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The Topeka Tiller

National Weather Service Topeka, KS

Fall 2022 Volume 15, Issue 2

Women in Science Day 2022

By Jenifer Prieto, Lead Meteorologist

For the first time since 2019, Washburn University in Topeka was able to host the 14th Annual Women in Science Day event. The event was held on October 17th, 2022 with over 240 seventh grade girls in attendance. After two years of being unable to host the event due to COVID, it was an especially exciting event to interact with the students and introduce them to STEM fields ranging from sustainable energy and architecture to wildlife, microbiology, and earth science. Studies have indicated that it is around this age that young girls begin to shy away from taking elective classes in science, technology, and math. Women in Science Day was the perfect opportunity for them to experience firsthand science possibilities for their future. Students from the Topeka and surrounding area schools attended the event, including rural and underserved communities. The students participated in two of several available hands-on lab sessions that allowed them to explore various STEM fields while also speaking with women scientists about the careers they have chosen. The keynote speaker for the event was Dr. Belinda Sturm, Professor in the Department of Civil, Environmental, and Architectural Engineering at the University of Kansas. Students also were able to enjoy a free lunch provided by Washburn University and Capitol Federal Bank while participating in an interactive science quiz show where they could win small prizes.

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Inside this issue:

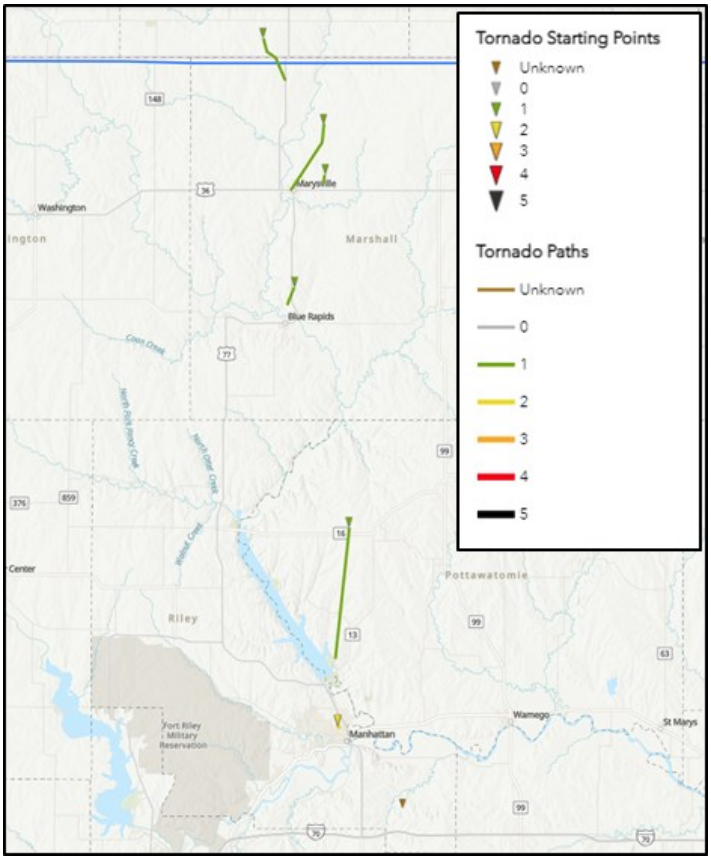
Recap of the June 11th Tornado Event

By Daniel Reese, Meteorologist

After a couple years of lower severe weather activity, 2022 was more active across northeast Kansas. So far this year, 15 tornadoes have been confirmed. Of these, almost half were produced by one storm – a supercell that moved almost due south across the Flint Hills on June 11. Marysville, Blue Rapids, and Manhattan were all impacted directly by this storm, sustaining widespread damage from a combination of straight-line winds and seven total tornadoes.

Supercell moving south over Marysville. Photo by Charles Peek.

The storm began in southeast Nebraska as several smaller supercells developed in close proximity to one another, with one of these producing 5-inch hail in Beatrice. These smaller supercells eventually merged into one very large supercell. By 5:40 PM, the storm produced its first tornado, an EF-1 that developed just north of the Nebraska border before moving into northern Marshall County. Over the next hour, the storm moved south along Highway 77 in Marshall County, directly through Marysville and Blue Rapids. It produced three more tornadoes in this time, all EF-1 as well. In addition to the tornadoes, the area on the southwest side of the storm known as the rear flank downdraft (RFD) produced a wide area of straight-line winds. These winds reached an estimated 90-100 mph as they moved through Marysville and Blue Rapids, producing significant building and tree damage in those towns. After a brief weakening trend as the storm continued south, it then quickly restrengthened as it moved into Riley and western Pottawatomie Counties. An EF-1 tornado developed near Olsburg and took an 11-mile path south just to the east of Tuttle Creek Lake. As the storm moved into Manhattan, a brief but strong EF-2 tornado impacted areas of town just east of the Kansas State University campus. More widespread damaging winds affected other parts of Manhattan, with one injury caused by falling trees at Tuttle Creek State Park. After passing through Manhattan, the storm continued south through the Flint Hills, producing one more tornado that did no damage but was caught on camera by a storm chaser in the area. As the storm exited our forecast area, it moved into Chase County where the Symphony in the Flint Hills was taking place. Despite the remote location of the concert, successful decision support allowed everyone to be evacuated to their cars before the storm arrived. Altogether along its 175-mile path, the storm produced seven tornadoes, with 15 reports of 1” or larger hail and dozens of damaging wind reports.



Confirmed tornadoes from the June 11 supercell.

Article continues on page 11...

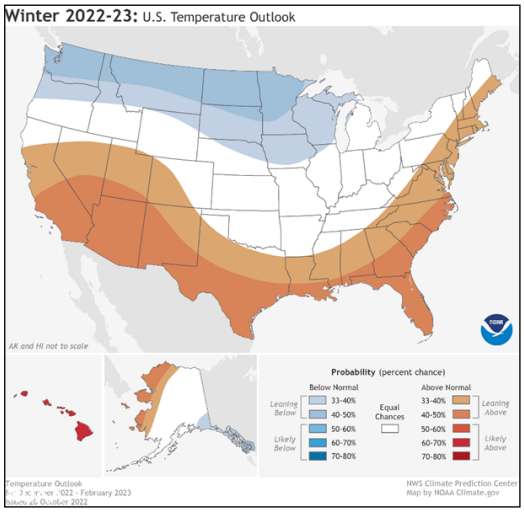
2022-23 Winter Outlook

By Chad Omitt, Warning Coordination Meteorologist

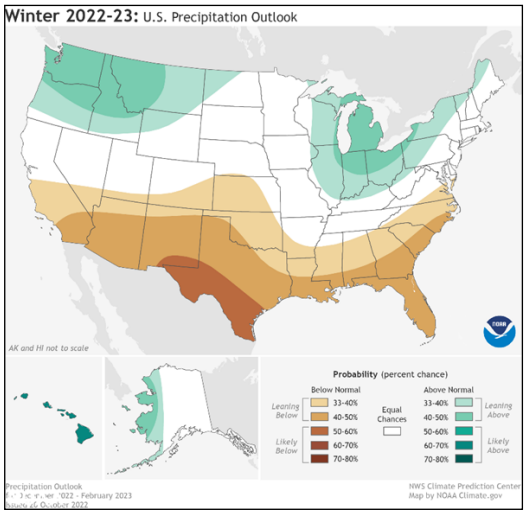
As winter approaches, many are again asking what the winter may bring to Kansas. This winter will feature another La Niña occurring across the Pacific, which will make this the third winter in a row for these conditions.

Unfortunately, this doesn't tell us much about what to expect for the winter months here in Kansas. Making an accurate winter forecast is very difficult, as the interplay between La Niña and other climate factors is complex and still poorly understood.

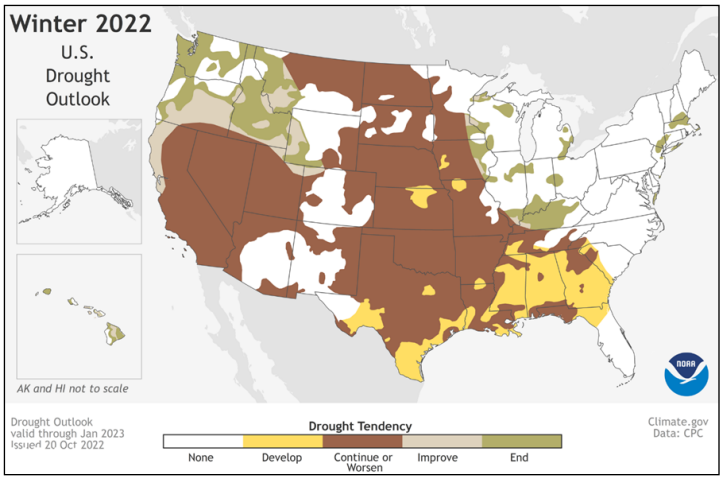
Here in Kansas, the official forecast shows that there is no meaningful signal for either warmer or colder than average conditions this winter.



The winter precipitation forecast shows that odds slightly favor drier than average conditions across much of the state.



Unfortunately, much of Kansas is experiencing drought conditions this fall, and in some cases it is extreme drought. Since winter is traditionally the driest time of year, we do not expect to receive sufficient moisture to break the drought. In fact, the drought may expand over the next few months as seen in the forecast image below.



FINAL THOUGHTS:

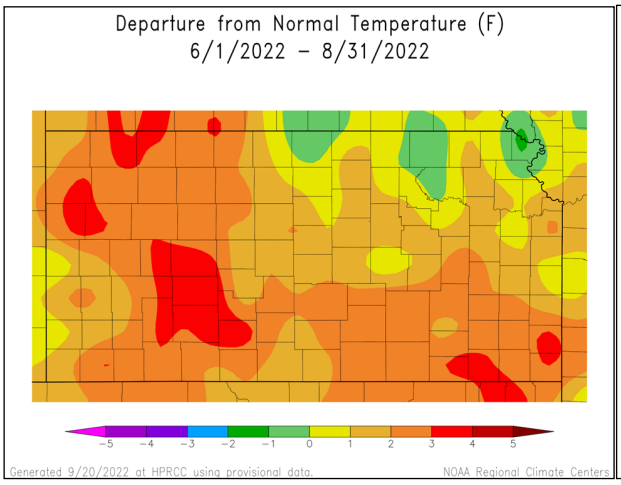
- There is a great deal of variability among wintertime La Niña events across Kansas. This leads to lower confidence in the seasonal forecast.
- That's because La Niña is never the **only** thing that influences the climate over the United States during the winter.
- Other climate phenomena, such as the Arctic Oscillation and North Atlantic Oscillation, which are prominent climate patterns, are difficult to predict more than two weeks in advance.

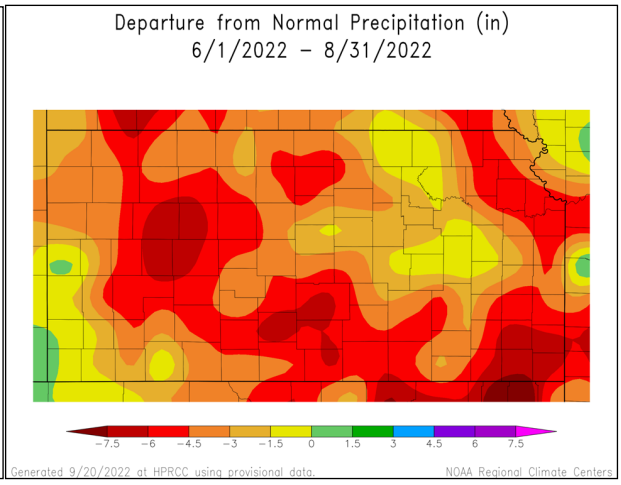
It is also good to understand that these maps depict three-month averages, so individual months or weeks could still see extremes. Also, the seasonal outlook does not project where and when snowstorms may hit, nor does it provide total seasonal snowfall accumulations. Snow forecasts are dependent upon the strength and track of winter storms, which are generally not predictable more than 10-14 days in advance. Bottom line, be prepared for winter!

Summer Summary 2022

By Kyle Poage, Meteorologist

The summer of 2022 (June through August) was warmer and drier than normal. For Topeka and Concordia, where weather records date back to the 1880s, it was the 18th and 16th warmest summer period on record, respectively. Some locations north of Interstate 70 saw slightly below normal temperatures, however. High temperatures were more above normal than low temperatures, which is typical in a drier than normal summer like this year. Topeka saw the mercury reach at least 100 degrees on nine days, which is the most since 2012 when there were 24 such days. Concordia reached at least 100 degrees on fifteen days, also the most since 2012 with 18 such days. These days of extreme heat were spread out throughout the summer.





The total precipitation for the summer for Topeka was the 26th driest on record, also the driest since 2012. Concordia was not quite as extreme, ranking as the 32nd driest, and the driest since 2007. The below normal values were rather common across the area with northeastern locations seeing the largest precipitation departures from normal. Particularly heavy rains were rather rare, with only one report of flash flooding – near Hartford on the evening of June 15 when around three inches of rain fell. Rainy periods occurred from June 22 through June 25, June 30 through July 8, and July 24 through July 28. Rainfall amounts of a few inches were common across the area during these periods.

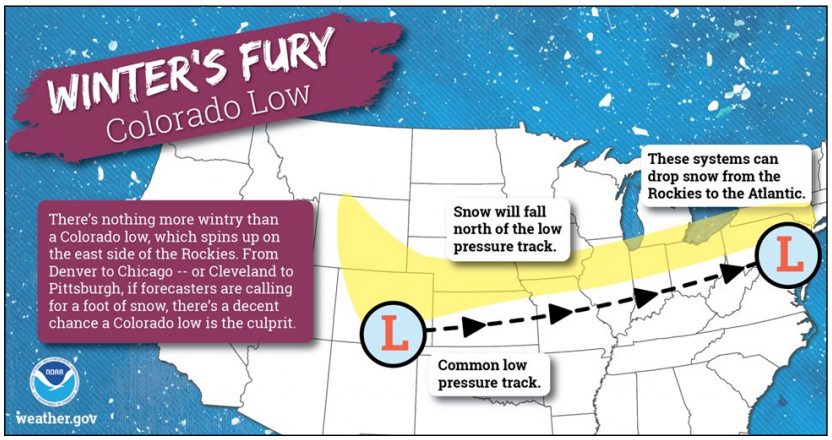
Severe weather episodes from thunderstorms were somewhat rare compared to normal this summer. The most widespread event was in the late evening of June 6. Thunderstorms producing damaging winds overspread much of the area, with the most concentrated impacts in Washington and Marshall Counties with trees uprooted and grain bins damaged. The only tornadic day of the summer was June 11; however, seven tornadoes formed on that afternoon and evening. The tornadoes were reported from northern Marshall County to just east of Marysville to Manhattan to several miles southeast of Manhattan. The highest-rated tornado was an EF-2 with peak winds estimated at 115 miles per hour. It was on the ground for less than half a mile in eastern Manhattan, removing roofs off some buildings and downing trees. A narrow, long stretch of tree damage occurred on the evening of June 21, spanning an area from Bennington to Junction City to Rossville to McLouth. A localized but very intense wind storm impacted Minneapolis during the pre-dawn hours of July 28 with wind speeds estimated at 95 miles per hour. Large trees were uprooted and a roof was blown off of a church from these winds.

Despite the lack of rainfall, the humidity and high temperatures combined to produce several periods of intense heat last summer. For June 12 through June 21, heat indices reached around 105 degrees nearly each day, with the hottest day coming June 16 when readings as high as 113 were measured. Other periods with heat index values around 105 were July 4 through July 7, July 19 through July 24, and August 1 through August 7. Several locations had heat indices peak above 110 degrees in this last stretch.

What Makes Winter Storms Hard to Forecast?

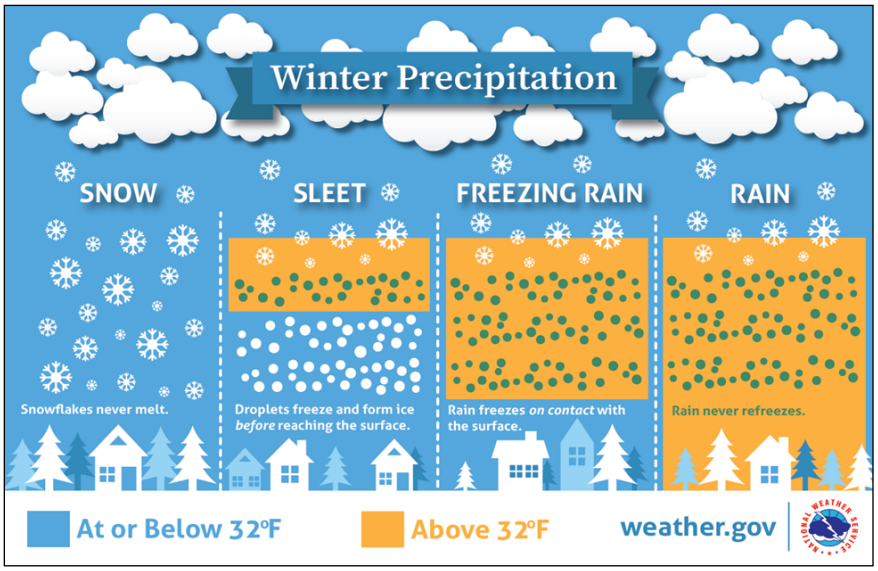
By Jenni Pittman, Science and Operations Officer

System Track



Do you want to build a snowman? Turns out, you're going to need a little more than waterproof gloves – first, you need a storm system. In Kansas, our winter systems typically start out as a large upper-level trough of low pressure, which moves across the Rockies and helps kick developing low pressure out into the Plains states. These troughs are, in a general sense, pretty predictable – we can see them coming about 7 to 10 days out, and can time them into the central U.S. with accuracy of a few days. However, these troughs can span the entire length of the Plains – and the low pressure systems they kick off are decidedly smaller. The track of that low pressure system has a big influence on the type of winter weather we get here. For example, storms that come up from the southwest typically have a lot of moisture but not always a ton of cold air, while storms that come down from the northwest have no shortage of cold air, but can be low on moisture. These types of details aren't very predictable until just a few days prior to the low pressure system's arrival, and a system track shift of 100 miles or less can be the difference between thunderstorms, snow, or missing out on the storm altogether.

Precipitation Type



Picture this – it's December, your holiday decorations are up, there's quite a chill in the air, and dark clouds are approaching from the south. It's about to start snowing, right? Well… maybe. While it might be below freezing where you're standing, the atmosphere above you has a lot more to do with what form precipitation will fall in. Typically, the atmosphere gets colder as you get farther above the surface of the earth – mainly because the earth's surface absorbs warmth from the sun much more efficiently than the air. However, this isn't always the case. In some systems, warm air can glide up over the colder air and result in an "inversion" – warmer air sitting above the colder air at the ground. If this warmer air is above freezing while the surface temperature remains below freezing, snow falling through that layer of warmer air can partially melt, resulting in sleet, or fully melt, resulting in freezing rain. If it's *really* cold at the surface, freezing rain can even freeze back into sleet before it hits the ground – that's a lot of transitioning for one little snowflake! In winter forecasting, the most difficult part of determining precipitation type is that just a degree or two can be the difference between snow, sleet, or freezing rain. Have you ever tried to take a picture of your car thermometer when it hits 100 degrees for the first time, only to see it fall to 99 by the time you can pull over? That tiny one-degree fluctuation that happens so easily can make all the difference for precipitation type in the winter – and it's all happening a few thousand feet above our heads, where there aren't very many thermometers.

Article continues next page...

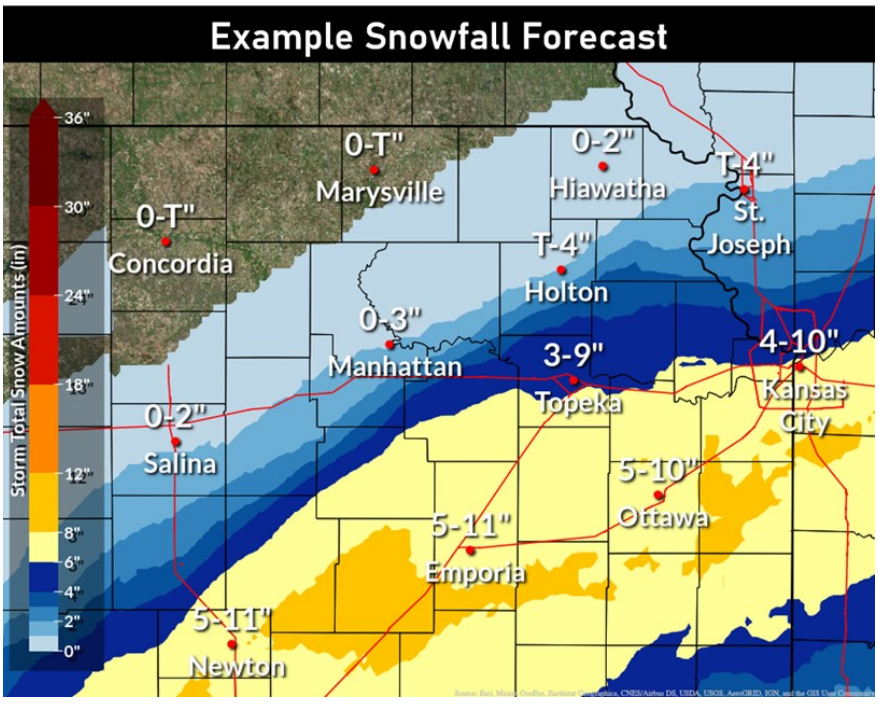
What Makes Winter Storms Hard to Forecast? (Continued…)

Snow-to-Liquid Ratio

In the summer, a forecast error of a half-inch of precipitation might only mean the difference between watering your garden tomorrow or waiting until next week. In the winter, that same forecast error can be the difference between 0 and 8 inches of snow! This is due to snow-to-liquid ratio (SLR) – the amount of snow that's produced by an inch of liquid. As water freezes, it expands, taking up more space than in its liquid form. Snow crystals take up even more space than their water droplet counterparts, because snowflakes allow space for air between crystals when they accumulate on the ground. Light and fluffy snow will have the highest SLR, and can be as high as 30 to 1! Heavy, wet snow will have the lowest SLR, and could be as low as 6 to 1. When snow is expected, forecasters have to predict not only how much liquid precipitation is expected, but also the SLR, in order to make an accurate forecast. And remember, those liquid precipitation forecast errors will be magnified by the SLR! Here in northeast Kansas, the average SLR (over all types of winter storms, in all winter months) is about 13 to 1, meaning an average of 13 inches of snow is produced by 1 inch of liquid precipitation.

What to Expect When You're Expecting a Winter Storm

Okay, you're thinking, *I get it – forecasting is tough. So what's reasonable to expect from a winter forecast?* First, be wary of snow (or ice, or liquid, for that matter) amount forecasts more than just a few days out. Computers can generate very specific-looking snowfall forecasts as many as 16 days out, and those numbers might end up in your Twitter or Facebook feed, but these are not the forecasts you're looking for. About 4-5 days out, we'll start discussing generalities – noting that a storm could impact the area, and giving some general timing if it does. In the 2-3 day time frame, we'll start throwing out some numbers, but you'll notice those numbers in the form of ranges – that's because the details of the storm still aren't certain, for all the reasons we listed above. In this time frame you might see a winter storm watch come out, if there's a possibility the impacts of the storm could be significant. Then in the 24 hours leading up to a winter storm, we'll get more specific with precipitation types and amounts, impacts, and timing, and may issue a winter storm warning or a winter weather advisory, depending on the expected impacts. Even day 1 forecasts aren't perfect – storm tracks can still shift, temperatures can still change, and impacts can depend on even non-meteorological variables like road treatment, and how many people are *pretty* confident they won't end up sideways at the traffic light before they even get out of their neighborhood. As these storms evolve, we'll continue to give you the best information we have when we have it, and will communicate any significant forecast changes.



Winter Weather Safety & Travel Hazards

By Chad Omitt, Warning Coordination Meteorologist

Living in Kansas, you may assume that severe storms and tornadoes pose the greatest risk to your safety from Kansas weather. Believe it or not, the greatest risk to your safety actually comes from driving in bad weather including ice and snow during the winter season. We're not talking about the traditional blanket of heavy snow that you can see. The true icy road hazard is subtle and due to light snow or freezing drizzle – these are events that suffer from a lack of obvious visual cues and public awareness. It is these conditions that cause the biggest percentage of deaths and injuries, and it doesn't take much to make roads icy enough for you to lose control!

Although numbers are largely underreported, here in Kansas at least 15 people lose their lives each year in automobile accidents where ice and snow play a role. That number may be much higher. So what can you do to lower your risk when driving in ice and snow?

1. **Know what to expect on your trip and plan accordingly.** If you know you need to travel through especially bad wintery conditions, be sure to check the weather forecast along your trip by visiting www.weather.gov. Also, visit Kansas Dept. of Transportation website to access information about your road conditions, including webcams.

2. **Pay attention, slow down, and relax.** This is the most important rule to driving in bad conditions of any kind. And we're not just talking about speed — you want to do everything more slowly and more lightly than you normally would. Hitting your gas pedal or cranking your wheel too quickly is a surefire way to lose traction on an icy or wet road. *At the same time, you cannot be distracted by a phone for any reason when driving, let alone when trying to drive in ice or snow… Pay attention to the road!*

3. **If you start sliding, turn slightly into the skid and use your brakes.** Once you're already sliding, your tires have lost traction with the road. It seems counterintuitive, but in order to avoid a spinout you need to turn slightly into the skid, slowly let off the gas, and let your anti-lock brakes do the work for you.

4. **Know when to quit.** Sometimes road conditions are simply too dangerous to drive in. If you can't see or you keep losing control, pull over. Never push your luck if you're unsure. It's not worth it to drive if you're jeopardizing yourself, your passengers, or other drivers on the road.

Article continues next page...

Winter Weather Safety & Travel Hazards (Continued…)

Even the smartest and safest drivers get into accidents. That's why it's crucial to be prepared for the possibility of any kind of collision or accident that could leave you and your passengers stranded on the side of a cold and possibly dangerous road. The first step is to build an emergency kit and place it in the trunk of your car.

Inside, you will want to include common car safety items like jumper cables, a flashlight, and a roadside visibility kit of either reflectors or flares. If you are stranded, a small shovel and bag of sand are must-haves. Below is a list of possible items you may want to have in your vehicle.

Points to remember:

- Wear your seat belt! Even though wearing your seat belt should already be a no-brainer at all times, during the winter it's even more critical. An alarming number of road ice fatalities occur with minor accidents where the vehicle occupants were not wearing seat belts.

- Take it slow! *You don't have the skill to drive at normal speeds on icy roads*. High speeds make it easy to lose control on ice and snow. Slowing down to below 45 mph when icy roads are a threat is one of the best ways to avoid an accident.

- Pay attention! Put your mobile device away and focus on the road with both hands on the steering wheel!

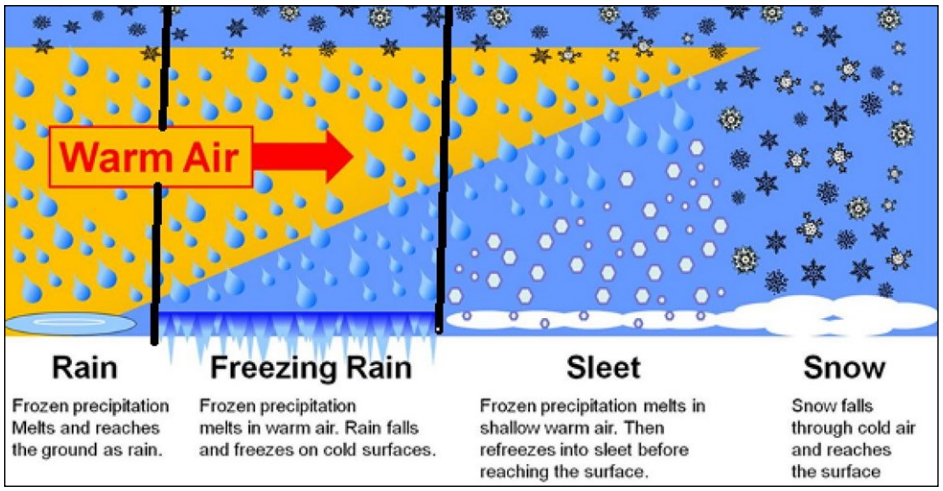
By remembering these few important points, we hope that you can help keep yourself, your family, and fellow drivers safe this winter season.

All About Ice Storms

By Bill Gargan, Lead Meteorologist

The definition of an ice storm is an event where freezing rain produces surface ice accumulations on a flat surface of one quarter inch or greater. If ice accumulations from freezing rain are three quarters of an inch or greater (or if strong winds accompany a quarter inch of ice accumulations), then extreme damage to trees, power poles, and power lines can occur. Also, driving and walking can become extremely dangerous.

Freezing rain occurs when warmer air, with temperatures in the 40s at 1000 to 4000 feet above the surface, moves over a shallow cold air mass at the surface, with temperatures below freezing. Any snow and ice crystals melt when falling through the layer of warm air above the surface and turn into liquid rain drops. The rain then freezes on cold surfaces, and can lead to an accumulation of ice on road surfaces, trees, power lines, and power poles.

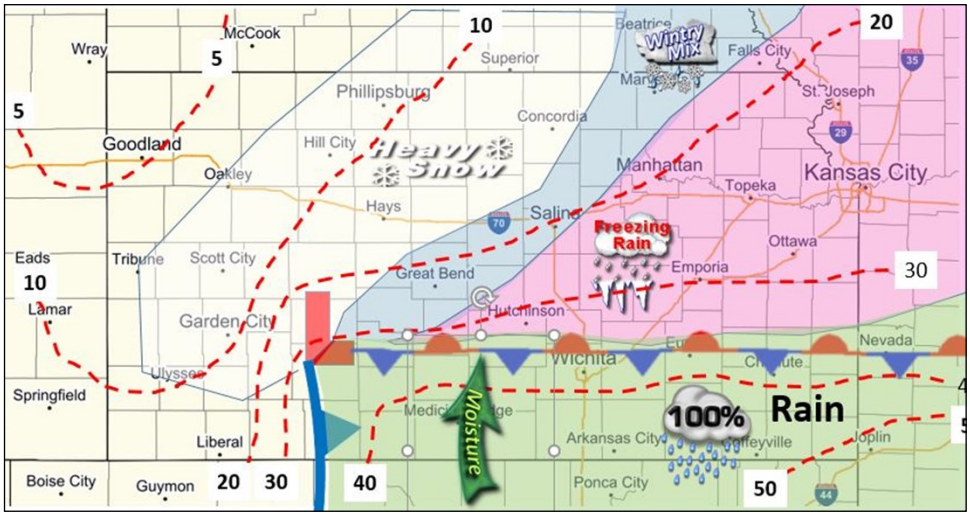


Most ice storms occur with major winter storm systems, usually ahead of an intense upper-level trough and deep surface low. A few days before an ice storm, there may be an Arctic air mass in place, making surface temperatures very cold. Some of the worst ice storms occur when cold air at the surface advects west or southwest across the area, keeping surface temperatures in the 20s, while heavier freezing rain falls for a long duration.

The National Weather Service will issue an ice storm warning when freezing rain produces a significant and possibly damaging accumulation of ice. The criteria for an ice storm warning to be issued would be any time more than one quarter inch of ice accumulation is forecast for an area.

Here are some of the major ice storms that affected north central, northeast, and east central KS in the past:

12/3 - 12/4/1973: Heavy freezing rain fell and accumulated 1 to 3 inches of ice in a 150-mile band from Meade, KS through Hiawatha, KS. This ice storm was one of the worst in Kansas history. Dozens of high-tension electric line towers collapsed, along with numerous television and radio transmission towers. Electric and telephone lines throughout central and northeast KS were down. Power outages lasted weeks.



A hypothetical set-up for an ice storm in northeast Kansas.

Article continues on page 12...

How to Find the Winter Weather Information You Need

By Sarah Teefey, Meteorologist

When hazardous winter weather is in the forecast, specific details about the forecast are important. So where can you find the information you need? There are many resources available online that provide the type of winter hazard expected, forecast accumulation amounts, timing, and possible impacts.

For starters, on our NWS Topeka website, weather.gov/top, you will see any watches, warnings, and advisories that have been issued in association with anticipated hazardous weather. On the homepage, you can also click on our latest Decision Support Services (DSS) packet, as shown toward the top right corner of image 1 (above) within the highlighted caution box. The DSS packet is meant to be a quick and easy-to-interpret document that gives the forecast highlights in plain language.

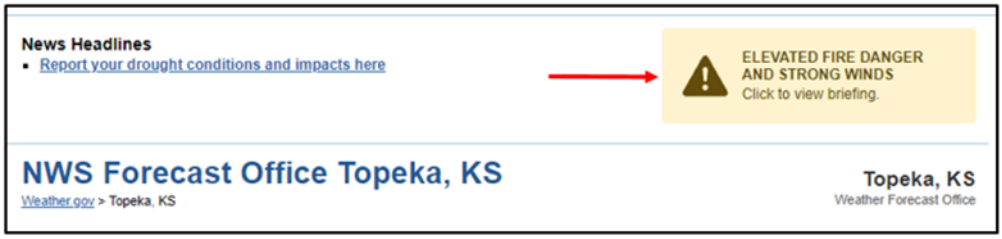


Image 1. NWS Topeka Homepage

Back on the homepage, you can click on your location on the map for more detailed information about your specific area. Once a location is chosen, scroll down the page to find the "Hourly Weather Forecast" (image 2) for a graphical representation of hour-by-hour weather data, including temperature, precipitation and amounts, and wind. Also check out the "Forecast Discussion" if you are interested in a detailed science-based explanation of the forecast!

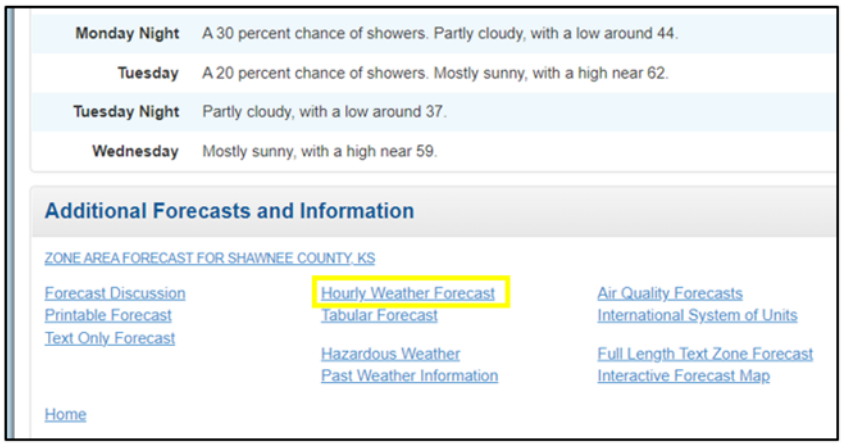


Image 2. Location of Hourly Weather Forecast Link

Additional helpful information can be found on the winter portion of the Weather Prediction Center's (WPC's) website – https://www.wpc.ncep.noaa.gov/wwd/winter_wx.shtml. See the "Snowfall Probability Forecasts" for an interactive map of probabilistic snowfall amount data (image 3). As described there, the probabilistic data will show the percent probability of accumulations equaling or exceeding a specific threshold, such as 4 inches.

The same type of information is available further down the page for freezing rain accumulations.

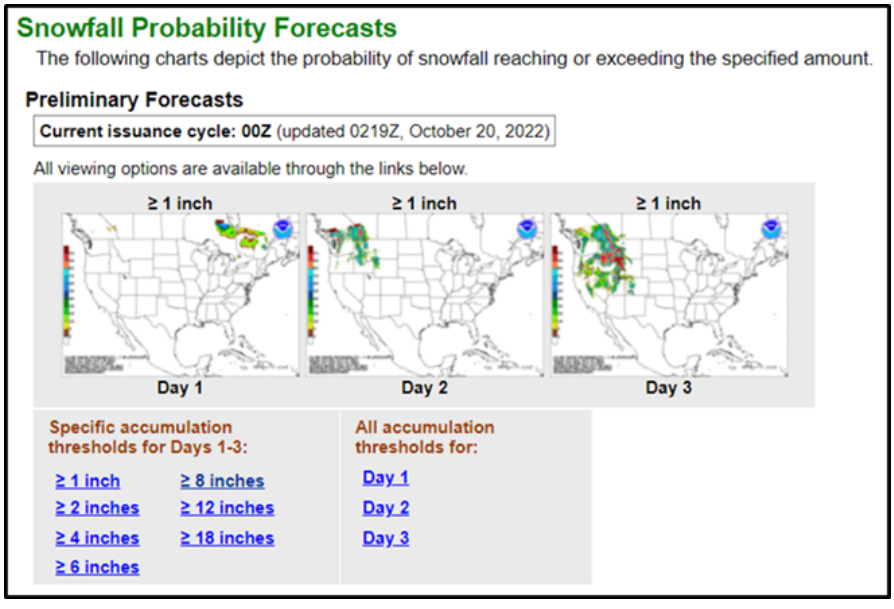


Image 3. Snowfall Probability Forecast on WPC's Website

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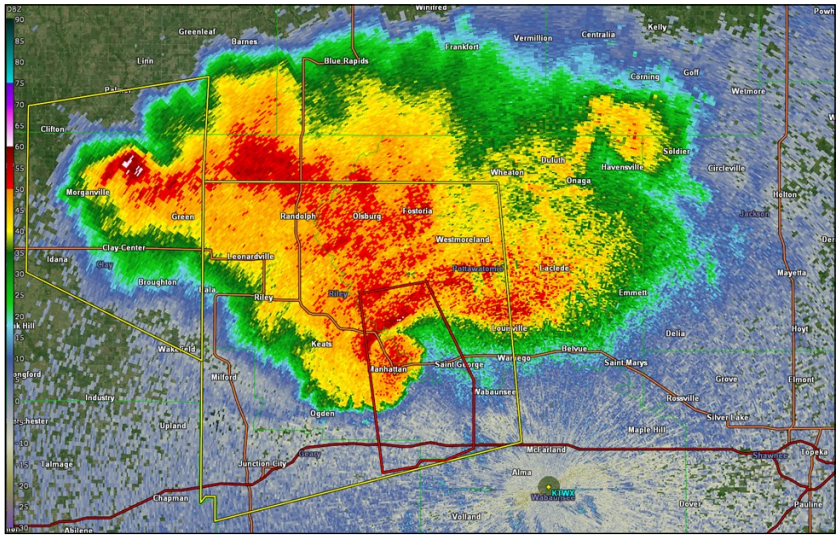
Recap of the June 11th Tornado Event (Continued…)



Radar imagery at 7:21 PM, around the time of a brief EF-2 tornado in Manhattan.

Aside from the significant damage produced, this storm was meteorologically notable in several ways. One was the large size of the storm. At times the mesocyclone (the supercell's rotating updraft) was over six miles wide, at the upper end of the scale. The width of the damage produced by the storm's RFD was around six miles wide as well, with damage stretching from Blue Rapids all the way west to Waterville. In addition to its width, the RFD was also extremely strong. While RFD winds in supercells do sometimes reach 60-70 mph and produce damage, the widespread 90-100 mph gusts with this RFD were quite rare. Lastly, the due south motion of the supercell at 30-50 mph was also unusual. Of all tornado warnings our office has issued since 2007, this event was the only one to have a storm motion within 40 degrees of due south. Two of the tornadoes even had a slight westerly component to their direction, which had only been observed in four other tornadoes since 1950.

For more information about this event, a summary can be found at the following link on our website: https://www.weather.gov/top/June11_2022tornadoes.

How to Find the Winter Weather Information You Need (Continued…)

Linked toward the top of the WPC winter page is the "Winter Storm Severity Index" (WSSI), which is helpful for gauging potential impact levels from expected winter weather. There, a map will display with possible impacts plotted per geographical area. Impact levels range from "minor" to "extreme" (image 4).

The sites mentioned here should give you the valuable information you need when winter weather is expected this cool season. Atmospheric data is constantly being analyzed, so refer back to these sites often for any updated information.

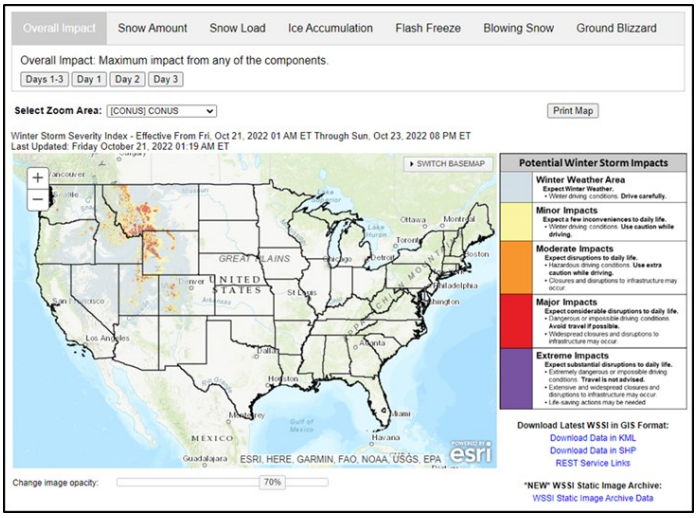


Image 4. WSSI Display

All About Ice Storms (Continued…)

12/6 - 12/8/1980: Heavy freezing rain produced 1 inch of ice accumulations along a line from Dodge City to Sabetha, KS. The 40 MPH wind gusts caused ice-coated trees to splitter and ice-coated utility poles to snap. Widespread power outages were reported and some areas did not have power returned for over four days.

11/26 - 11/27/1983: Freezing rain caused up to an inch of ice accumulations across north central and north-east KS. The heavy ice accumulations caused large tree branches and utility poles to snap. Widespread power outages were reported with some power outages lasting over a week.

3/18 - 3/19/1984: One of the worst ice storms to affect east central KS and the city of Topeka occurred. Heavy freezing rain with embedded thunderstorms produced 1 to 2 inches of ice accumulation on all exposed surfaces. The city of Topeka was hard hit with heavy ice accumulations that caused power outages to 100,000 residences, which was over 82 percent of the city's population. Widespread tree damage occurred along with power poles snapping due to the weight of the ice. A large TV transmission tower also collapsed. Some said the damage to the city was the 2nd worst, right behind the 1966 tornado. Some power outages lasted for over one week.

10/31/1991: Freezing rain caused ice accumulations of 0.5 to 0.75 inches across east central KS. The ice accumulations caused many tree limbs to break and power poles to snap. Widespread power outages were reported, with half the city of Emporia losing power.

1/29 - 1/31/2002: Freezing rain caused ice accumulations of 1 to 2 inches across east central KS. The heavy ice accumulations caused considerable power line and tree damage. Many residents remained without power well into February. Several buildings collapsed under the weight of the ice, doing considerable damage to the contents. A boat marina at Lake Perry collapsed under the weight of the ice and damaged or destroyed 19 boats.

1/4 - 1/5/2005: Heavy freezing rain led to significant ice accumulations of 1 to 2 inches. This caused the most tree and property damage generally along and north of Interstate 35 from Emporia to Ottawa, and south of Interstate 70 from Lawrence to Topeka to Abilene.

12/10 - 12/11/2007: During the 24-hour period from around noon on the 10th to noon on the 11th, heavy freezing rain caused significant ice accumulations across northeast Kansas. Counties from Morris and Dickinson northeastward to Nemaha and Brown were coated with between three quarters of an inch and one and a half inches of ice. These counties were the hardest hit northwest of I-35. Surrounding sites generally saw accumulations between one quarter and three quarters of an inch thick. Regardless, vehicle accidents were reported across the region, homes and businesses were left without power, and the structural integrity of trees, power lines, and some buildings and homes was severely compromised by the weight of the ice. 10 to 20 MPH winds on the tail of the system exacerbated the structural problems and caused further damage, as did melting and refreezing of the ice over the next several days. Thousands of trees were reported to be damaged or down. President Bush issued an emergency disaster declaration for the state of Kansas. 45 emergency shelters were opened in east central and northeast KS to assist those without electricity and heat to their homes.

Safety measures and precautions one should take before, during, and after an ice storm:

If you have a generator and know how to operate it, make sure the fuel tank is full and that the generator has had a test run recently.

If you live in a rural area with an electric water pump from a well for your water supply, make sure you fill your bath tubs with water, so that this water can be used to flush toilets when electricity is lost to your home.

Stock up on dry foods that can last a week. Your refrigerator will be inoperable if you lose electricity.

Article continues next page...

All About Ice Storms (Continued…)

Make sure you have plenty of blankets since your electric or gas furnace will not operate without electricity. It can be difficult to stay warm without power. If you live with young children or the elderly, consider temporarily staying somewhere with power.

During the ice storm, remain indoors and do not drive since roadways will be very hazardous to drive on. Sidewalks and porches will be ice-coated and very slick which could cause you to slip and fall, resulting in injuries. Stay warm by dressing in layers and using blankets. Close unneeded rooms to keep residual warmth in a central room in your home, like a front room or living room. When using an alternative heat source, follow operating instructions, use fire safeguards, and be sure to properly ventilate.

After an outage, power can return in spikes. Keep your electronics safe by unplugging them when power is lost. Leave one light on to indicate that power has been restored, and then turn on other appliances and equipment one at a time.

After an ice storm and you venture outdoors, stay away from downed power lines and warn others to stay away. Be alert to the possibility that tree limbs or debris may hide an electrical hazard. Treat all power lines as live and dangerous, and treat everything near them as dangerous.

Women in Science Day 2022 (Continued…)

Meteorologists Chelsea Picha, Jenifer Prieto, and Sarah Teefey from the National Weather Service hosted one of the lab sessions, which included three interactive weather experiments. The girls were able to observe clouds and fog forming in a jar, create a tornado with debris in a bottle, and observe the formation of snow as well as learn how snow ratios are determined by the moisture content. The group also discussed the various career opportunities as a meteorologist and the types of science and math classes they can start taking in high school to learn more about the dynamics of the atmosphere and weather phenomena.

Overall the event was a huge success and the Women in Science Day Committee looks forward to next year's event. A special thank you goes to Washburn University, all of our sponsors, and a wealth of volunteers and lab leaders who helped us out that day.

COOP Corner Fall 2022

By Shawn Byrne, Observing Program Leader

Hi all! We seem to have emerged from the pandemic, and I have been busy with trying to see all of you before the end of the calendar year. I have already gotten to about 90% of you as of the end of October with just a few more sites to go!

Spring and early summer started out rather wet, and it looked like it would be another abundant rainfall year. However, drought set in by mid-summer with many locations observing around two inches of rainfall for the entire month! August and September were also very dry months for many sites. Meanwhile, a few sites did see close to, or slightly above, average rainfall.

It was a busy year handing out awards once again this year. Douglas County Emergency Management received their first Institutional Award in recognition for 25 years of service to the Cooperative Observer Program. The Warning Coordination Meteorologist, Chad Omitt, and I were privileged to recognize Douglas County emergency managers for their dedicated work at the Douglas County Commission meeting in October.

I'd also like to recognize those who received Length of Service Awards for 2022…

40 Years of Service

Leo & Nancy Pollard, Lecompton, KS

25 Years of Service

Kevin Foerschler, Woodbine, KS

John E. Foster, Eskridge, KS

Douglas County Emergency Management, Lawrence, KS

15 Years of Service

Loren & Deborah Sudbeck, Seneca, KS

Lance Baily, Rossville, KS

Dennis Ashcraft, Holton, KS

James & Mary Pierson, Onaga, KS

James & Kathy Kraft, Gridley, KS

10 Years of Service

Charles & Elvie Aikens, Wilsey, KS

Donnie Whitebread, Junction City, KS

I will try to get these out as soon as we can! You all deserve to be recognized and thanked for the time you put in volunteering for us! Thank you all for your dedication and service!

As we enter fall, please make sure to bring your rain gauge funnels and inner measuring tubes indoors. Leaving them outside will cause the inner tubes to crack due to the ice, and the funnels are not large enough or deep enough to catch the snow properly. If you need any help with snow measurement, please don't hesitate to call the office at **1-800-432-3929** and we would be happy to help! Have a good and safe holiday season, everyone!

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