National Weather Service Topeka, Kansas

The Topeka Tiller

Volume 4, Issue 3 Spring 2011

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- Blizzard blasts Northeast Kansas
- What can we expect for the Spring 2010 season?
- Meet your local Forecaster
- Advancing our understand-ing of the weather through Research

Severe Weather Safety 2011: Best Methods to Receive Warnings

By Chad Omitt, Warning Coordination Meteorologist

When disaster strikes, you may have only a short time to make what might be a life or death decision. One of the most important things you can do is to be aware that a danger is present. Most of the injuries and deaths happen to people who are unaware or uninformed. For this reason, **it is crucial that you have multiple ways to receive warning information.**

- NOAA All-Hazards Radio

A NOAA All-Hazards radio receives broadcasts exclusively from the National Weather Service. The radio can provide rapid warning, direct from the source, when hazardous weather conditions pose a threat to life and property. For more information please visit http://www.crh.noaa.gov/top/?n=nwr

- Television and Radio

Broadcast television and radio stations are a vital component of our warning system. Local television and radio stations routinely broadcast official "Watches" and "Warnings" issued by the National Weather Service as well as forecasts and storm tracks developed by on-air meteorologists. Television, in particular, is an excellent source of emergency information since graphics such as radar displays and maps can be used to describe the event in

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Fire Weather Season Has Arrived

By Kris Craven, Senior Forecaster

The cold and snow of winter leaves most of us yearning for the warm days of spring. But as the snow melts, one can't help but look around and notice the considerable amount of dormant or dead vegetation that now blankets the Plains. As these grasses grew and thrived over the past few spring and summer seasons, those now dry stands of grasses bring an increased risk of fire danger as temperatures rise. The control and removal of these dead grasses brings to the forefront rising concerns about smoke management.

Springtime is a popular time of year to burn across Eastern Kansas, before relative humidity climbs and grasses green up, slowing the spread of fire. Early spring days bring warm temperatures with low relative humidity and enough wind to drive fire, and these weather conditions are coupled with the dead grasses that will burn well under these conditions. The process of burning helps with many land management needs, including weed control, control of invasive species such as Eastern Red Cedars, increased forage yield for

Fire Weather Page 3

The February Blizzard of 2011

By Jared Leighton, Forecaster

Blizzard Conditions along 6th Street in Lawrence (Douglas County).

After a very slow start to the snowy season many people started to wonder if winter was going to pass by with only minimal impact. Normally Topeka averages 4.5 inches of snow during the month of December, and in 2010 the month came and went with only a tenth of an inch of the white stuff. Then January came and brought with it a quick and ugly change to the winter season. The first heavy snowfall of the winter season occurred on January 10th and brought with it eight to ten inches of snow. Then a week and a half later a second major snow storm brought six to eight additional inches of snow to portions of northeast Kansas. The third storm in the series would be the strongest and would bring with it nearly ten inches of snow to eastern Kansas.

The storm was well forecast with the first Winter Storm Warnings issued on the afternoon of Sunday, January 30. Those Winter Storm Warnings were upgraded to Blizzard Warnings for Douglas, Franklin, Coffey, and Anderson Counties the next day. Blizzard Warnings are issued when an area is expected to experience Blizzard conditions for three hours or longer. Blizzard conditions are classified as heavy snow with visibility at or below a quarter mile and wind speeds of 35 mph or greater.

The snow began to lightly fall across eastern Kansas during the overnight hours between January 31st and February 1st. Steadily, throughout the day the snow picked up in intensity. By noon the National Weather Service office at Billard Airport recorded 3 inches of snow, and by 6 pm an additional 6 inches fell. As the afternoon wore on, the winds increased to around 30 mph. Further to the east in Lawrence, winds increased to around 40 mph, which in concert with the heavy snow caused near white out conditions. Visibility at Lawrence Airport dropped to less than a quarter mile from 9:30 am until 5:30 pm. Because Lawrence Airport reported 35+ mph winds and quarter mile visibility in heavy snow for more than 3 hours the storm was classified a blizzard for that area. Impacts from this blizzard were felt as far south as Oklahoma City, Oklahoma and as far north

Blizzard Page 5

Spring 2011 Climate Outlook

By Kyle Poage Forecaster

The early portions of this spring brought a variety of conditions so far, including several days with temperatures reaching the 70's and 80's but also snow falling in many locations in late March. Of course, this is not abnormal for this time of year in Kansas, but what types of conditions are expected for the remainder of the spring?

The most recent 3-month outlook from the Climate Prediction Center, which includes the months of April, May and June, indicates there are equal chances for both temperatures and precipitation to be above, below, and near normal for Central and Eastern Kansas. Cooler than normal conditions are likely from the Pacific Northwest into the Great Lakes, warmer than normal temperatures the

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detail. Broadcast television and radio, while being an excellent source of information, have one major disadvantage as a means of receiving warning. Your radio or television has to be on and you have to be able to hear it or see it. If the TV or radio is not on or you are in another room, you will probably miss the warning. A normal TV or radio will not wake you up in the middle of the night to inform you that a tornado warning has been issued. For this reason, you should not rely on broadcast television or radio as your sole source of emergency warning.

- Emergency Notification Via Mobile Device

Some Counties and many private companies offer a call service or text -based message service that provides severe weather watches and warnings based on your selected ZIP Code or geographic location. This can be a very helpful service, providing you with emergency information even if you are out of your home or out of siren range and especially if you are sleeping. For more information simply perform an internet search for "weather warnings via mobile devices" along with your location

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Fire Weather Season *Continued from Page 1*

grazing cattle, and increased brood cover for birds that nest in the late spring to early summer. Several landowners also have portions of their land as designated Conservation Reserve Program (CRP) land (see http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp), and have deadlines coming up to treat their land based on their contract agreements - one of the easiest of which is prescribed burning. With all of these entities involved in burning across our area, smoke management becomes a primary concern. There are a limited number of days in the spring during which burn conditions are ideal, and several area landowners and farmers burning all at once can make for considerable smoke problems for those that live downstream.

In an effort to keep ozone levels under control, particularly in the Kansas City and Wichita areas, a voluntary program has been developed to help manage springtime smoke, with focus over the Flint Hills area. A website has been established at ksfire.org, in an attempt to balance the need for burning across the area with the health concerns of smoke sensitive populations. If you are planning to burn this year, please take a moment and explore the resources available at this site. If burn plans can be spread across the spring over a wider window of time, the impacts on human health can be reduced.

The National Weather Service in Topeka provides a full suite of forecast products to help you with your burn planning. Pay a visit to our website at www.weather.gov/topeka, and click on the 'Fire Weather' tab for weather information specific to burn planning for your area. Forecasters are also available 24 hours a day, 7 days a week at our office - feel free to give us a call if we can help you with your burning weather questions.

Photo showing the flint hills burning during the peak of fire weather season

Meet your Weatherman

Senior Forecaster Bill Gargan

My name is Bill Gargan, I'm a meteorologist for the National Weather Service in Topeka, KS. I am one of five Lead Forecasters at our office. A Lead Forecaster serves as the shift supervisor.

I have been interested in the weather since I was 8 years old. As a child I was always fascinated by severe weather and tornadoes. Growing up in southeast Michigan we never seemed to get much in the way of severe weather. During my 6th grade geography class one of our class assignments was to pick a state where you would like to live and do a report on that state. Most of my classmates picked states such as California, Florida and Hawaii, I was the only one to pick Kansas since I knew that it had more severe weather and tornadoes. My teacher asked me why I chose Kansas as the state where you would like to live, and I told him that I liked the weather in Kansas! I actually remember writing the State Chamber of Commerce in Topeka requesting an information package on Kansas back in 1975. My interests in severe weather lead me to become interested in all

Weatherman
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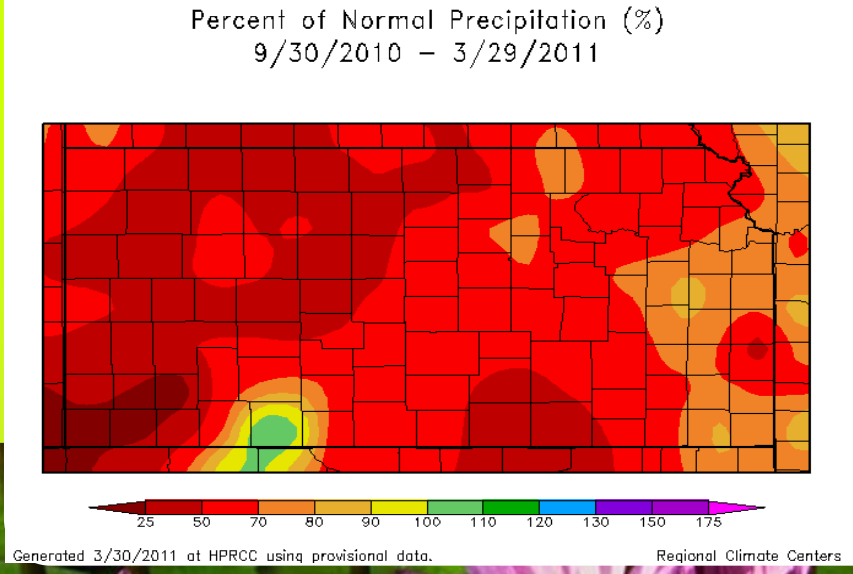
"The U.S. Seasonal Drought Outlook indicates some level of drought is likely to develop over Kansas in the upcoming months."

Spring 2011 *Continued from Page 2*

most likely occurrence from the southwest states east to the southern Atlantic states. As for precipitation, the lack of a strong signal for drier or wetter conditions encompasses much of rest of the nation.

May and June are typically two of the wettest months for Kansas, and for many locations, this moisture is needed. Precipitation amounts over the past few months, especially during the late fall of 2010, have been well below normal for much of the state. Due to this and the lack of confidence in a wet spring, the U.S. Seasonal Drought Outlook indicates some level of drought is likely to develop over the bulk of the state in the next few months.



Left Figure:

Percent of Normal Precipitation from the last 6 months. Colors indicate the darker the red, the lower the amount of precipitation indicating possible drought conditions in the upcoming months.

Meet your Weatherman

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aspects of meteorology and by the time I entered Junior High School, I knew what I wanted to for a career and that was to be a professional meteorologist.

After High School I went to college at Wayne State University in Detroit, MI and received a BS in Mathematics. Subsequently, I went on to the University of Michigan, in Ann Arbor, MI for two years and earned my BS degree in Meteorology. In order to study and specialize in severe thunderstorms and tornadoes I applied to Graduate School at the University of Oklahoma and I earned a Master's degree in Meteorology from the University of Oklahoma. During my time at OU I had the opportunity to participate in VORTEX 1 field study of severe storms and tornadoes.

I considered staying at OU to get my PhD in meteorology, since I wanted to be a research scientist, studying severe storms and tornadoes. However, much of the research would involve writing a lot of computer code and I did not want to spend all my time writing code. Therefore, I decided to apply to the National Weather Service to work as a meteorologist, where I would be more involved with operational meteorology in forecasting the weather and analyzing radar data to issue severe thunderstorm and tornado warnings. I really enjoy my job since it has been my hobby since childhood. It is very fulfilling to know that the work our office does to transmit timely warnings, during severe weather operations, help to save lives across Northeast Kansas.

Due to a partial hiring freeze during the Mid 1990s, it took nearly 5 years for me to get a job in the National Weather Service. Once the freeze was lifted, I was hired by the National Weather Service in Mobile, Alabama in March of 1998. I spent 10 months in the Mobile office as an intern, at which point I bid on and received a promotion as a Journeyman Forecaster at the National Weather Service in Lubbock Texas. I remained at the Lubbock Office from December of 1998 through June of 2003. In early June of 2003 I bid on and was selected to be a Lead Forecaster at the National Weather Service Office in Topeka, KS. I have been working at the Topeka National Weather Service since July 5th of 2003.

My hobbies include forecasting the occurrence of supercells, tornadoes, and storm chasing when I get an opportunity. I have been storm chasing since the Mid 80s in the Midwest, and across the plains states since the spring of 1991. Predicting a forecast target area where a tornado may occur several hours in advance of a storm forming is about as fun for me as going out and chasing. I've seen approximately 150 tornadoes in my chasing career and 100's of supercell thunderstorms. In 2004, I met my lovely wife and best friend Nancy. We were married in October of 2005. We have a cat named Katzilla. My wife Nancy goes chasing with me every spring for a week and other times when we're both off work together during the spring months. Other hobbies of mine include traveling with Nancy, we usually make one trip a year to the west coast to visit wineries. We also like to hike in the mountains of Colorado. I also play softball with a team we have organized at work, and I like to run 3 to 4 times a week.

Photo of tornado taken by Bill on May 22, 2008 near Hoxie, KS.

Blizzard

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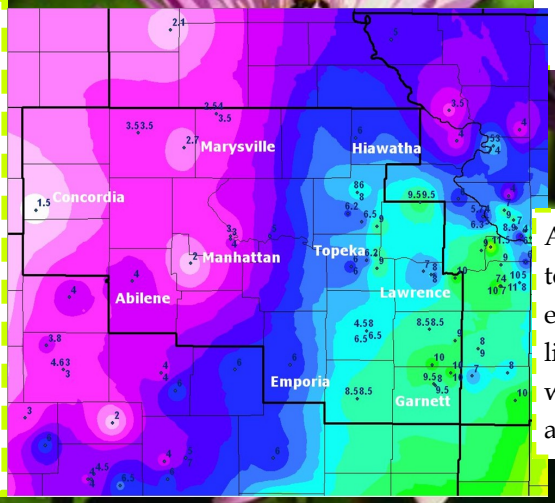
as Grand Rapids, Michigan. By the time the storm came to an end 9.1 inches of snow fell at Topeka's Billard airport with six to seven inches to the west of Topeka and eight to ten inches east of Topeka into the Kansas City metro area. Brutally cold air and strong northerly winds contributed to the misery facing eastern Kansans the day after the storm. The entire region experienced wind chill readings between -10 and -20 degrees. Wind chill readings plummeted to -18 degrees in Lawrence, -14 in Topeka ,and a staggering -21 degrees in Concordia.



A map of the snow totals from across eastern Kansas. The lighter colors indicate where the heaviest amounts.

Severe Weather Safety 2011: Tornado Safety

By Chad Omitt, Warning Coordination Meteorologist

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

If a warning is issued or threatening weather approaches

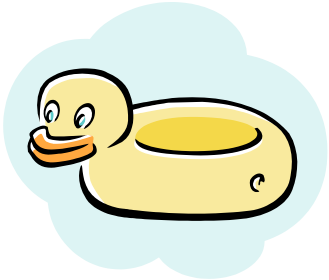
- Always remember **"DUCK"**
- Stay away from windows

"DUCK"

Down to the lowest level

Under something sturdy

Cover your head



Tornado Safety **continues Page 11**

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to find a list of services available. You can also ask your local county Emergency Manager if any similar services are provided in your county.

Outdoor Sirens

First, sirens are designed to alert individuals who are outdoors. Sirens are not intended to alert people who are in cars, homes, or other buildings. Hearing sirens indoors may have been possible in the past, however, this should no longer be expected. Energy conservation practices and better insulation have effectively reduced the sound penetration into these areas. They are an outdoor alerting device and should be used as such.

Weather Research Conducted by NWS Topeka Meteorologists

By Scott Blair, Forecaster

When the weather is quiet and sunny, there can still be lots of work to do for NWS employees. Over the past three years, meteorologists at the National Weather Service in Topeka, Kansas have been utilizing their expertise and passion by conducting weather-related research at the office, and sometimes even during their time away from work. Scientific research can be tedious, and span for several months to years. Formal literature must go through a peer-reviewed process of experts in the subject matter to look for scientific integrity and assist in improving the manuscript. All of this hard work has the potential to improve and enhance forecast operations during all types of inclement weather, especially during high impact events.

Large hail is one of the most frequent severe weather hazards to impact northeast Kansas. Bill Gargan looked at *Signatures Associated with Golfball Sized Hail across eastern Kansas*. A team effort consisting of Scott Blair, Derek Deroche, Josh Boustead, Jared Leighton, Brian Barjenbruch, and Bill Gargan spent the past 16 months identifying unique characteristics of 4"+ hail on *An Operational Assessment of the Predictability and Detection of Giant Hail*.

Tornadoes contain some of the most violent winds on Earth and sufficient lead time is critical to ensure everyone has time to reach safety. Jared Leighton looked for overall signals in tornado frequency with a 1950-2008 Tornado Climatology for Northeast Kansas. On the same topic, Josh Boustead, Barb Mayes, Bill Gargan, George Phillips, and Jared Leighton looked at a *Composite Analysis of Environmental Conditions Favorable for Significant Tornadoes across eastern Kansas* (http://ams.confex.com/ams/pdfpapers/176099.pdf). Nighttime tornadoes are some of the most dangerous phenomena, and Dennis Cavanaugh, Josh Boustead, Elizabeth Lunde, and Scott Blair tackled these events with a *Composite Analysis of the Mesoscale Environments Associated with Significant Plains Nocturnal Tornadoes* (http://ams.confex.com/ams/pdfpapers/153856.pdf). Even tornado dynamics were investigated by Scott Blair, Derek Deroche, and Al Pietrycha in the paper *In situ Observations of the 21 April 2007 Tulia, Texas Tornado*. (http://www.ejssm.org/ojs/index.php/ejssm/issue/view/14).

Societal impacts relative to weather are an important area of research to understand people's behavior and decision making when warnings are issued. Scott Blair and Elizabeth Lunde studied the vulnerability of Interstate motorists in *Tornadoes Impacting Interstates: Service and Societal Considerations*

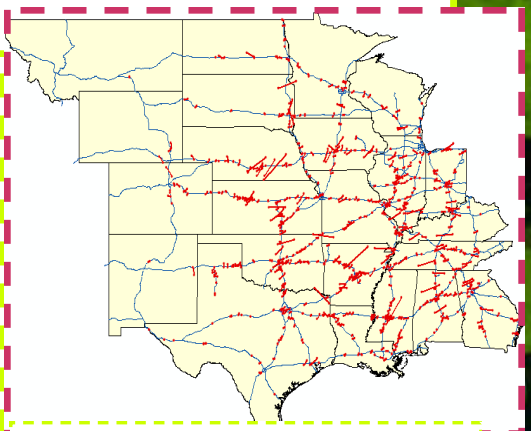
(http://www.ejssm.org/ojs/index.php/ejssm/issue/view/22). A warning climatology evaluating the NWS warning decision process was examined by Jared Leighton and Brian Barjenbruch in Convective Warning Density over northeast Kansas.

New technologies are available these days where storm spotters and chasers can send in reports in real-time, including streaming video. These were discussed by Scott Blair, Al Pietrycha, Tyler Allison, Derek Deroche, and Robert Fritchie in *Emerging Technologies in the Field to Improve Information in Support of Operations and Research* (http://www.nwas.org/ej/2009-EJ2/).

On the cold side associated with winter, Kyle Poage studied the challenge of *Minimum Temperatures Associated with Fresh Snow Cover*. Jared Leighton and Barb Mayes are currently investigating the *Anomaly of the 2009 Christmas Blizzard*.

In addition, Aviation and Fire Weather interests have been investigated by Shawn Byrne in a *Multi-year Climatology of Thunderstorms Impacts on Aviation Forecasts at Billiard Airport* and Kris Craven by *Comparing Grassland Fire Danger parameters with respect to Relative Humidity and Wind*.

Utilizing and presenting the latest research findings has further helped in the advancement of understanding the physical and dynamic properties of Meteorology. With time and further research, the above studies may be used as everyday tools in operational forecasting techniques which will ultimately produce more timely and accurate forecasts in the field.



Map depicting tornado paths (red lines) crossing across one or more interstates (blue lines) from 1990 to 2008

Cooperative Observers' Corner

By Michael Couch, Observing Program Leader

Marilyn and Claude Harwood proudly accept the Length of Service Award for 25 years of weather observations at Glasco Kansas. Marilyn and Claude have done a marvelous job of providing rainfall, snowfall and snow depth measurements for over 25 years. During that time, the two of them have also provided countless river stage readings for the Solomon River south of Glasco.

Eugene Goff, Operations Project Manager, accepts the Honored Institution Award for 50 years of weather observations at John Redmond Lake. Eugene was proud to accept the award on behalf of all the men and women who have worked at the John Redmond Lake office over the years, collecting the valuable climate data. Authorized by Congress under the Flood Control Act of 1950, John Redmond Lake was started in 1959. Weather observations began shortly thereafter in August of 1960.

Wanda Diehl of Tescott, Kansas, accepts the Dick Hagemeyer Award for 45 years of service, providing precipitation and river readings to the National Weather Service. Wanda enthusiastically began serving as a Cooperative Observer in 1965, after the previous observer Vere Tatlock retired. Serving others is nothing new for Wanda, as she has served her community in many other ways. She has served on the Council and as a Deacon of her local church for many years; served the American Legion Auxiliary and also supports many foundations and clubs in central Kansas. Wanda's former minister once said, "Wherever there is a need for help, Wanda is there ready to serve". In 2001, Wanda was awarded with the John Campanius Holm award, recognizing her outstanding contributions and achievements in the field of meteorological observations. The Dick Hagemeyer Award was presented by Bill Newman, retired Data Acquisition Program Manager from the NWS Forecast office in Topeka KS.

NWS Partners to Raise Awareness and Preparedness of Severe Weather

By Kelsey Angle, Senior Forecaster

Topeka, KS- The Topeka National Weather Service Forecast Office in coordination with the Federal Emergency Management Agency (FEMA) Region VII, Shawnee County Emergency Management, WIBW 13-TV, KSNT 27-TV, KTKA 49-TV and the American Red Cross hosted a Severe Weather Awareness Day at West Ridge Mall on March 5, 2011. Hundreds of shoppers were exposed to severe weather awareness and preparedness information to mitigate the hazards of severe thunderstorms, tornadoes, flash flooding and lightning.

To help the public plan and prepare for the upcoming severe weather season, agencies and organizations offered a variety of educational information and interactive booths. National Weather Service meteorologists conducted severe weather safety presentations, discussed the dangers of tornadoes via a tornado simulator, demonstrated the dangers of flooding with a flood model and provided additional weather information through interactive booths. FEMA distributed information on the Ready America program and the importance of preparing, planning and staying informed. The American Red Cross presented life saving medical information. The Shawnee County Emergency Management discussed the Community Emergency Response Team program. WIBW-13, KSNT-27 and KTKA-49 aided in distributing severe weather preparedness information, answering weather questions and informing shoppers on how social media can be used to receive weather information.

The Topeka National Weather Service Office county warning area includes 23 counties in North Central, Northeast and East Central Kansas. The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Meteorologist Intern Matt Anderson (Front Left) demonstrates runoff and flooding utilizing a flood model while Observation Program Leader Mike Couch (Back Left) shows a weather balloon.

Weather Trivia!

Can You Name this Cloud Type?

Severe Weather Trivia Questions!

1. How many tornadoes were recorded in 2010 over Kansas?
2. Where did the strongest tornado occur in 2010? (What date?)
3. How many tornadoes occurred in one day for Kansas?
4. Which county in Kansas has seen the most tornadoes since 1950?

Answers to Cloud Type:

Top right: Cumulonimbus

Top Left: Fair Weather Cumulus

Bottom Left Mammatus Cloud

Bottom Right: Altocumulus Castellanus

1. **88 tornadoes (tied for 15th place for Kansas)**
2. **Kingman County. It was an EF-2 on May 10, 2010**
3. **70 tornadoes (May 23, 2008)**
4. **Sherman County where they had 99 tornadoes since 1950.**

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"Working together to save lives"

Severe Weather Spotter Card-

Weather to Report:

Hail (report any size)

Strong wind gusts (58+ MPH)

Any notable wind damage to trees, homes, businesses

Funnel Cloud/ Rotating Wall Cloud or Tornado

What to Include in your Report:

Your Name and/or Call Sign (Spotter Number)

Your Location

Exact Location of Event

Time and Date of Event

Tornado Safety *Continued from Page 6*

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.

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