2011 KANSAS

SEVERE WEATHER AWARENESS WEEK

MARCH 7-11, 2011

TORNADO SAFETY DRILL TUESDAY, MARCH 8th

1:30 PM CST

INFORMATION PACKET

National Weather Service

Dear Emergency Management and Media Partners,

The National Weather Service, the Kansas Emergency Management Association, and the Kansas Division of Emergency Management request your participation in "**Kansas Severe Weather Awareness Week**" activities from March 7 – 11, 2011. The annual statewide tornado drill will take place on Tuesday, March 8th at 1:30 pm CST. Test tornado warnings will be issued via NOAA Weather Radio and the EAS system for distribution statewide.

Enclosed is tornado and severe weather information that can be used for preparedness activities in your local jurisdiction. Feel free to duplicate and distribute this information as necessary.

As in 2009, the havoc caused by tornadoes was surpassed by severe thunderstorms which can pack winds over 125 mph and hail greater in size than a grapefruit. On September 15th, Kansas set a new record for diameter in regards to hail. The behemoth stone fell in West Wichita and the diameter measured a whopping 7.75 inches, easily surpassing the old record set in Coffeyville, KS. The stone in Coffeyville, will retain the record for weight, as the stone in Wichita was not able to be weighed until the following day and had sublimated.

Fortunately, 2010 was another relatively quiet year in regards to tornadoes across the state of Kansas. The state recorded 88 tornadoes which is 28 above the average of 60 tornadoes since records began in 1950. However, Kansas was 8 under the 20 year average which is 96. On a side note, which county will be the first to reach 100 tornadoes since records began in 1950? It looks as though Sherman county has the lead with 99 tornadoes, but as we all know, one outbreak as depicted later in this document can spring many counties to that lofty height.

Kansans live with the threat of severe weather year round. Kansas Severe Weather Awareness Week is the ideal time to prepare for severe weather. Families should practice their severe weather safety plan at home, work, school or other public locations that they frequent. They should develop a safety plan for times when they are participating in outdoor recreation activities, sporting events, or working outdoors. Each Kansan should know where to go should severe weather strike their location.

All Hazards NOAA Weather Radio is like having your personal tornado siren in your home or vehicle. We encourage Kansans to purchase a weather radio and have it programmed to their county and/or surrounding counties to receive severe weather warnings and information directly from the National Weather Service. Now is a great time to replace the back-up battery in your NOAA All Hazards Weather Radio so that you get severe weather information even if the power goes out.

As always, the National Weather Service offices that serve the state of Kansas look forward to partnering with you to help Kansans prepare for severe weather. Please contact the Warning Coordination Meteorologist at your local office if you have any questions or comments regarding this packet. Visit our webpages for the latest forecasts and severe weather information.

www.weather.gov/topeka
www.weather.gov/dodgecity
www.weather.gov/kansascity
www.weather.gov/hastings
www.weather.gov/wichita
www.weather.gov/goodland
www.weather.gov/springfield

2010 Kansas Tornado Facts

Tornadoes: 88 (**28** above the 1950-2010 average of 60)
(**11** above the past 30 year average of 77)
(**8** below the past 20 year average of 96)

Fatalities: 0 **Injuries: 0**

Longest Track: **21.6 miles** (Gove County, May 25, EF1)

Strongest: **EF2** (Kingman County, May 10)

Most in a county: **6** (Gray and Scott)

Days of occurrence: **21** (also called Tornado Days)

Most in one day: **15** (May 10)

Twin tornadoes northeast of Hoxie, Kansas on June 11, 2010 which eventually merged into one tornado. Photo courtesy of John Scott.

Most in one month: **42** (May...2010 ranked 10th for tornadoes for May)

First tornado of the year: **April 22** (Kearny County, 4:48 pm CDT, EF1, 9.4 mile length, 1760 yard width)

Last tornado of the year: **September 25** (Comanche County, 4:49 pm CDT, EF0, 0.49 mile length, 50 yard width)

---------- 2010 Monthly Tornado Totals ----------

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Total	0	0	0	12	42	18	4	0	12	0	0	0	88	100%
Percent	0	0	0	14	48	20	5	0	14	0	0	0		
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	1	0	0	0	0	0	0	0	1	1%
EF1	0	0	0	3	9	4	1	0	0	0	0	0	17	19%
EF0	0	0	0	9	32	14	3	0	12	0	0	0	70	80%

Weak (EF0, EF1) tornadoes in green, strong (EF2, EF3) in yellow, violent (EF4, EF5) in red, month totals in blue.
Percent values may not add to 100% due to rounding.

Yearly Summary: 2010 is tied for 15th place in the Kansas historical database in terms of the number of tornadoes. The 88 tornadoes reported remained above the 61-year average but was a little below the most recent 20-year average and well short of the record 187 tornadoes set in 2008. There were no violent (EF4-EF5) tornadoes in the state in 2010 and only one strong (EF2-EF3) tornado. Fortunately, there was no loss of life, and there were no injuries directly attributable to Kansas tornadoes in 2010.

The lack of tornadoes in August last year, while interesting at first glance, is actually not all that noteworthy. Looking back through the records since 1950, in 31 of the 61 years (about half), the month of August shows only 0 or 1 tornado in the state. This is not too surprising, since the winds aloft are typically much weaker in August compared to spring, and therefore the wind shear needed to sustain stronger thunderstorms is often absent.

KANSAS TORNADO STATISTICS

by County

1950 - 2010

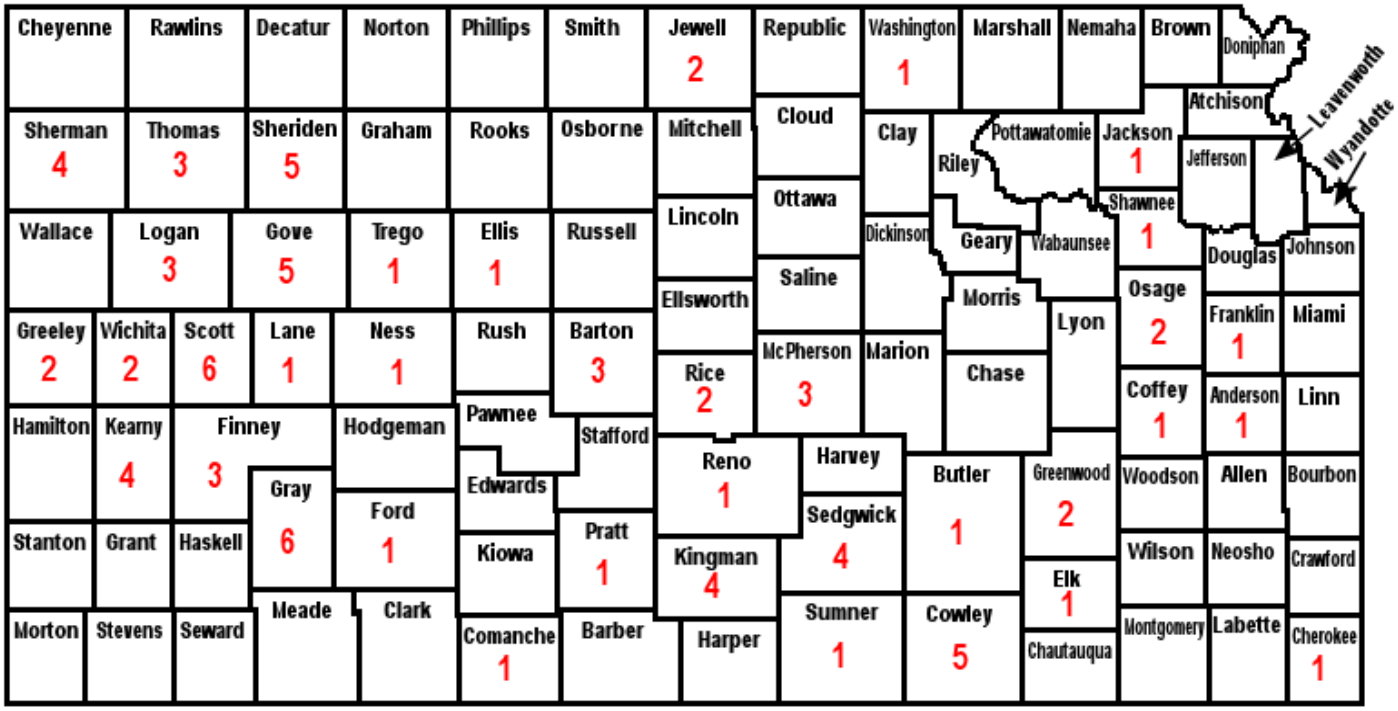
TORNADOES, FATALITIES, AND INJURIES

County	Tor	Fat	Inj
Allen	27	0	4
Anderson	15	3	12
Atchison	15	0	11
Barber	32	0	2
Barton	89	2	37
Bourbon	17	0	7
Brown	43	0	5
Butler	73	28	225
Chase	38	0	2
Chautauqua	15	0	0
Cherokee	35	4	41
Cheyenne	39	0	0
Clark	37	0	0
Clay	36	1	31
Cloud	45	1	8
Coffey	23	0	5
Comanche	36	0	2
Cowley	62	77	293
Crawford	33	4	43
Decatur	43	0	5
Dickinson	34	1	12
Doniphan	18	0	2
Douglas	37	1	48
Edwards	43	0	7
Elk	24	2	8
Ellis	52	0	6
Ellsworth	46	0	0
Finney	87	1	41
Ford	80	0	0
Franklin	27	3	34
Geary	17	0	3
Gove	43	0	3
Graham	34	0	0
Grant	24	0	9
Gray	38	0	3
Greeley	33	0	0

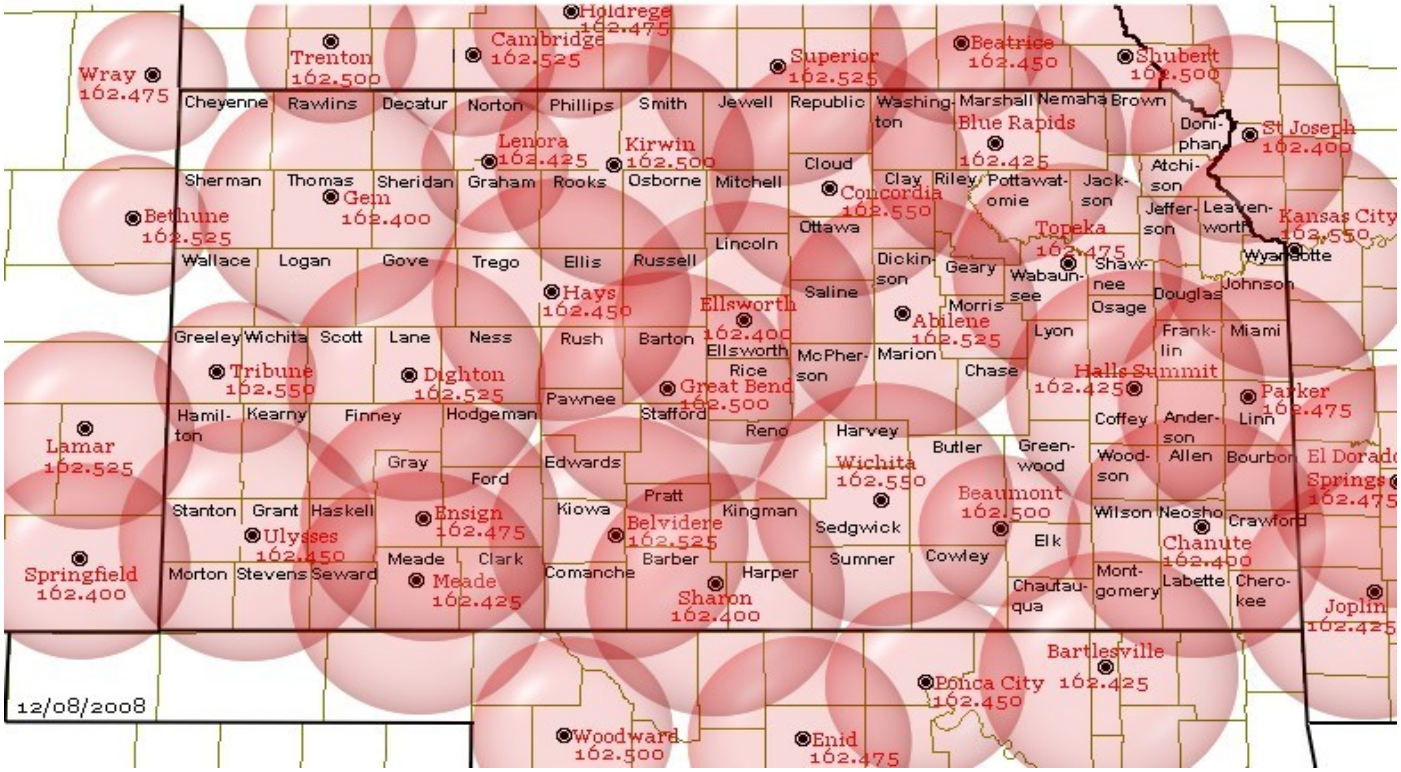
County	Tor	Fat	Inj
Greenwood	38	0	10
Hamilton	21	0	1
Harper	57	0	1
Harvey	47	1	63
Haskell	27	0	10
Hodgeman	43	0	4
Jackson	30	4	17
Jefferson	39	0	101
Jewell	35	0	1
Johnson	35	4	12
Kearny	34	0	0
Kingman	51	0	1
Kiowa	51	11	74
Labette	34	1	29
Lane	31	0	2
Leavenworth	30	2	30
Lincoln	29	0	2
Linn	13	0	3
Logan	24	0	0
Lyon	40	6	217
McPherson	46	1	16
Marion	45	1	2
Marshall	31	0	1
Meade	44	0	0
Miami	18	0	9
Mitchell	46	0	5
Montgomery	31	1	1
Morris	28	0	7
Morton	18	1	2
Nemaha	33	0	1
Neosho	31	0	4
Ness	42	0	4
Norton	19	0	0
Osage	39	17	6
Osborne	40	0	13
Ottawa	24	2	9

County	Tor	Fat	Inj
Pawnee	43	0	1
Phillips	37	0	1
Pottawatomie	31	0	5
Pratt	66	3	10
Rawlins	46	0	4
Reno	74	0	22
Republic	49	0	1
Rice	41	0	6
Riley	27	0	51
Rooks	48	0	6
Rush	33	0	8
Russell	63	1	7
Saline	31	0	66
Scott	42	1	1
Sedgwick	82	13	321
Seward	34	0	15
Shawnee	46	18	528
Sheridan	37	0	0
Sherman	99	0	0
Smith	40	0	1
Stafford	63	1	4
Stanton	19	0	0
Stevens	24	1	5
Sumner	77	5	14
Thomas	43	0	1
Trego	58	5	101
Wabaunsee	31	0	14
Wallace	35	0	4
Washington	34	2	12
Wichita	25	3	4
Wilson	15	0	0
Woodson	12	0	8
Wyandotte	10	2	36
Total	**4049**	**235**	**2824**

Kansas Tornadoes 2010



Kansas Area NOAA All-Hazards Weather Radio Stations



Check out a Storm Spotter and Weather Safety Training presentation near you this spring…

Each spring, the National Weather Service offices that serve the state of Kansas conduct storm spotter and weather safety training sessions in each county. 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, ways to get weather information from the National Weather Service, and you can meet a meteorologist from your local National Weather Service office.

The schedule for storm spotter training sessions varies in each community, please check out www.weather.gov for more information on a training session in your area.

Did you know that there are seven National Weather Service offices that serve portions of Kansas?

The NWS offices are located in Goodland; Dodge City; Wichita; Topeka; Hastings, Nebraska; Pleasant Hill, 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, for office tours, or to learn more about careers in meteorology in the NWS or in NOAA. We are here to serve you!

Kansas Tornado Facts

Days with more than 20 tornadoes

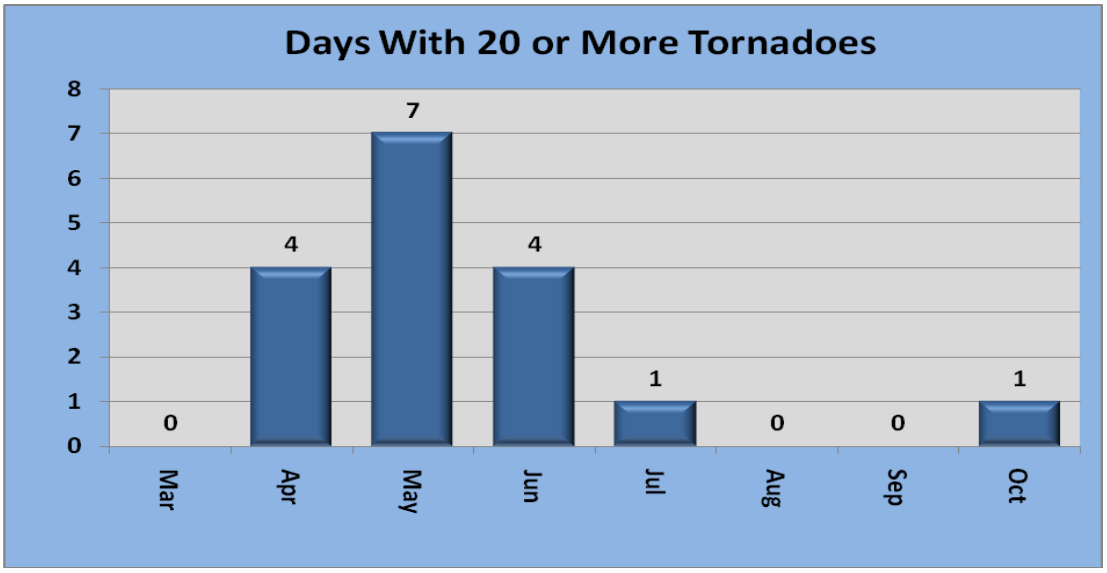
Date	#Tornadoes
05/23/08	70
06/15/92	39
05/05/07	36
06/04/55	33
05/29/04	28
10/26/06	28
05/25/97	25
06/09/05	25
05/15/91	24
07/07/04	23
04/26/91	21
06/15/09	21

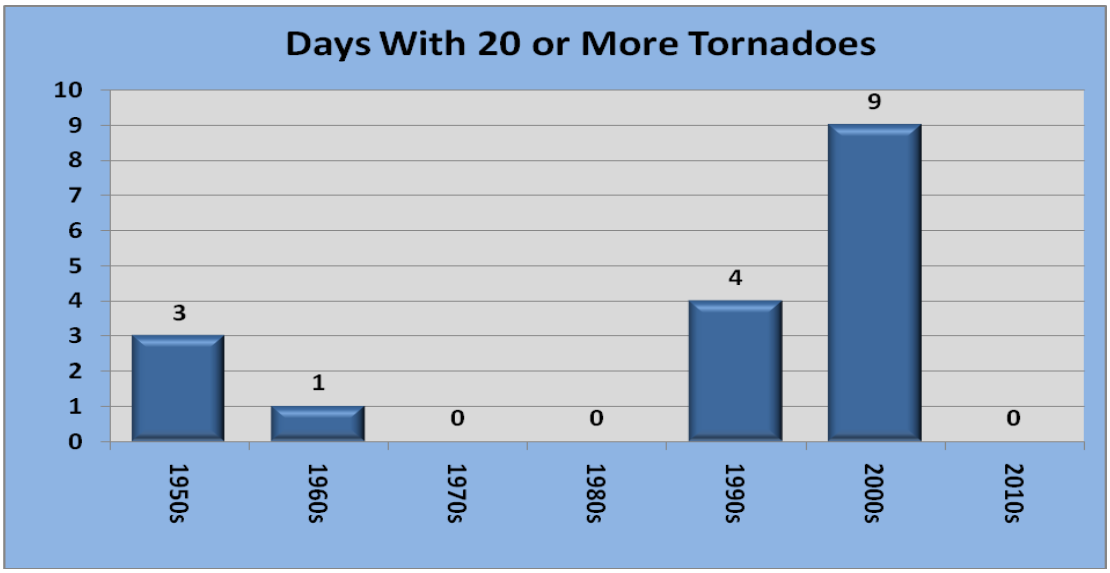
Kansas Tornado Count By Decade

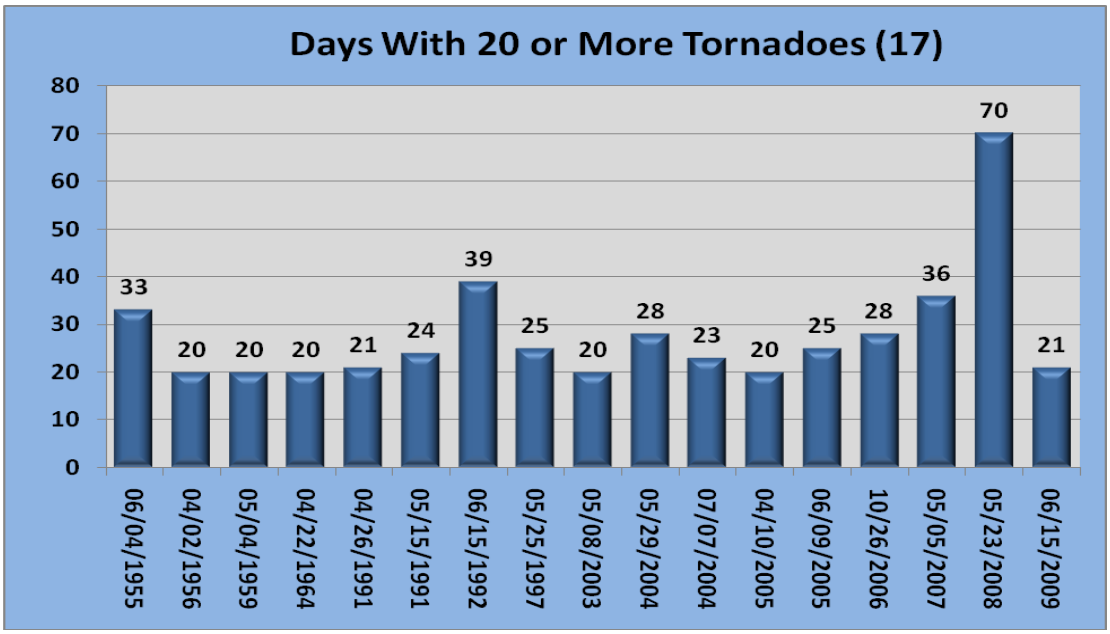
1950s: 560
1960s: 457
1970s: 303
1980s: 339
1990s: 789
2000s: 1192
2010s: 88 (through 2010)

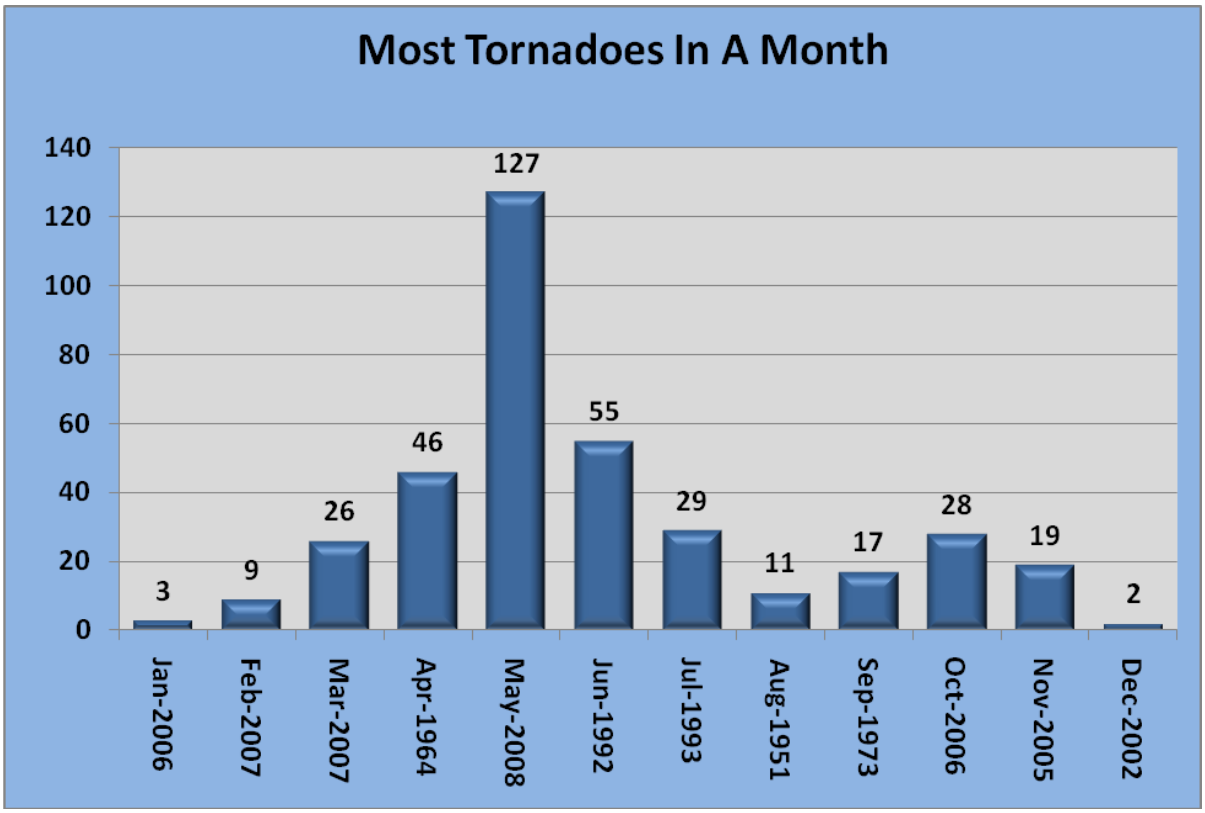
Most Tornadoes in One Episode

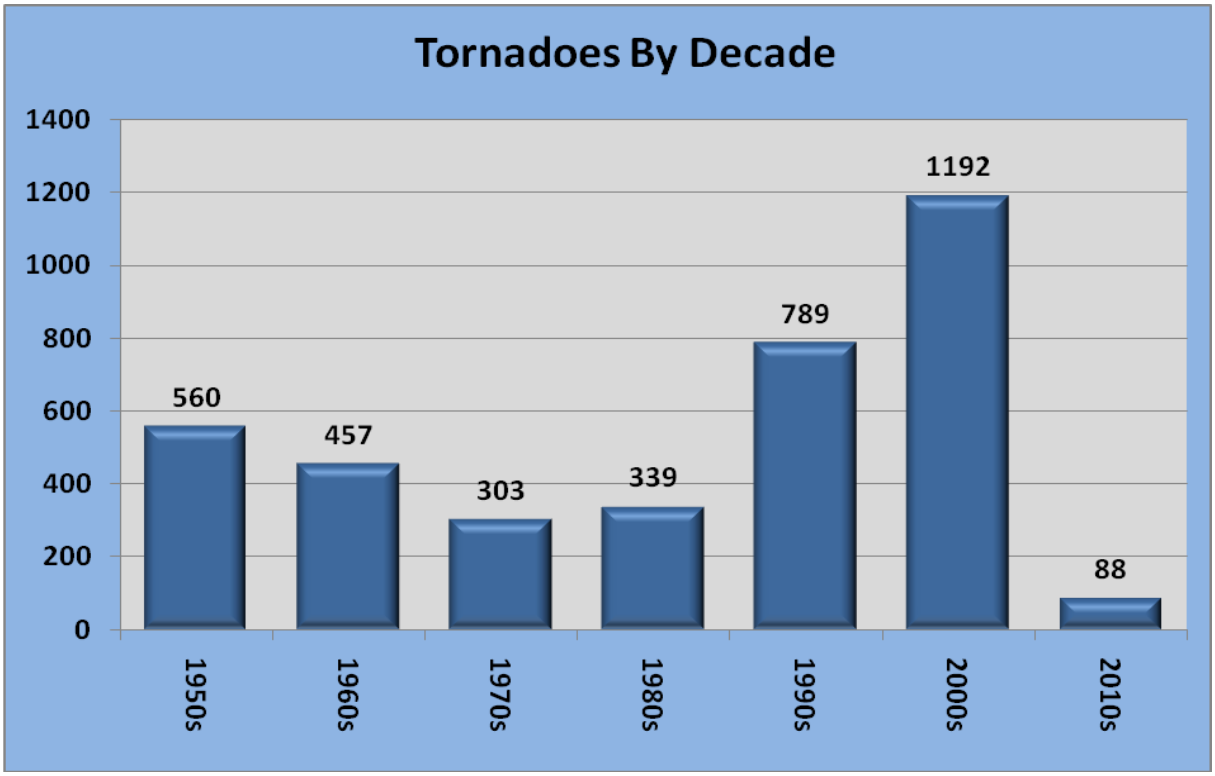
May 23, 2008	70 Tornadoes
June 15-16, 1992	41 Tornadoes


Days With 20 or More Tornadoes
8
7
6
5
4
3
2
1
0
0
4
7
4
1
0
0
1
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct


Days With 20 or More Tornadoes
10
9
8
7
6
5
4
3
2
1
0
3
1
0
0
4
9
0
1950s
1960s
1970s
1980s
1990s
2000s
2010s


Days With 20 or More Tornadoes (17)
80
70
60
50
40
30
20
10
0
33
20
20
20
21
24
39
25
20
28
23
20
25
28
36
70
21
06/04/1955
04/02/1956
05/04/1959
04/22/1964
04/26/1991
05/15/1991
06/15/1992
05/25/1997
05/08/2003
05/29/2004
07/07/2004
04/10/2005
06/09/2005
10/26/2006
05/05/2007
05/23/2008
06/15/2009

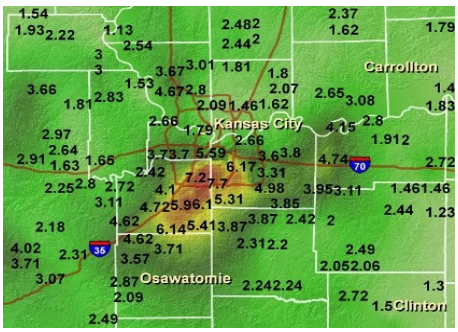

Most Tornadoes In A Month
140
120
100
80
60
40
20
0
3
9
26
46
127
55
29
11
17
28
19
2
Jan-2006
Feb-2007
Mar-2007
Apr-1964
May-2008
Jun-1992
Jul-1993
Aug-1951
Sep-1973
Oct-2006
Nov-2005
Dec-2002


Tornadoes By Decade
1400
1200
1000
800
600
400
200
0
560
457
303
339
789
1192
88
1950s
1960s
1970s
1980s
1990s
2000s
2010s

2010 Severe Weather Summary
Extreme East Central and Northeast Kansas
National Weather Service Pleasant Hill, MO

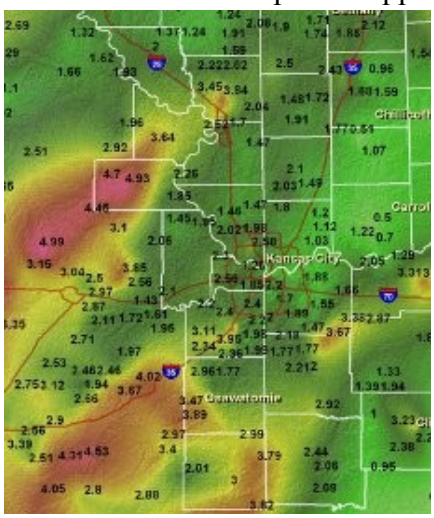
The 2010 severe weather season was very active across extreme east central and extreme northeast Kansas. Numerous rounds of strong damaging winds, very heavy rain and large hail occurred; however, no tornadoes were reported across this area.

On April 2, severe thunderstorms moved across east central Kansas resulting in damage to buildings in the Blue Mound and Centerville areas in Linn County, as well as just west of Bonner Springs in Leavenworth County. This storm also blew a roof off a house just south of Bonner Springs. Severe storms rolled across eastern Kansas from May 12th into the 13th. Most of the damage occurred just after midnight, as a bow echo with 60 to 70 mph winds blew over trees and caused property damage to fences and homes near the Kansas Speedway, Shawnee, Olathe, and Overland Park areas.



From June 12th through the 15th, several rounds of thunderstorms rolled across the region. Rainfall rates with each round of storms locally exceeded 2 inches/hr leading to multi-day rainfall totals as high as 7.50 inches across parts of the Kansas City metro.

Two rounds of severe weather occurred on June 19th. A small cluster of storms which developed near Concordia, KS early that morning quickly developed into a small bow echo. As the complex moved across far northeast Kansas and west central Missouri, it grew to stretch some 100-150 miles from north to south. This storm system packed a punch with radar estimated wind speeds topping out in the 80 to 100 mph range. While most of this wind speed didn't translate to the ground, reports of 65 to 75 mph winds were common from St. Joseph to Kansas City. Round two occurred that evening, as a supercell developed and "bowed out" near the same areas.



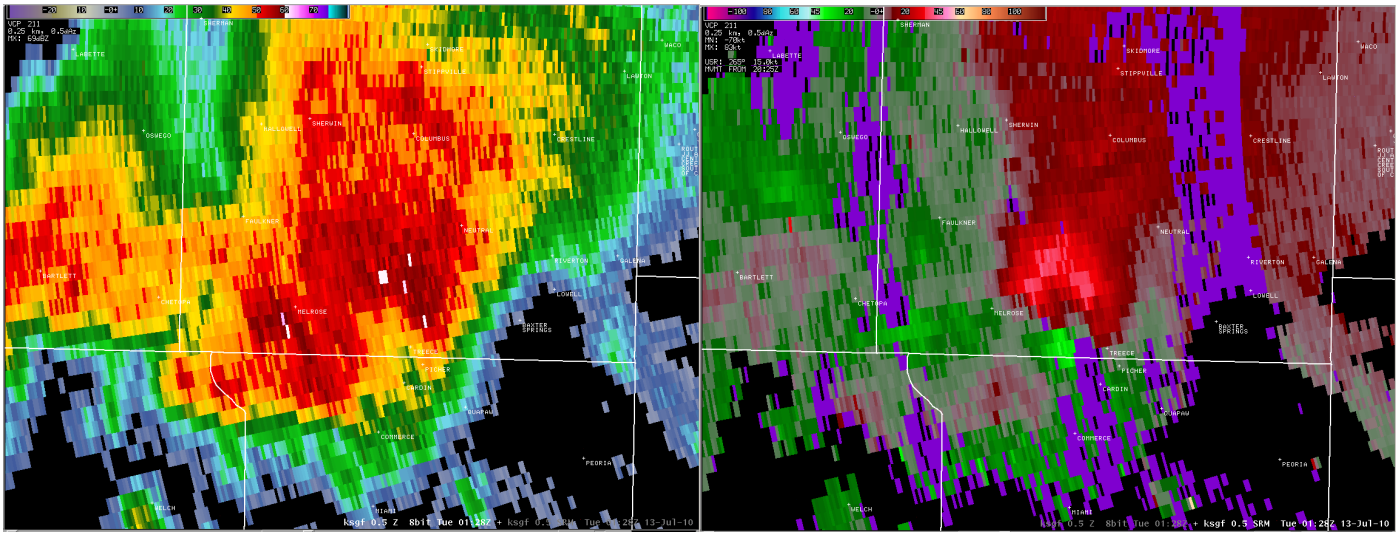
Remnants of tropical system Alex collided with a weakening frontal boundary over Kansas and Missouri leading to a very wet July 4th weekend. Several rounds of tropical type rains moved into the area Sunday and Monday causing the delay or cancellation of many holiday activities. Rainfall across the region generally totaled between 1 and 3 inches, though some locations in eastern Kansas saw close to 5 inches of rain.

Yet another round of strong winds and very heavy rain occurred over extreme eastern Kansas July 11th. The very moist and unstable air mass feeding into these storms produced rainfall rates in excess of 2 inches/hr with rainfall totals in the Kansas City area ranging from around 1 inch to near 5 inches. This created flooding in many areas of the city.

2010 Severe Weather Summary
Far Southeast Kansas
National Weather Service Springfield, MO

While there were numerous bouts of severe weather in 2010, significant damages were rare across Cherokee, Crawford, and Bourbon counties.

A single EF-1 Tornado occurred with only a 60 yard width which moved through the Melrose and Treece areas in Cherokee County during the evening of July 12th. A more widely viewed funnel cloud gained more attention when a slow moving funnel cloud moved across the western sections of Pittsburg on June 2, but there were no confirmed reports of a touch down with this photogenic event.



Reflectivity and Radial Velocity of the Supercell that produced the EF1 Tornado in Cherokee County on July 12th.

Melrose, Kansas was also the location of the largest hail in far southeast Kansas when hail the size of baseballs fell along Highway 59 just north of the Oklahoma border on May 16. Luckily only a few homes and cars were affected by this storm.

Flooding, which is normally a significant occurrence across the three county area, was thankfully limited to an occasional brief road closure or two during the half dozen or so events that occurred throughout the year.

Lightning was the big news in Ft Scott when it struck the courthouse on June 8th causing damage to computers and other property.

Lastly, two winter storms struck the region in 2010. Widespread five to eight inches of snow were noted on January 28, and an even greater storm brought up to a foot of snow during a late season event on March 20th.

2010 Severe Weather Summary
Northeast and North Central Kansas
National Weather Service-Topeka, KS

The 2010 severe weather season across north central and northeast Kansas was highlighted by eight tornadoes, which were all rated EF-0. Over the previous ten years northeast Kansas has encountered, on average, about 16 tornadoes per year. June 8th, 2010 featured the day with the most tornadoes, when four weak tornadoes formed in east central Kansas. The severe weather season was also defined by strong storms which brought damaging winds and flooding rains. On June 16th the downtown portions of Lawrence and Topeka were inundated with rushing water caused by prolonged heavy rain. And on August 13th a strong storm brought winds to Manhattan which were measured over 90 mph. Here are some of the highlights of the 2010 severe weather season.

April 6th – On the afternoon of April 6th, 2010 a line of storms formed in central Kansas. These storms produced golfball sized hail and damaging winds near 70 mph. By 4:00 pm the line of storms moved into east central Kansas and affected Lawrence. Severe winds ripped through the northern portions of town causing significant tree damage in some of the neighborhoods along and north of 6th Street. The Lawrence Municipal Airport Automated Surface Observing System (ASOS) reported a wind gust of 68 mph at 4:39 pm. No structures were damaged; however, many trees greater than 24 inches in diameter were snapped as a result of the strong winds.

April 29th – Strong thunderstorms formed in northern Kansas bringing golfball size hail and damaging winds over 60 mph. A brief tornado touched down over open country approximately 4 miles northeast of Washington, Kansas. No condensation funnel appeared to reach the ground; however, dust was noted beneath the rotating wall cloud indicating a ground circulation on two occasions for a period of about 30 seconds.

May 6th– Severe thunderstorms tracked across much of the northern half of Kansas during the afternoon and evening hours on Thursday, May 6th. A southern swath of severe weather was caused by a supercell which moved through Dickinson, Morris, Lyon, and Osage Counties. Hail up to the size of baseballs was reported as well as strong winds up to 100 mph. A house and its attached garage near Hope, Kansas were seriously damaged as a result of the strong winds. Another swath of more widespread severe weather presented itself just south of the Kansas/ Nebraska border as numerous supercells moved eastward through north central and northeastern Kansas. Hail up to the size of baseballs was reported throughout much of the area during the late evening to overnight hours. Strong 80 mph winds caused a large amount of damage to outbuildings, trees, and vehicles throughout Republic County.

The back wall of a garage near Hope, KS was blown out after the garage door gave way.

June 8th – Supercell thunderstorms developed late in the afternoon on June 8th. The supercells produced four confirmed EF-0 tornadoes in Osage, Franklin, Coffey, and Anderson Counties. Very little damage from the storms was reported. The moist air mass and relatively slow storm motion provided a favorable situation for thunderstorms to produce very heavy rainfall. Rainfall rates were estimated at 1 to 2 inches per hour with the heavier activity. The storms' very slow movement caused some extreme rainfall amounts estimated as high as 8 inches in some locations.

June 13th – Strong winds and heavy rain accompanied a strong storm complex which moved through northeastern Kansas late Sunday night into Monday morning. The hardest hit areas from flooding and flash flooding were Geary, Morris, Riley, Wabaunsee, Douglas, and Lyon Counties where multiple reports of stranded motorists and closed roads were received. Aside from the flooding, 80 to 90 mph winds caused large trees to snap and uproot in Topeka, Kansas near midnight.

Water rushes into Buford M. Watson Park near downtown Lawrence. Photo Courtesy Douglas County Emergency Management

June 16th - On June 16th excessive rainfall in northeast Kansas was caused by multiple storms producing heavy rain and moving across the same area. A combination of the heavy rain and soil saturation from previous days' rain caused significant flash flooding in Topeka and Lawrence. In Topeka, 2.76 inches of rain fell over the two hour span between 5 pm and 7 pm. Many cars stalled in flooded streets in Topeka as the water rose. In Lawrence, heavy rain caused significant flooding to streets and parks within the city. At one point the Buford M. Watson park at Tennessee St and 7th St. near downtown Lawrence was under eight feet of rushing water. Numerous water rescues were conducted throughout town as motorists became stranded by the quickly rising water. The storms responsible for the flash flooding also brought severe hail and wind to the area. Quarter to golfball size hail was reported throughout northeast Kansas as well as 60 mph winds.

June 19th – A powerful storm system moved across northern Kansas on June 19th producing winds of greater than 80 mph across north central Kansas. Some of the strongest winds were experienced along a swath extending from Concordia through Barnes, Blue Rapids, and Vermillion along Highway 9. Large grain bins were blown over as a result of the strong winds. Later that evening another round of severe weather brought damaging winds, large hail, and flash flooding

A grain bin was destroyed by strong winds in rural Cloud County. Photo Courtesy Tom Roberts

July 4th – A tropical air mass associated with the remnants of Tropical Storm Alex moved into the Central Plains during the 4th of July weekend. Several storms formed that af-

ternoon bringing heavy rain and flooding. Two tornadoes were reported during the afternoon of the 4th. The first tornado formed near Mayetta, and crossed US 75 overturning a vehicle and travel trailer. The tornado also hit a house near Mayetta causing some minor structural damage. A second brief tornado formed in southeastern Shawnee County, and caused damage to trees, power poles, and some outbuildings.

A weak tornado struck a travel trailer on Highway 75 near Mayetta on July 4th.

July 7th - On the evening of July 7th, a small storm developed along a boundary draped across Osage County. During the developing stages of the storm, it was able to produce a small landspout tornado that briefly came in contact with the ground but did no apparent damage. There were also numerous other funnel clouds reported between Carbondale and Overbrook through the evening hours.

August 13th – Strong thunderstorms spawned from a warm and moist air mass on the afternoon of August 13th. The Manhattan airport tower measured a wind gust of 93 mph at the peak of the storm. Wind speeds in the 70 to 95 mph range were reported from Manhattan through Ogden and other parts of southern Riley County. The storm complex tracked eastward across southern Pottawatomie, northern Wabaunsee, southern Jackson, northern Shawnee, and Jefferson Counties. Additional severe thunderstorms developed later that night, bringing repeated rounds of damaging winds of 70 mph.

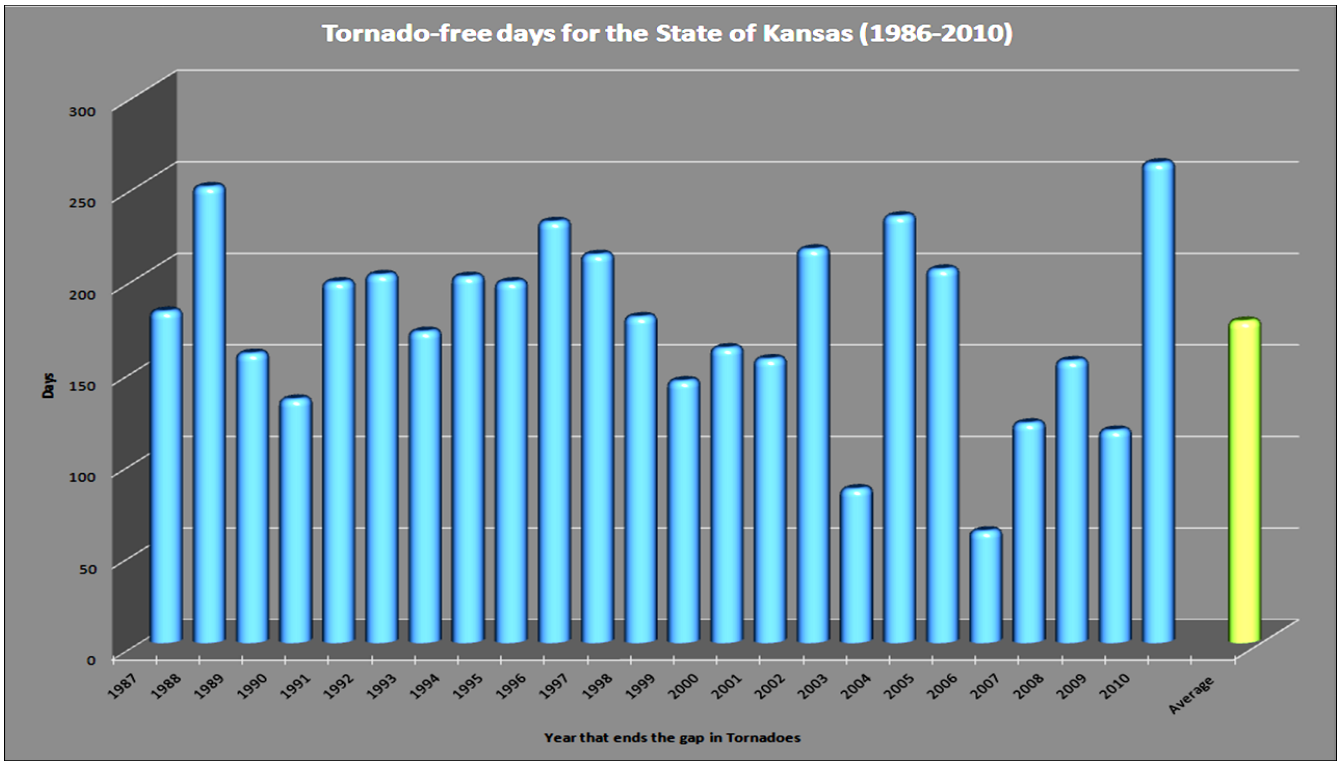
Severe Weather Terminology

- **Severe Thunderstorm** – The National Weather Service issues severe thunderstorm warnings for thunderstorms that are currently producing or are capable of producing winds of 58 mph or stronger and/or hail one inch in diameter or larger. Severe thunderstorms often may be 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 pendant from a cumuliform cloud or underneath a cumuliform cloud, and 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, associated with a rotating column of air.
- **Flash Flood** – A flash flood is flooding that occurs very rapidly, usually within 6 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.

2010 Severe Weather Summary

Portions of Central, South Central and Southeast Kansas
National Weather Service - Wichita, KS

Longest tornado drought for Kansas in 24 years!



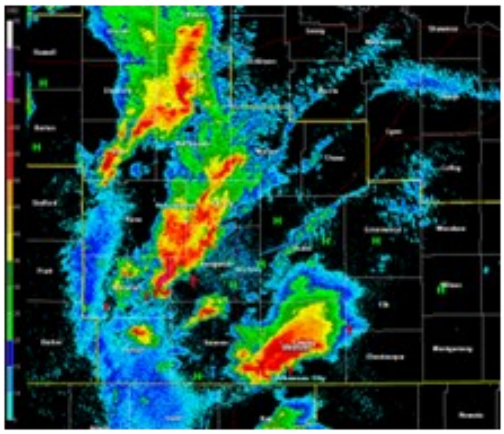
The graph shows the logest stretches of tornado free days between the years 1986 and 2010. The average number of days is shown by the green column at the far right. You can see that the column above 2010 has the most tornado free days since 1986.

On Thursday April 22nd, 2010 a tornado was reported in Western Kansas. This was the first tornado reported in Kansas for 2010. Prior to this tornado, the last tornado reported in Kansas was back on August 2nd, 2009. This resulted in 262 days in which Kansas did not report a tornado which in turn is the longest tornado drought in 24 years. The graph above shows the longest stretches of tornado free days between the years 1986 and 2010.

Tornado damage rated EF2 10 miles southeast of Kingman, KS

Severe Weather hits south central and southeast Kansas on May 10th, 2010

A strong surface low pressure system tracked across southern Kansas on Monday, May 10th. Rich moisture from the Gulf of Mexico surged northward making it into southern Kansas by late afternoon. A dryline developed across western Oklahoma and extended into south central Kansas, and a warm front stretched from the center of the low in south-



Radar image from KICT Radar at 4:44pm showing the supercells over Kingman and Cowley Counties on May 10th, 2010.

west Kansas into south central Oklahoma. Very high levels of instability and shear allowed supercell thunderstorms to develop along and ahead of the dryline. These storms moved quickly northeastward during the late afternoon and evening hours.

Tornadoes, hail up to 4.25" diameter (between grapefruit and softball size), and damaging winds were reported with many of these supercell storms including several tornadoes in western and central Oklahoma. There were a few reports of tornadoes across south central and southeast Kansas as well. These supercell storms eventually developed into a line of storms that produced large hail and damaging wind through southeast Kansas then into Missouri and Arkansas.

Tornadoes and large hail batter central and southeast Kansas on May 12th, 2010

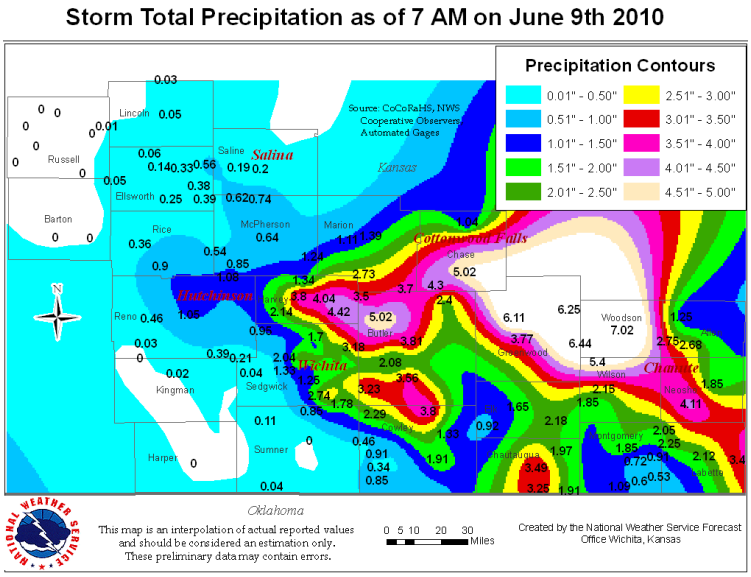
A strong low pressure system tracked through eastern Kansas on Wednesday, May 12th. A warm front moved north into Kansas, while a dryline and cold front stretched southward from the low through western Oklahoma. As warm moist air ahead of the dryline and south of the warm front increased, supercell thunderstorms rapidly developed along the cold front across central and south central Kansas. Eventually three distinct supercell storms developed with two of these spawning tornadoes. Later in the evening, severe thunderstorms continued although the supercells that produced the damage weakened. These thunderstorms occasionally produced large hail and damaging winds.

Accident on May 12th, 2010 along the Kansas Turnpike which was initiated by power lines being blown across the Turnpike due to severe straight line winds. Image courtesy of Butler County Emergency Management

There were several reports of golf ball sized hail with a few larger hail reports. There were also some reports of tornadoes through the afternoon and early evening. The largest hail reported to the National Weather Service was baseball size near Cedar Vale at 1:30am with 65 mph winds reported as well.

Severe storms and flooding on June 8th and 9th, 2010

Storms first developed late Tuesday afternoon (June 8th) along a cold front that was pushing southward. Additional storms formed north of the cold front as the overnight hours progressed providing several rounds of storms for locations generally along and southeast of the Kansas Turnpike. Many of these storms quickly became severe with strong winds being the main severe threat. With an extremely moist air mass in place all of the storms produced very high rainfall rates that caused widespread flooding across portions of south central and especially southeast Kansas.



Straight line Wind Damage on July 12th, 2010 across Cherryvale. Picture by M. Dennis.

Powerful storm plows through southeast Kansas on July 12th, 2010

Stronger than normal upper level winds from an associated weather system moved across Kansas on July 12th, 2010. The combination of the stronger winds aloft and unstable July air set the stage for significant severe weather. A powerful thunderstorm developed over southeast Kansas around 7pm and marched southeast across Montgomery and Labette Counties producing widespread wind damage with wind speeds of 60 to 75 mph from Cherryvale to Oswego. Several very large tree limbs and power line poles were knocked down.

Wind damage at Marion Lake. Image courtesy of Marion County Emergency Management

Damaging winds across central Kansas on August 13th, 2010

Severe storms developed late in the afternoon on Friday August 13th along a cold front that pushed through central and south central Kansas. Extremely hot temperatures along and south of a cold front set the stage for any storm that developed to produce severe downburst winds. Around 4:30 pm, a storm quickly developed over McPherson County and produced extensive damage in the town of McPherson. Between 7:00 and 7:30 pm a severe storm tracked over Marion Lake producing winds that overturned RVs and trailers and downed numerous trees. This storm also injured 10 people in the carnage.

2010 Severe Weather Summary
North Central Kansas
National Weather Service - Hastings, NE

As usual, a variety of severe weather took center stage across north central Kansas in 2010, but one of the more significant severe events was a short-lived tornado east of Randall in Jewell County. The tornado occurred during an active period in June, during which very heavy rainfall caused widespread flooding in the region, and several wind and hail events pounded the area causing crop and property damage at several locations.

The ominous approach of a shelf cloud in June 2010 somewhere in rural north central Kansas.

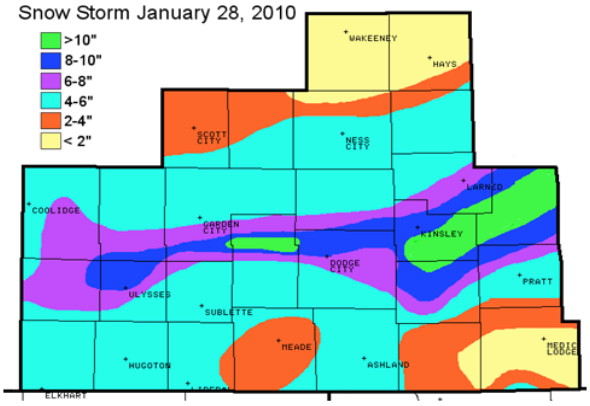
Around supper time on June 19, a severe thunderstorm rolled into eastern Jewell County. The tornado set down at 6:30 p.m. east of Randall and slid northeast on its 2.1 mile path. One farmstead in the path of the storm sustained damage to several outbuildings, trees and to the main house. An elderly woman watched the approach of the storm and subsequent tornado from her back porch. At the very last second, she went inside to ride the storm out. Fortunately, she sustained no injuries, despite the roof damage to her home and the preponderance of broken glass throughout the residence. This EF1 tornado managed to complete destroy at least one barn on the property, heavily damaged another and produce extensive damage to vehicles and farm machinery along its path.

The storm complex which produced the tornado was also responsible for producing a widespread 5 to 7 inch rainfall in parts of southern Phillips County. The Bow Creek near the Phillips and Rooks county line crested at an all-time record stage of 14.29 feet, or 5 feet above its flood stage. The flooding damaged a communications line to a local NOAA Weather Radio All-Hazards system near Kirwin, which caused the radio to go off the air for 3 days, as technicians could not get to the sight with the presence of the flood waters in the area.

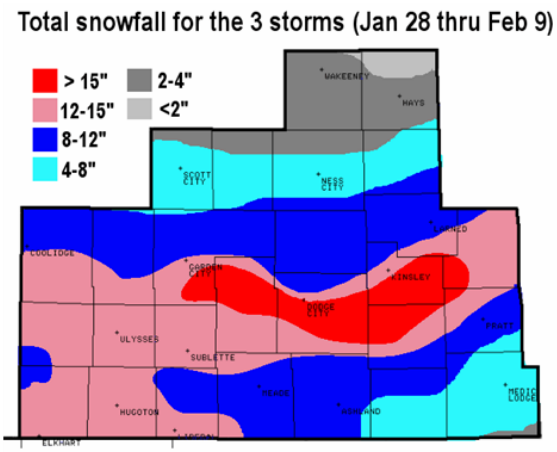
The 2010 severe weather season may not go down as one of the worst in memory, but it had its share of events. The year was littered with reports of large hail and damaging winds from April to October. If nothing else, it should be a good reminder and starting point for all of us to get ready for whatever Mother Nature brings us 2011.

View of a mangled garage east of Randall after an EF1 tornado plowed through the farmstead.

2010 Severe Weather Summary
Southwest Kansas
National Weather Service - Dodge City

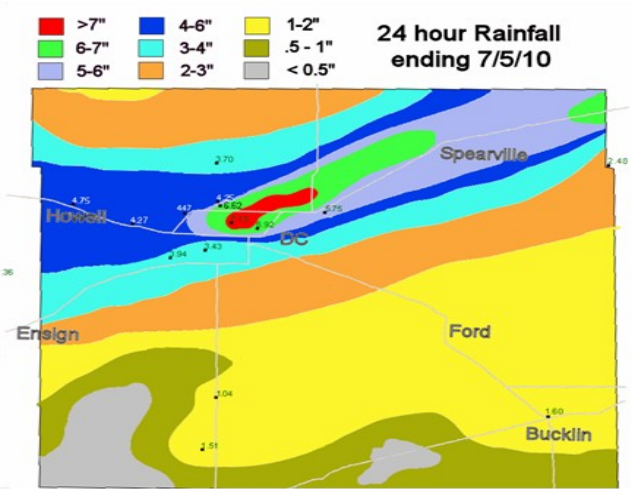


It took about 4 weeks into the new year of 2010 before significant storms impacted the area. On January 28th, a storm moved in from the southwest and spread a layer of snow across the region. The heaviest snow fell along the Arkansas River. The largest amount reported was 11 inches near Ingalls and also in the Kinsley area. Another storm dumped additional snow on the area on February 4th with a swath of 6 to 7 inches reported from Elkhart to Liberal. A third storm brought even more snow on the 8th and 9th.



Besides a few more small and relatively weak winter storms in February, the remainder of the winter and the first part of spring were uneventful. The first taste of severe weather for the spring evolved on the 22nd of April. On that day a swarm of 10 tornadoes were reported in Kearny, Finney and Scott Counties. Some of the tornadoes were large in size, but only minor damage was reported – mostly due to luck with the twisters remaining over sparsely populated areas. The largest tornado west of Lakin was nearly a mile wide but only did EF-1 damage. There were other tornadoes that occurred in May, June, and September, but all were small short lived and did not cause any damage. A total of 26 tornadoes occurred in our area which is still above average (15).

Good news greeted southwest Kansas on May 15th as a brand new reservoir (Horse Thief) closed its gates just as a surge of water came rolling down Bucker Creek Basin as a result of isolated heavy rain. Subsequent rains during the spring and summer were able to add about 2300 acre feet of water to the newly formed body of water. Speaking of heavy rains, July 4th was quite active in the Dodge City area. Record rainfall fell during the late afternoon and evening hours with 6.95" reported at the airport. This is the greatest 24 hour amount ever recorded at that location. There was even heavier rain in Ford County.

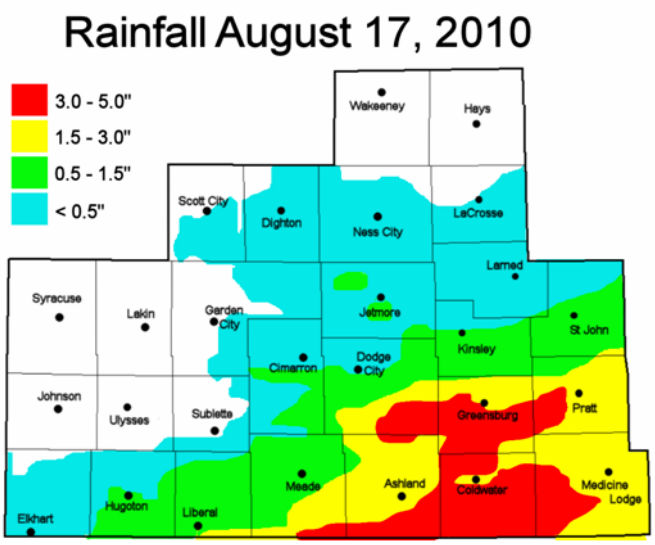


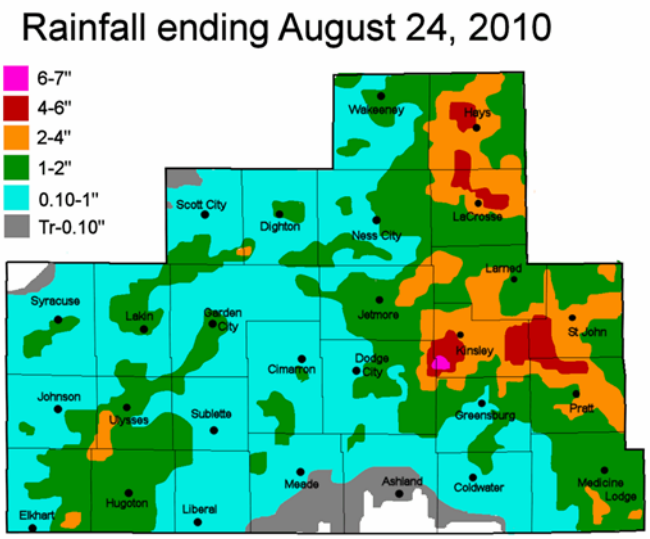
Before the big rain event on July 4th, there was a bit of severe weather across the area especially during the

early morning hours on June 7th. A thunderstorm merger occurred near Ellis around 9:00 am, and high winds caused widespread damage especially on the east side of town. The most significant damage extended from near Interstate 70 southward across the golf course to homes south of the golf course. Many large trees were uprooted or broken off near the ground. At least three garages were destroyed, and a semi was blown over on Interstate 70. The damage appeared to have been the result of a wet microburst.

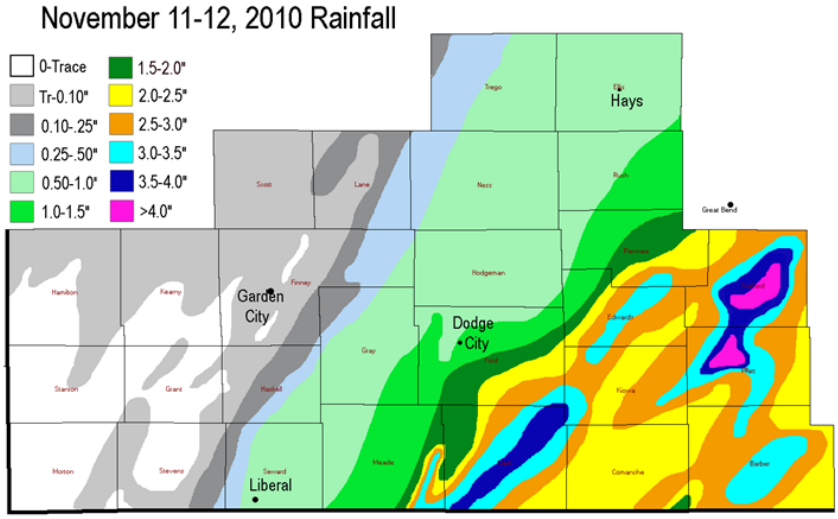
Another microburst occurred in August, this time in the Hays, McCracken and Larned areas. Widespread damaged occurred across the Fort Hays campus area from wind speeds that approached 100 mph.

There were a couple of heavy rainfall events in August.





The remainder of the year 2010 the weather was rather uneventful with the exception of one storm in November. This storm produced widespread rain where amounts were particularly heavy across the southeast third of the area.

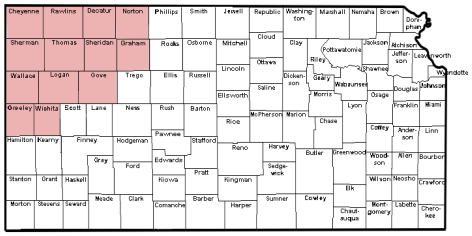


2010 Severe Weather Summary

Northwest Kansas

National Weather Service - Goodland, KS

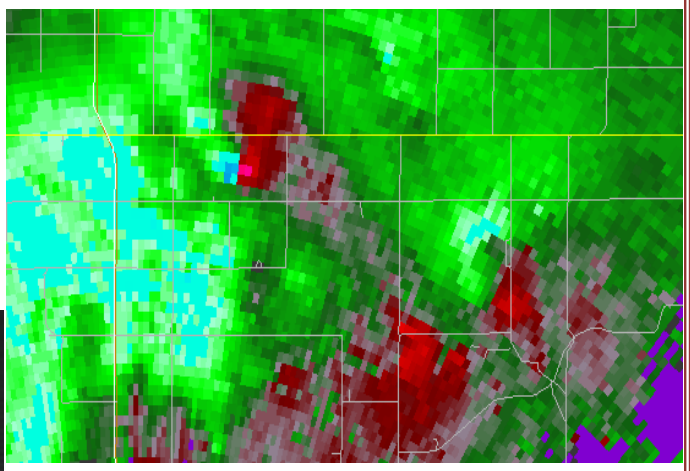
Kansas Counties Served By WFO Goodland



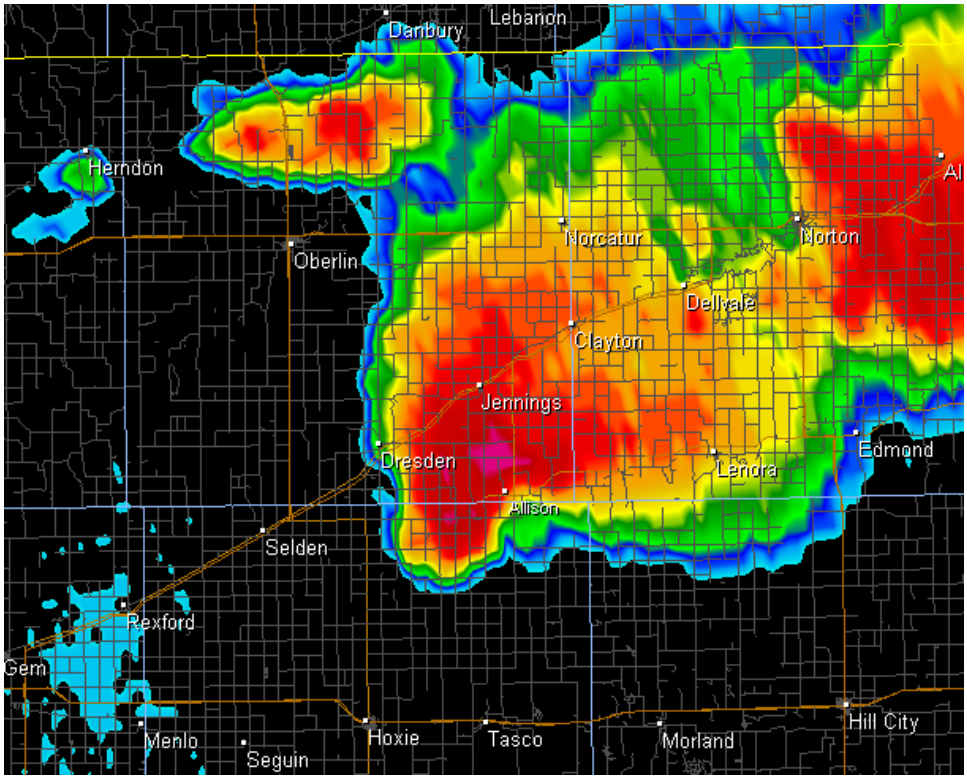
The first three months of 2010 were quiet in terms of weather with the exception of two noteworthy events in January. On January 25th, strong northwest winds occurred for much of the day with gusts to 60 mph, which resulted in minor sign and roof damage in NW Kansas. Three days later, a winter storm brushed the southern portion of our County Warning Area (CWA), bringing 4-6 inches of snow across Greeley and Wichita Counties.

It wasn't until April before the weather became active once again as a series of intense low pressure systems moved across the region. On April 13th, wind gusts of 50 to 70 mph from the southwest produced tree and awning damage, with utility poles broken, and one vehicle blown over on Interstate 70 near Colby. On April 22nd, a slow-moving low pressure area produced the first round of severe convective weather in the area with half dollar sized hail breaking windows, several reports of flash flooding resulting in road closures, and one EF0 tornado in Gove County which remained over open fields.

The year 2010 brought 24 tornadoes to our Kansas counties which is nearly three times the average. Five tornadoes resulted in EF1 damage, while the remaining 19 were rated EF0 with little damage reported. Despite the high number of tornadoes, no residences were affected with damage confined mainly to trees, utility poles, and outbuildings. No fatalities or injuries occurred as a result of the tornadoes.



May was an active tornado month in northwest Kansas with 15 reports including five on May 10th in Wichita and Logan Counties; four on the 23rd in Sherman and Thomas Counties; and six on the 25th in Greeley and Gove counties. The radar image above shows a pair of mesocyclones moving north across Sherman county during the evening of May 23rd. The circulation in the upper left resulted in a nighttime tornado that was difficult to observe except through well-timed lightning flashes, as shown in the image to the left captured from video. The longest track tornado this year occurred in Gove County on the 25th, travelling over 21 miles.



On June 11th, a nearly stationary supercell (radar image above) developed over northern Sheridan County, and produced multiple tornadoes including the one shown below right that was taken by John Scott. Flooding also occurred over portions of Decatur and Norton counties from this slow-moving storm, which ultimately dropped 6-10 inches of rain in some areas.

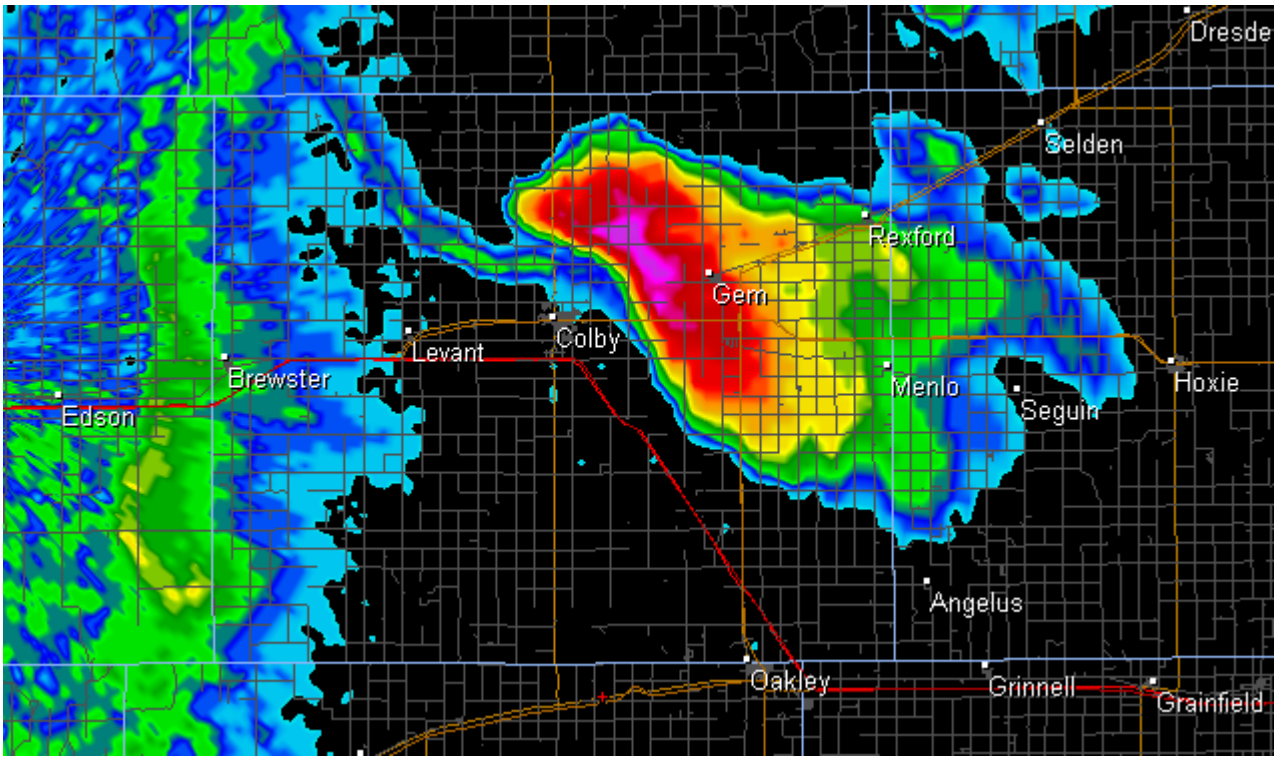
Ten days later, an intense microburst roared across northeast Greeley County on June 21st, and produced winds of at least 90 mph.

A large storage barn (shown left) was completely destroyed and a vehicle inside was heavily damaged.

The month of July brought two significant episodes of severe weather to the Colby area in

Thomas County. On July 9th, slow-moving thunderstorms tracked southeast across Thomas County during the evening hours, producing extremely heavy rainfall. An observer reported 8.23 inches in one hour. Water was flowing 18 inches deep in some sections of Colby. Just three days later, an intense supercell tracked southeast during the late afternoon.

Hail up to the size of grapefruits fell in a long swath and just clipped the east side of Colby. Over $1 million in property damage occurred as roofs, skylights, and windows in both homes and vehicles were heavily damaged or destroyed. In addition, an estimated $10 million in crop damage occurred across the county.

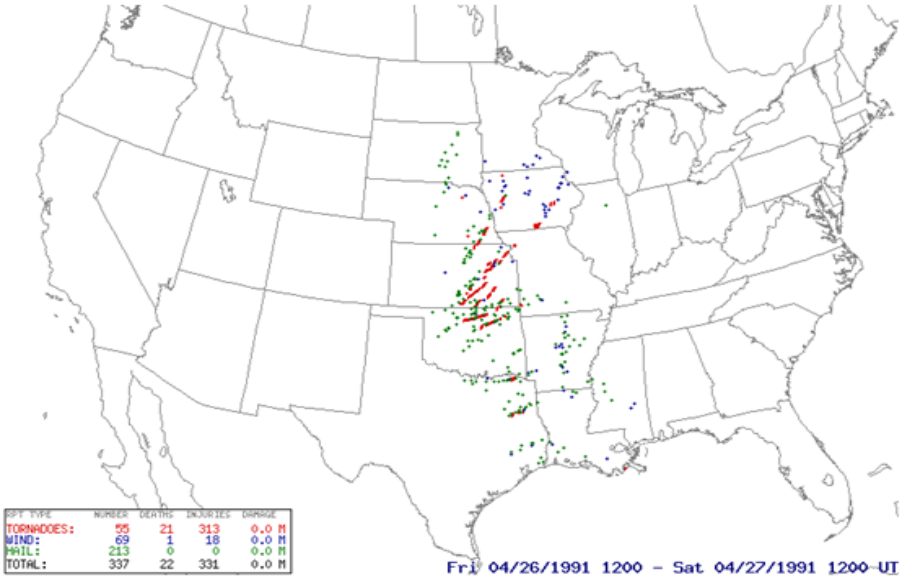


Only a handful of severe reports occurred in August in NW Kansas. The year finished out with one final severe event in mid-September when three weak tornadoes, golf ball sized hail, and wind gusts to near 80 mph were reported along and north of Interstate 70.

1991, A year to Remember Twenty Years Later

By Dick Elder

Hi, my name is Dick Elder. I am the manager of the Wichita National Weather Service office. I've had the honor of serving in this position for nearly 21 years. Over that time I have seen a lot of severe weather events. It should go without saying I am fascinated by severe weather. That's the main reason I chose the meteorology career, and it is part of the reason I came to Wichita to pursue it.



Severe storm reports from 4/26/1991 through 4/27/1991.

Tornado tracks are in red.

One year that occurred not long after I came to Wichita continues to stand out for me, 1991 – a year unprecedented for severe thunderstorms and tornadoes in Kansas and in the Wichita area. Since the Weather Service began keeping tornado statistics in 1950, Kansas has averaged 60 tornado touchdowns across the state per year. Fortunately, only about 5 per year are classified as EF-3 or higher on the Enhanced Fujita Scale. EF3 tornadoes are strong enough to cause significant property damage, injuries, and deaths.

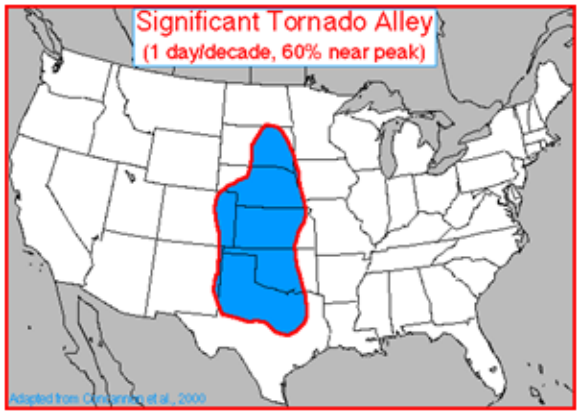
F5 Tornado moving into Andover, KS April 26, 1991

In 1991, Kansas had 115 tornadoes. Nine of those were rated as EF-3 or higher. The strongest was the April 26th EF-5 tornado that ripped through Andover in western Butler County.

Twenty people died in severe weather and tornadoes that year and 347 were injured. Property damage was put at $330 million dollars.

Few people realize that on March 26th and April 26th, 1991, tornadoes followed tracks

within 5 miles of one another across Cowley County. In Sedgwick County, a violent tornado tracked across south Wichita on April 26th, and three weeks later on May 16th, another strong tornado touched down and moved within a mile of the original track. Like lightning, tornadoes do strike twice in the same place.



Many of you may know Wichita is sort of located on a dividing line between the Great American Desert to the west and the wetter and more temperate areas of the Ozarks and the Midwest. The city and surrounding areas sit in the heart of Tornado Alley.

I hope this region never again sees severe weather to match 1991, but my experience tells me we will see massive tornadoes and outbreaks of multiple tornadoes again.

The destructive weather of 1991 is something I think about each and every day as we prepare for severe weather season each year. We, as scientists and public protectors, learned many things that year that have helped us be successful in the National Weather Service mission to protect lives and property.

I came to the realization that the National Weather Service can provide the best warnings possible. Local emergency management agencies can sound sirens. Local media can provide constant updates on the storms, but it still comes down to each of us taking responsibility to stay informed and to make correct decisions to protect ourselves from severe weather.

I want to give you some examples of how poor decisions made on April 26th, 1991 resulted in tragedy that might have been avoided.

As a violent tornado was moving across Cowley County northeast of Winfield, volunteer severe weather spotters were out ahead of the storm. Not only were they calling in reports on the tornado's location and direction of travel, they were going house to house telling people to take shelter because a dangerous tornado was headed their way. One of the tornado fatalities that day was a young lady who chose to stay in her mobile home after one of those brave spotters told her to take cover. The mobile home was demolished, and she was one of the first fatalities of the storm.

At nearly the same time a violent and deadly tornado was moving out of south Wichita and drawing a bead on the city of Andover. The Golden Spur Mobile Home Park was in the direct path of this tornado. Knowing this, an Andover policeman took it upon himself to drive through the mobile home park, sounding his siren to do what he could to advise people that they needed to take shelter. Many did take shelter in the Park's community shelter.

However, 13 Golden Spur residents died in the tornado. Some either were oblivious to the tornado or weren't sure what to do to stay safe.

One couple left their mobile home and sought shelter in the metal shed where they stored their lawn equipment. Their mobile home and shed were destroyed, and one of the couple died.

One person knew the tornado was coming, walked to the community shelter, and then went back to his mobile home telling others he had forgotten to lock the door. His body was found among the rubble.

Another man, known to be rather independent, enjoyed sitting on his porch. He stayed true to his routine that day and sat on his porch, refusing to heed warnings from others about the tornado. His body was found among the debris.

My purpose here is not to criticize the victims of these storms, but to emphasize the need for everyone in this state to educate himself or herself about what to do when severe weather strikes. At some time, you will be threatened by severe weather. The decisions you make at that time can mean the difference between life and death.

Our Skywarn storm spotter and weather safety presentations offer the opportunity to learn about severe weather and how to stay safe. Everyone who attends and completes this training session is a qualified storm spotter and is educated on severe weather recognition and detection to provide accurate reports of severe weather conditions to the National Weather Service and local emergency management.

You can also learn how to be safe by following guidance in severe weather safety brochures available from the National Weather Service and the American Red Cross. You can find links to severe weather brochures at http://www.weather.gov/safety.php.

I encourage each of you to take these safety tips to heart and share them with family and friends. Make sure you know where to find adequate shelter if severe weather threatens at home or at work – the two places you spend most of your time. Make sure to share this with family and friends, and ask that they do the same. Let's learn from the tragedies of 1991.

Record Setting Hail

By
NWS Wichita

A hailstone that fell in West Wichita on September 15th, 2010 officially broke the Coffeyville hailstone record from 1970. The record hailstone fell near Pawnee and 119th street when a severe thunderstorm dropped giant hail from Goddard to Udall. Hail at times reached 4 to nearly 8 inches in diameter! The giant hail punched holes in roofs, shattered windows, heavily damaged siding and thousands of vehicles. This particular record hailstone measured 7.75 inches in diameter shortly after the stone fell. However, the official weight and circumference were not able to be obtained until 15 hours after the stone had fallen. At that time, the stone weighed 1.1 pounds and had a circumference of 15.5 inches. "This has been quite a summer for large hail," said Jim Keeney, weather program manager at National Weather Service Central Region Headquarters in Kansas City. "We had a national record hail stone recovered in South Dakota earlier and another is being examined as a possible state record in Oklahoma. These hailstones are significant recoveries, but they are records we wish we didn't see." Final verification of the hailstone's record status came from NOAA's National Climatic Data Center through the State Climate Extremes Committee.

National Record hailstone

8 inch diameter

18.625 inch circumference

1.9375 pounds

7.75 inch hail fell near Pawnee and 119th Street. Picture from Melissa McCarter.

State of Kansas Record Hail Stone

Wichita, Kansas - - 2010

Diameter: 7.75 inches
Circumference: 15.5 inches (15 hrs later)
Weight: 1.1 lbs (15 hours later)

Coffeyville, Kansas - - 1970

Diameter: 5.7 inches
Circumference: 17.6 inches
Weight: 1.65 lbs

*** Note: 2010 record is for diameter only.**

National Weather Service

Weather Safety

Kansas

Have you ever sat down with your family to discuss and plan what you would do in case of an immediate weather threat? If you haven't, now would be an excellent time to sit down with your family and devise a plan. Finding the time to do this can be difficult, but taking the 15 minutes to develop and practice a plan could save the lives of ones you love. Please remember these tips when planning and carrying out your actions.

Tornado Safety Tips

Before the storm:

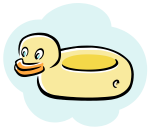
- Develop a plan of action
- Have frequent drills
- Have a NOAA Weather Radio with a warning alarm tone
- Listen to radio and television for information
- If planning a trip outdoors, listen to forecasts

In Homes or Small Buildings:
Go to the basement or to an interior room on the lowest floor (e.g. closet or bathroom). Upper floors are unsafe. If there is no time to descend, go to a closet, a small room with strong walls or an inside hallway. Wrap yourself in overcoats or blankets to protect yourself from flying debris.

In Schools, Hospitals, Factories, or Shopping Centers:
Go to interior rooms and halls on the lowest floor. Stay away from glass enclosed places or areas with wide span roofs such as auditoriums and warehouses. Crouch down and cover your head. Don't take shelter in halls that open to the south or the west. Centrally-located stairwells are good shelter.

If a warning is issued or threatening weather approaches

- Always remember **"DUCK"**



- Stay away from windows
- Get out of automobiles and get into a sturdy structure or ditch.
- Or, buckle your seat belt and get below window level of your vehicle.

"DUCK"

Down to the lowest level
Under something sturdy
Cover your head
Keep in the shelter until the storm has passed

In High-Rise Buildings:
Go to interior small rooms or halls. Stay away from exterior walls or areas with glass.

In Mobile Homes:
ABANDON THEM IMMEDIATELY!!!
Many deaths occur in mobile homes. If you are in a mobile home when severe weather approaches, leave it immediately and go to a substantial structure or designated tornado shelter. Determine your shelter ahead of time so you don't have to think about it when weather strikes.

If no Suitable Structure is Nearby:
Lie flat in the nearest ditch or depression and use your hands to cover your head. Be alert for flash floods.

Tornadoes and Overpass Safety

Many people mistakenly think that a highway overpass provides safety from a tornado. In reality, an overpass may be one of the worst places to seek shelter from a tornado. Seeking shelter under an overpass puts you at greater risk of being killed or seriously injured by flying debris from the powerful tornadic winds.

Tornadic winds can make the most benign item a dangerous missile. In addition to the debris that can injure you, the winds under an overpass are channeled and could easily blow you or carry you out from under the overpass and throw you 100s of yards.

As a last resort, lie flat in a ditch, ravine or below grade culvert to protect yourself from flying debris. If no ditch is available, you may remain in your vehicle, put on your seatbelt, lower yourself below window level, and cover your head with your hands or a blanket.

Lightning Safety

- Watch for developing thunderstorms and be ready to act when thunder is heard.
- Lightning can strike as far as 10 miles from an area where it is raining. That's about the distance you can hear thunder.

If you can hear thunder, you are within striking distance. Seek safe shelter IMMEDIATELY!

- Outdoor Activities: Minimize the risk of being struck by moving indoors or to vehicles at the first roar of thunder.
- Inside Activities: Things to avoid
  - Corded phones
  - Computers
  - Other electrical equipment
  - Indoor/Outdoor pools
  - Tubs and showers and other things connected to metal plumbing

  Wait 30 minutes after the last roar of thunder before going outside again.
- Help a Lightning Victim: Call 911 and get help immediately. You are in no danger when helping a lightning victim. The charge will not affect you.

When Thunder Roars, Go Indoors!

Flood Safety

- Floods, especially Flash Floods kill more people each year than any other weather phenomenon.
- As little as 6 inches of fast moving water can sweep you off of your feet.
- As little as 18-24 inches of water is enough to float a car and carry it away.
- If you see a road barrier across a flooded roadway....

TURN AROUND. DON'T DROWN!

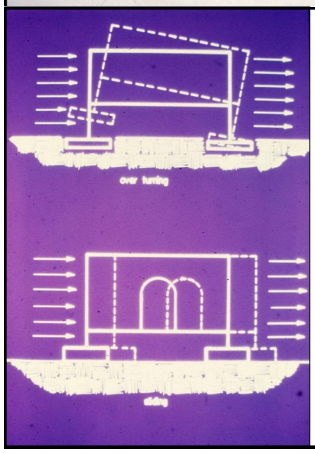
- Tune to the NOAA Weather Radio, or your favorite news source for all flood and any other weather related information.
- Leave areas subject to flooding, such as dips, low spots and underpasses.
- Do not attempt to cross flowing streams, you don't know how deep the water could be.
- Never drive through flooded roadways.
- If your vehicle is suddenly caught in rising water, leave it immediately and seek higher ground.
- Report any flooding to your local authorities or to the National Weather Service.

Turn Around. Don't Drown!

Mobile Home Safety

- The average annual death rate in mobile homes due to tornadoes is **20 times** higher than in permanent homes
- Mobile homes were the most common location for **tornado fatalities (44%)** from 1985 to 2005, followed by permanent homes (25.3%) and vehicles (9.9%). This disparity is more striking when considering that mobile homes accounted for a mere 5%–8% of U.S. housing units during this period
- The National Weather Service (NWS) considers mobile homes unsafe during a tornado.
- Mobile home residents should go to the nearest sturdy building or storm shelter. Do NOT seek shelter inside your mobile home!
- In many cases, your car can be a safer sheltering option than staying in your mobile home.

Rolled mobile home – stopped by tree 70 mph



Mobile homes:

- **overturn or slide between 70 and 100 mph**
- **Are completely blown away at 110-137 MPH EF2**

Truck stays - M. Home flipped

Picher, OK 2008

Remember!

1) Participate in a tornado drill in your mobile home community. If you don't have one, then organize a tornado drill!

2) Understand the definition of a tornado warning*

3) Have an emergency response plan for seeking shelter **away** from your mobile home.

By following these 3 points you can lower the risk to you and your family from the hazards posed by tornadoes in Kansas.

***A Tornado Warning means:** there is immediate danger for the warned area. All in a tornado warning are urged to seek shelter immediately, as it can be a life-threatening situation. For our residents who live in mobile homes, this means evacuating the mobile home and seeking shelter in the nearest sturdy building or storm shelter.

National Weather Service
Kansas

Disaster Kit

www.weather.gov

Are you ready?

When Disaster strikes, it pays to be prepared. Having a Disaster Kit prepared will save you time and could save your life. A disaster kit should be in your *designated shelter* and it would also be helpful to have a *smaller version in a small backpack or other containers that are easily carried if you need to evacuate your home*. Disaster kits should be reviewed annually to be kept up-to-date with your family's needs. Items in your kit should include, but are not limited to:

BE PREPARED

Staple Items

- □ 3 day supply of water (1 gallon per person per day)
- □ 3 day supply of nonperishable, ready to eat food items and manual can opener
  - □ high energy foods, e.g. peanut butter
  - □ juices, dried Milk
  - □ sugar, salt, pepper
- □ First Aid Kit (see list for individual items)
- □ Flashlight and extra batteries, or ones that generate their own energy by shaking them
- □ Battery operated or Hand crank radio
  - □ NOAA All-Hazard Weather Radio
- □ Clothing— Think about the climate: warm and/or cool season clothes
- □ Shoes
- □ Sanitation and hygiene items (such as hand sanitizer, moist towelettes, and toilet paper)
- □ Matches in waterproof container
- □ Whistle
- □ Blankets
- □ Other tools (e.g. hammer, pliers)
- □ Cash and coins
- □ Photocopies of important documents, personal ID's and credit cards
- □ Baby needs
- □ Special Needs
  - □ Prescription medications, eye glasses,
  - □ Contact lens solution, etc.
- □ Games to pass the time (e.g. cards)
- □ Pet food and extra water

First Aid Kit

- □ Sterile adhesive bandages in assorted sizes
- □ 2-inch and 4-inch sterile gauze pads
- □ Hypoallergenic adhesive tape
- □ Triangular bandages
- □ Scissors & tweezers
- □ 2-inch and 3-inch sterile roll bandages
- □ Waterless alcohol-based hand sanitizer
- □ Antiseptic wipes
- □ Petroleum jelly or other lubricant
- □ Latex gloves
- □ Anti-bacterial ointment
- □ Aspirin or non-aspirin pain reliever
- □ Antacid (for upset stomach)
- □ Cold pack
- □ CPR breathing barrier, such as a face shield
- □ Assorted sizes of safety pins

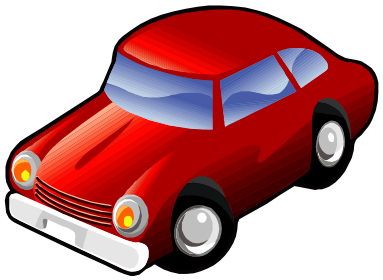
Winter Disaster Kit

Winterizing your Disaster Kit

If you live in a cold climate, you must think about warmth. It is possible that you will not have heat during or after a disaster. Think about your clothing and bedding needs. Be sure to include one set of the following for each person to add to your Disaster Kit.

- ◻ Jacket or Coat
- ◻ Long pants and long sleeve shirt
- ◻ Sturdy Shoes
- ◻ Hat, Mittens, and Scarf
- ◻ Sleeping Bag or Warm Blanket
- ◻ Extra Blankets
- ◻ Lantern or Flashlight

A Disaster Kit for your Vehicle



You may be in your vehicle when disaster strikes, or possibly stuck in your vehicle in a summer/winter environment. Below are a few items that you should keep in your car as part of your Vehicle Disaster Kit.

- ◻ Flashlight and extra batteries
- ◻ Maps
- ◻ Small First Aid Kit
- ◻ White Distress Flag
- ◻ Tire Repair kit
- ◻ Booster/Jumper cables
- ◻ Air pump
- ◻ Flares
- ◻ Bottled water
- ◻ Non-perishable foods such as granola bars

<u>Winter supplies</u>

- ◻ Blanket or Sleeping Bag
- ◻ Hat and Mittens
- ◻ Shovel
- ◻ Sand Bags
- ◻ Tire Chains
- ◻ Windshield Scraper
- ◻ Florescent Distress Flag

<u>Summer Supplies</u>

- ◻ Sunscreen
- ◻ Shade Item (umbrella or wide brimmed hat)
- ◻ Bug spray

Sirens Are An Outdoor Warning System

Every year the National Weather Service and the Emergency Management communities get together and provide severe weather information for the public. Each year we emphasize the fact that the Outdoor Sirens are just that…an Outdoor Warning System. Every year we get a multitude of calls telling us that the sirens can't be heard while in the house.

Severe weather season usually begins in the early spring in Kansas. We all need to be prepared for severe weather at any time of the day or night and at any time of year. The National Weather Service, Emergency Management, Law Enforcement, the 9-1-1 Center, and the Fire Department cannot notify every individual of the possibility of severe weather in their town. The local media outlets and All Hazards NOAA Weather Radio are your best sources for information concerning severe weather watches and warnings. Do not wait for the sirens to be your warning system at home. Sirens may not be working if the power is out and oftentimes cannot be heard indoors. Sirens may not be activated for other severe threats such as damaging straight line winds in excess of 60 mph, large hail, and flooding. Monitor NOAA Weather Radio and local media then take the appropriate action for the severe weather threat. If it appears that a severe thunderstorm is approaching your location, do not wait for the outdoor sirens, take immediate action to protect your life and the lives of others in your home.

Hundreds of volunteer storm spotters, amateur radio operators, and first responders put their lives on the line every time there is severe weather in the local area. They do this because they care about the people in their communities and want to make sure those people are given the best chance at survival. The storm spotters, emergency managers, law enforcement and other volunteers immediately relay severe weather reports to the National Weather Service. The National Weather Service in turn disseminates that information to the media and public through warnings, statements, and local storm reports. Getting the word out to the public in a timely manner may save lives. When severe weather threatens at night while most people sleep, it can be especially dangerous. Oftentimes in the heat of the spring and summer, we cannot hear outdoor sirens over running air conditioners. A NOAA Weather Radio with a back-up battery can make the difference for you and your family.

Take responsibility…listen to the media….take protective action….survive to enjoy the wonderful warm sunny days that also come this time of year.

Americans live in the most severe weather-prone country on Earth, and the state of Kansas is no exception. Each year a startling 10,000 thunderstorms, 2,500 floods, 1,000 tornadoes, and 10 hurricanes impact the United States. Potentially deadly severe weather impacts every American. Communities can rely on the National Weather Service's StormReady program to help them guard against the ravages of Mother Nature.

What is StormReady?

Ninety percent of all presidentially declared disasters are weather related. Through the StormReady program, NOAA's National Weather Service gives communities the skills and education needed to survive severe weather – before and during the event. StormReady helps community leaders and emergency managers strengthen their local hazardous weather operations.

StormReady Does Not Mean Storm Proof

StormReady communities are better prepared to save lives from the onslaught of severe weather through better planning, education and awareness. Communities have fewer fatalities and property damage if they plan before dangerous weather arrives. No community is storm proof, but StormReady can help communities save lives.

How Can My Community Become StormReady?

The entire community – from the mayor and emergency managers, to business leaders and civic groups – can take the lead on becoming StormReady. Local National Weather Service forecast offices work with communities to complete an application and review process. To be recognized as StormReady, a community must:

- ✔ Establish a 24-hour warning point and emergency operations center.
- ✔ Have more than one way to receive severe weather warnings and forecasts and to alert the public.
- ✔ Create a system that monitors local weather conditions.
- ✔ Promote the importance of public readiness through community seminars.
- ✔ Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.

Go to http://www.stormready.noaa.gov for more information.