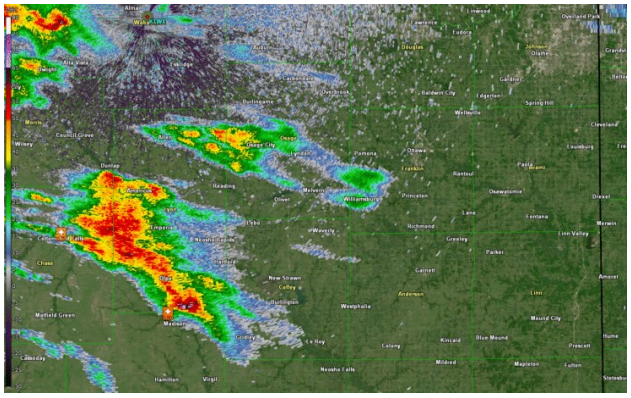


Storms and their associated warnings at 8am on May 4th.

In fact, the storms produced numerous instances of tennis ball to baseball sized hail during the morning. The photo on the next page shows baseball sized hail that fell southeast of Emporia associated with the storms seen in the image on the next page.

In addition to huge hail, the thunderstorms also produced sporadic damaging wind gusts in excess of 70 mph.

Tennis ball sized hail SE of Emporia
Courtesy of Bob Rodak



Radar image from May 4th, 2020

The Abilene Kansas airport experienced what appeared to have been a downburst of damaging winds that damaged or destroyed several hangers and aircraft as seen below.

The storms continued to produce very large hail and sporadic damaging winds through the late morning hours as they tracked southeast across the area. The event was unusual in the sense that most severe weather tends to begin in the late afternoon and last into the evening, whereas the storms on May 4th developed around 6AM and moved out of the area by noon ending the severe weather!

Another remarkable weather event in 2020 was the July 29-30 torrential flooding rains which dumped 5-10 inches of rain across parts of northeast Kansas. In fact, some areas received 2-4 inches of rain in around one hour on July 30th and much of that fell over the city of Topeka where

Topeka Flooding
Courtesy of Evert Nelson - Capital Journal

Flooding at 5000 SW 22nd Park and Prairie Road Topeka. Courtesy of Kathleen Weaver-WIBW

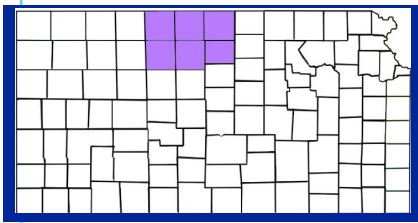
serious flash flooding occurred. The photos on the previous page show how serious the flash flooding was across the city on July 30th.

The table to the right shows some of the rainfall reports from across northeast Kansas from July 29-30th. Much of this rainfall occurred over a short period of time on July 30th. As mentioned parts of the city of Topeka received 2-4 inches of rain in just 60 to 90 minutes which would classify as a 100 year recurrence rainfall event.

Rainfall Reports (in)

4 Sse Ozawkie	7.5	4 Wsw Topeka	4.9
4 Wsw Topeka	4.61	3 Wsw Topeka	4.29
2 Sw Topeka	4.22	4 Sw Topeka	3.95
3 Sw Morganville	3.89	1 Se Parkerville	3.57
1 Wsw Berryton	3.44	5 Wsw Mayetta	3.26
Clifton	3.22	2 Nnw Berryton	3.06
Clay Center	3.05	4 Ssw Morganville	3.03
7 Se Palmer	3	3 Wnw Willis	2.98
1 Sw Herington	2.96	3 Se Clifton	2.89
3 E Herington	2.88	3 Nw Pomona	2.84

data valid as of Fri 10:22 am - NWS Topeka



2020 Severe Weather Summary
North Central Kansas
National Weather Service - Hastings, NE

Last year marked the first time since 2009 that no tornadoes were reported across north central Kansas. The lack of any confirmed tornadoes was unusual but that seemed to fit right in with the year 2020. Without any tornadoes, the 2020 severe weather year in review focuses on hail, wind and flooding.

For starters, much of the severe weather was centered later in the season primarily in July and August. In fact, there was only one severe weather report noted prior to June 20th (a 68 mph wind on June 3rd near Webber). June 26th and 27th marked the first more significant event which was a mixture of heavy rain and strong winds from a typical early summer

Early summer flooding in Mitchell County

Courtesy of Mitchell County Emergency Manager

storm. Anywhere from 2” to 6” of rain was recorded including 5.05” just northeast of Beloit. This prompted relatively minor flooding and drove the Solomon River out of its banks at Beloit with a crest of 22.4 feet (flood stage is 20 feet)

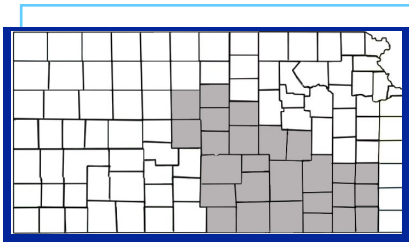
July brought a mix and match of strong winds and heavy rain. Early in the month, two events brought 60-75 mph winds on the 2nd and 8th. Damage appeared to be relatively minor and mostly limited to tree limbs. On the 26th, another heavy rain event rolled across Jewell and Mitchell counties. Storm total rainfall of 4” to 7” was reported, and several county roads were waterlogged. Just north of Randall, a driver had to be rescued when their car left the road and ended up in the ditch after encountering water over the road. A NWS Cooperative Observer nine miles north-northeast of Natoma recorded 6.72” of rain.

Arguably the most noteworthy event of the season occurred on August 14th. This event was highlighted by several reports of large hail in Jewell, Osborne and Mitchell counties. Jewell County was hit the hardest with copious amounts of tennis to softball sized hail. The large hail caused extensive damage to homes, vehicles and area crops. Hailstones measured at 4” in diameter in Mankato and two miles north of Jewell. The Jewell County EMS Director’s vehicle incurred major damage including a shattered windshield. Total damage for this event was likely in the millions of dollars.

This windshield gives some idea of the size of hail and extent of damage southeast of Mankato. Courtesy of Jeff Cady

A snapshot of the huge hail near Jewell. Courtesy of Kayla Dunstan

After a few more reports of hail in August and a quiet September, the severe weather season wrapped up with a couple of 60 mph wind gust reports in the Jewell area on Columbus Day.



2020 Severe Weather Summary
Central, South Central & Southeast Kansas
National Weather Service - Wichita, KS

2020 Central, South Central and Southeast Kansas Severe Weather Stats By The Numbers

Number of Severe Wind, Hail, Flooding Reports: 295 (2019: 736)

Tornadoes: 0 (Average 19)

Largest Hail: 4" (Wilson County: July 11)

Strongest Wind: 90 mph (Labette County) May 5, 2019 estimated)

Most reports received: Allen, Russell and Sedgwick counties (25)

Wichita's County Warning Area Tornado Drought

Amazingly, no tornadoes were reported in 2020 across Wichita's 26-county warning area stretching across portions of central, south-central, and southeast Kansas.

This is the first time such a feat has occurred across Wichita's county warning area since records began in 1950. On average since 1990, about 27 twisters touch down each year across Wichita's county warning area.

Lowest Annual Tornado Totals Across Wichita's 26 County Warning Area Since 1950

2020	0
1996, 1979, 1976, 1972, 1952	2
1994, 1977, 1967	3
1989, 1969	4
1987, 1968	5

Furthermore, only two tornado warnings were issued in 2020 across Wichita's county warning area. This was one of the lowest 2020 totals compared to all National Weather Service offices across the country. Offices in Idaho, California, and Washington state even issued more tornado warnings than the Wichita office! On average since 1986, the Wichita office issues about 30-35 tornado warnings annually.

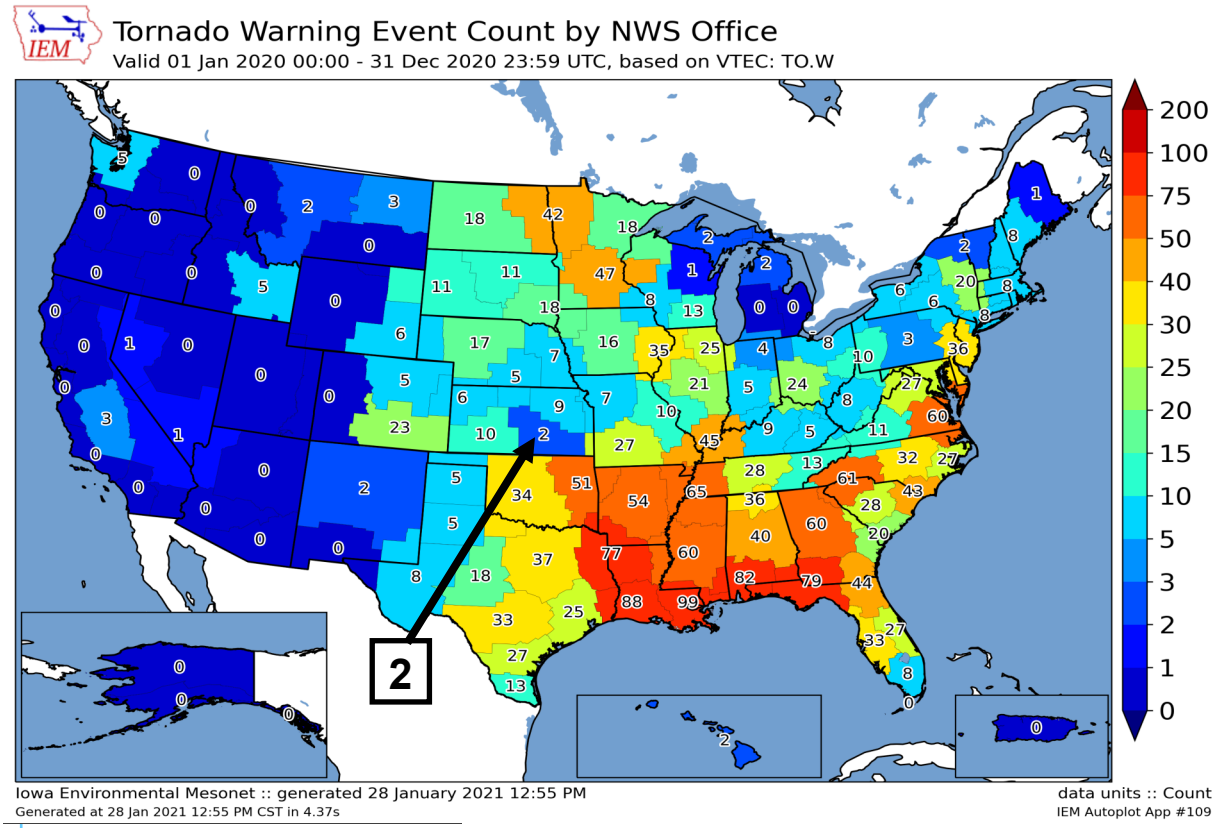


Figure 1. Tornado warnings issued by individual National Weather Service offices in 2020. Courtesy of Iowa Environmental Mesonet

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021

February 25th Narrow Snow Band

An extremely narrow band of heavy snow, estimated to be about 10 miles wide, impacted portions of central and north-central Kansas during the early morning hours of February 25th. Snow totals in this narrow band ranged from 2 to 13 inches. This area of snow crossed both I-70 and I-135 which caused numerous traffic accidents.

Figure 2. Photo of the narrow snow band over north central Kansas. Notice Wilson Lake in the lower left, and Waconda Lake in the upper right.. Courtesy of Leigh Marts

Figure 3. Heavy snow in Sylvan Grove. Courtesy of Damon Vonada

May 3rd—4th Early Morning Severe Storms

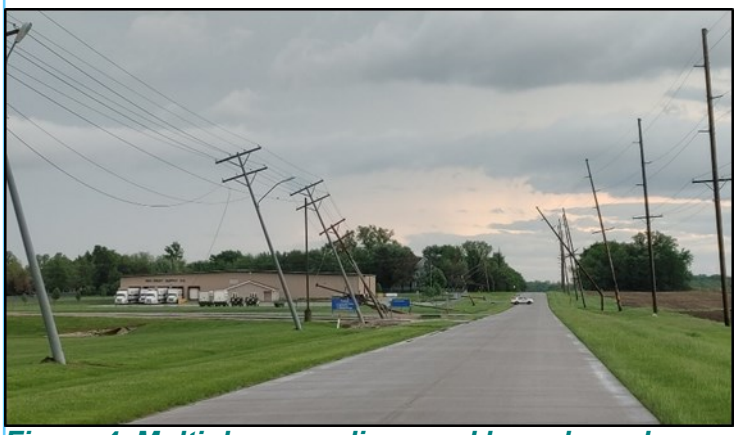


Figure 4. Multiple power lines and large branches down near Iola. Courtesy of Randy Stitt.

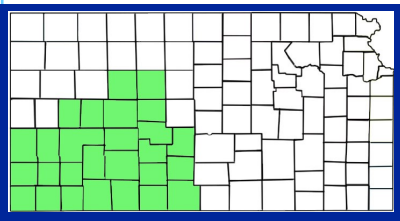
Severe thunderstorms impacted portions of central, south-central, and southeast Kansas two mornings in a row on May 3rd and 4th. Hail near the size of golf balls was reported across the northern Wichita metro area, and also near Lincoln, New Cambria, Iola, Chanute, and Moran. Meanwhile, damaging winds of 75 mph downed trees and caused damage to outbuildings in Greenwood County. Near Iola, a weather station recorded a 76 mph wind gust that knocked down trees and snapped power poles. In Woodson County severe winds damaged several outbuildings and metal structures.

July 11th Severe Storms

Very humid air and above normal temperatures combined to produce extreme instability across the region on the afternoon and evening hours of July 11th. Scattered thunderstorms developed across east-central Kansas during the afternoon hours and spread slowly south and east across southeast Kansas through the late afternoon and early evening hours. Some of the storms produced very large hail around the size of softballs as well as numerous reports of damaging winds. The Oswego area experienced more widespread wind damage with estimated speeds around 90 mph with isolated higher gusts.

Figure 5. Wind damage in Oswego. Courtesy of Labette County Emergency Management

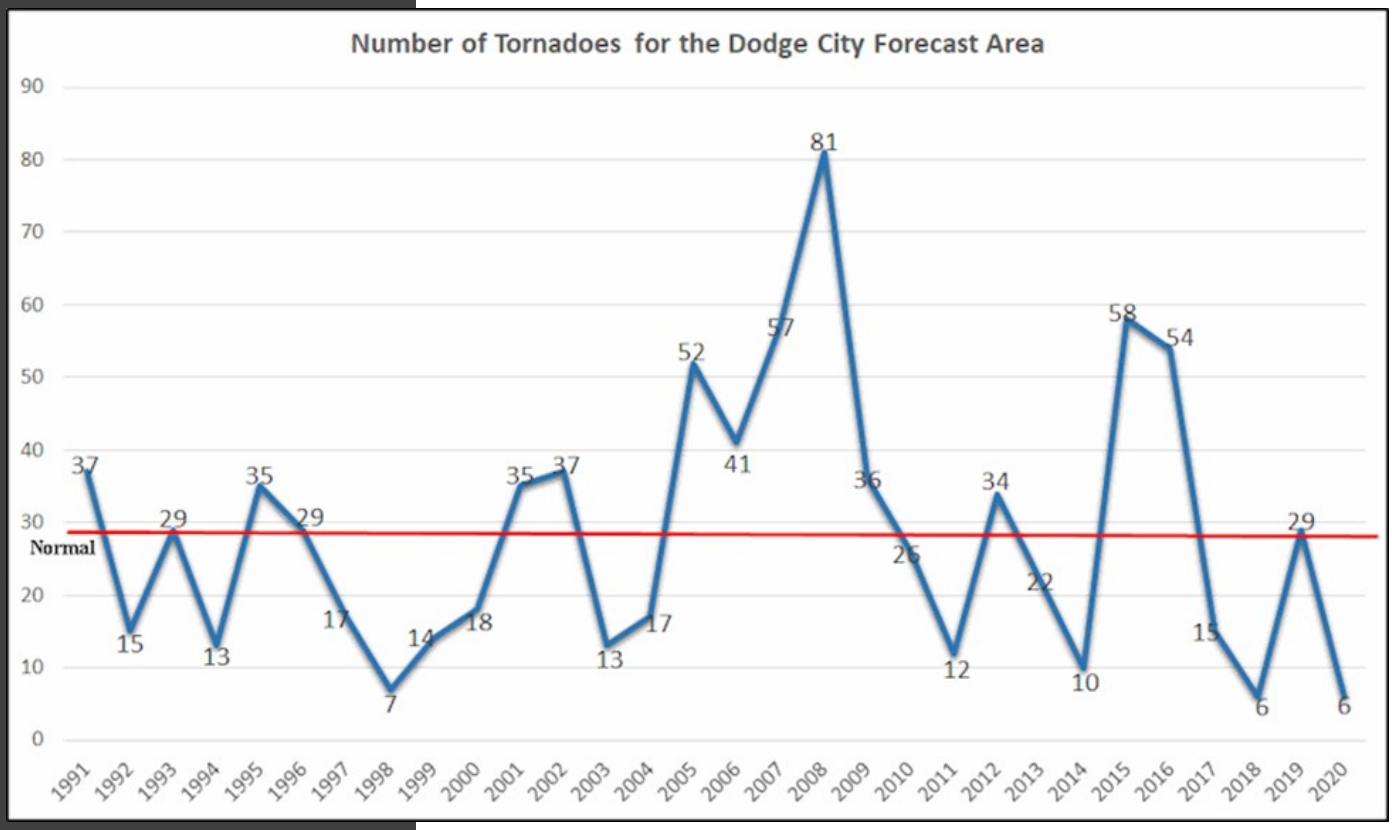
Figure 6. Large hail in eastern Wilson County. Courtesy of Eric Spaulding



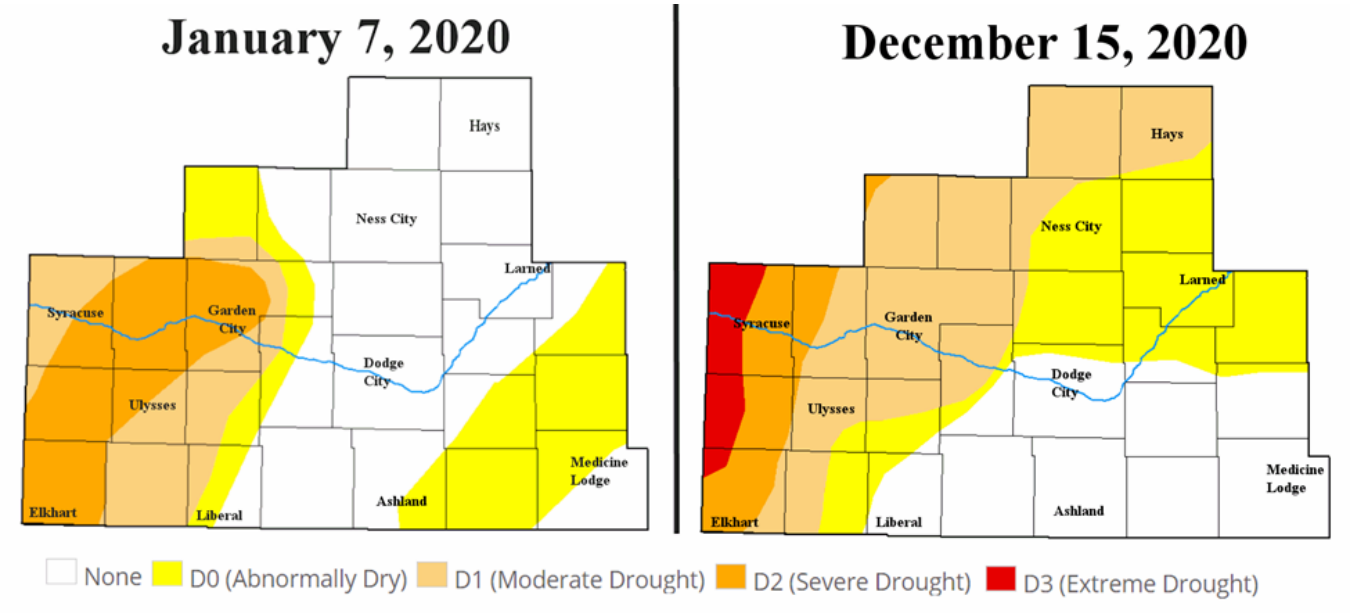
2020 Severe Weather Summary
Southwest Kansas
National Weather Service - Dodge City, KS

The year 2020 across southwest Kansas once again experienced many extremes in weather including the number of tornadoes. The low number of tornadoes was arguably the biggest weather news for the year.

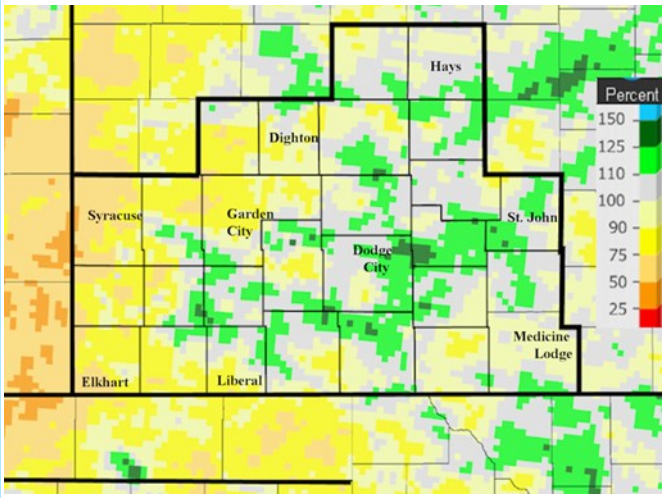
In a typical year, the Dodge City forecast area averages 28 tornadoes. For 2020, there were only six twisters. The strongest and longest-lived did not occur until July 1st! Since 1991, there have only been three years with single digit tornado counts (7 in 1998, 6 in 2018 and 6 in 2020).



Unfortunately after several years of wetness, drought conditions began to increase in severity (Images on next page). By mid-summer exceptional drought conditions were in place across the western counties. Even though temperatures were not extreme, the lack of widespread rainfall allowed the drought to worsen.



2020 Precipitation % of Normal



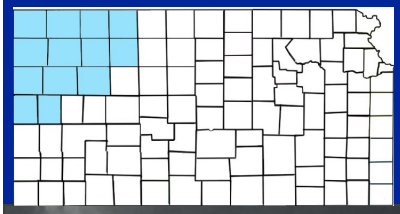
Amazingly, there were still locations in our area with above normal precipitation for 2020! For instance, at the Dodge City airport the yearly precipitation was above normal – for the 7th year in a row! Since records began in 1874, there have been only three consecutive years in row of above normal precipitation!

As fall approached, the frequency of cold fronts increased. On October 11th, a brief but severe dust storm rolled through the area as the result of north winds in excess of 60 mph. See Figure 1.

The year ended with three significant snowstorms. Several locations in Meade and Clark counties received nearly 30 inches in the three storms. Portions of the drought area also received significant amounts of snow that helped with dryness.

Hopefully, 2021 will be kind to the area, weather-wise.

Figure 1: Wall of dust approaching Dodge City on 11 October 2020



2020 Severe Weather Summary
Northwest Kansas
National Weather Service - Goodland, KS

Jill Lambert captured several photos of the landspout as it moved north of Hoxie on June 21st.

Northwest Kansas experienced several severe weather events during 2020. Thunderstorms leaving wind damage in their wake and hail storms impacted the region. Heavy rain in late July resulted in flooding across Cheyenne County. Despite the active weather, only six tornadoes were reported across northwest Kansas. This total may seem low especially compared to the 11 tornadoes reported in 2019; however, only three tornadoes were reported in 2018.

June 21st Sheridan County Landspout

Of the six tornadoes reported across northwest Kansas in 2020, only the Sheridan County tornado was assigned a rating falling on the Enhanced Fujita Scale which runs from EF-0 to EF-5. The five other tornadoes occurring in the area received ratings of EF-U or Unknown. Tornadoes receive a rating of unknown if an estimate of wind speed stemming from damage is not available.

The event started with unorganized supercells developing along a dry line which extended through Wallace and Logan counties. The storms moved east into an unstable airmass where they merged into a line of storms extending from Greeley to Sheridan County.

At 1:50 PM CDT, a landspout tornado developed in Sheridan County. Landspouts are generally short lived; however, as was the case with this tornado, they can last for several minutes. Numerous reports from the public along with radar images and photos show that this landspout was long-lived staying on the ground for twenty minutes and traveling 5.82 miles. The landspout overturned a center pivot which was the only damage reported. As a result of the damage, the landspout was rated as an EF-0 with winds estimated to be around 80 MPH.

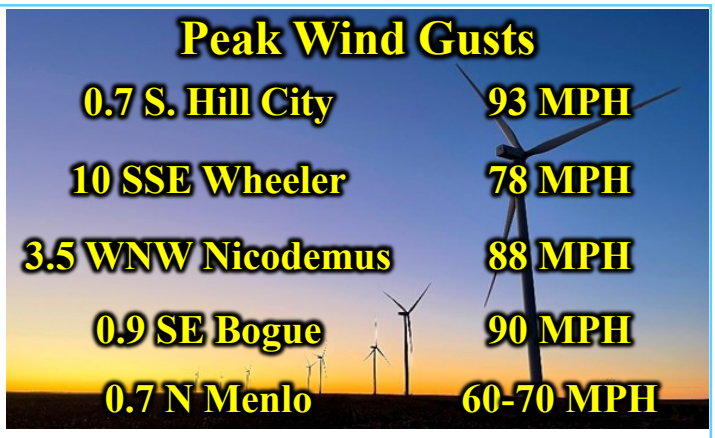
July 2nd Thunderstorms

Severe thunderstorms impacted the Tri-State region on the afternoon and evening of July 2nd producing strong winds and leaving damage in its wake across several counties in Northwest Kansas.

During the afternoon, supercell thunderstorms developed over the plains of eastern Colorado. The storms converged into a line intensifying as they moved across the state line into Kansas and Nebraska. Storms produced hail ranging in size from dimes to ping pong balls in Logan County in the town of Oakley.

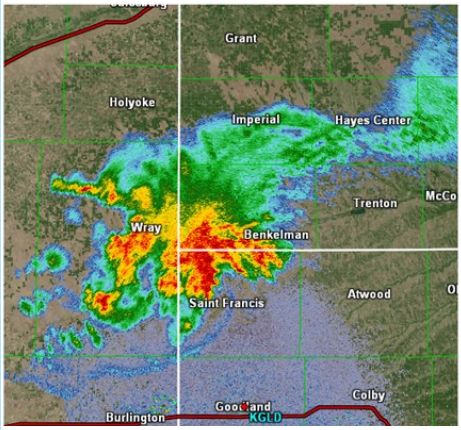
Thunderstorms produced wind gusts ranging from 60 to 90 mph across Sherman, Cheyenne, Thomas, Norton and Graham counties. Winds brought down power lines across portions of Logan and Graham counties. The Logan County Emergency Manager reported brownout conditions due

to blowing dust with winds estimated at 50 to 60 mph. Three power poles were damaged within the county.



In Graham County, law enforcement reported an oil tank battery had caught fire south of Hill City and four additional batteries were knocked over. Numerous live tree limbs and power lines were brought down in the area resulting in power outages. The ASOS at the Hill City Airport reported a wind gust of 93 mph at the time of the damage. Additionally, tree limbs were downed across portions of Norton County. Reports from Thomas County included an irrigation system being blown over and a trampoline being blown away.

July 23rd and 24th Flooding



Radar image taken at 10PM MDT

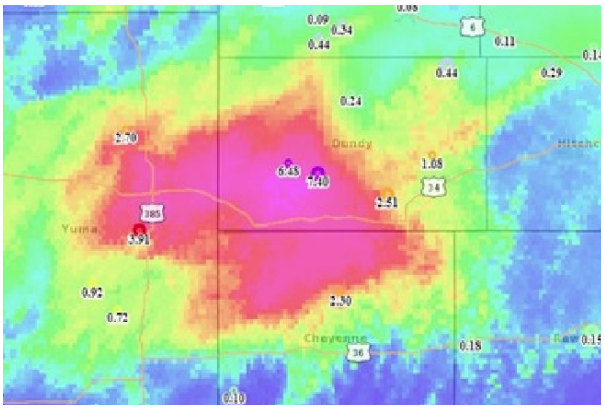
One of the more active events of the 2020 convective season was the flash flooding event that transpired on July 23rd and 24th. Initially, scattered thunderstorms developed in eastern Colorado on the afternoon of the 23rd producing wind gusts of 35 to 40 mph. As the afternoon progressed, storms began to cluster and congealed into a line as they moved east.

During the evening hours, a cluster of stationary thunderstorms producing heavy rainfall developed across portions of Yuma County in Colorado and Dundy County in Nebraska. As the evening continued, thunderstorm coverage expanded southward into Cheyenne County in Kansas.

Heavy rain continued to fall through the overnight hours across northern Cheyenne and southern Dundy counties. Total rainfall amounts from the event ranged from nearly three quarters of an inch in southeastern Yuma County to over eight inches reported along the Kansas-Nebraska border.

In Cheyenne County, the heavy rain resulted in flooding of Hackberry Creek where it meets the Republican River. The Cheyenne County Emergency Manager reported that the river was out of its banks and backfilling to the south at Road 23. The sound of trees snapping in the river were reported overnight around the Road 22 bridge.

Estimated Rainfall Amounts through July 24th



The event resulted in numerous roads becoming washed out due to flooding. Several roads across Cheyenne, Dundy and Yuma counties were closed due to water covering roadways. This resulted in farms being cut off from outside access due to the status of surrounding roads. One bridge was damaged in Cheyenne County and another was washed out from the flooding.

Weather-Ready Nation
National Oceanic and Atmospheric Administration

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

AMBASSADOR™ WRN WEATHER-READY NATION

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

KANSAS SEVERE WEATHER AWARENESS WEEK
MARCH 1-5, 2021