Serving Residents of Northeast Kansas Since 1878

The Topeka Tiller

National Weather Service
Topeka, KS

Spring 2016 Volume 9, Issue 1

Inside this issue:

NWS Topeka is Hosting an Open House! Save the Date: Saturday, October 1st

By Audra Hennecke, Forecaster

Have you ever wondered what the day-to-day operations are like at a National Weather Service office, or how NWS meteorologists operate during an active severe weather event? Well you can learn all about it and so much more at our upcoming Open House!

NWS Topeka will be hosting an Open House on Saturday, October 1st from 10am-3pm. This event is FREE and open to the public. During the Open House you'll have the opportunity to tour our office, meet our meteorologists, see first-hand how we produce our various weather forecasts, and see how we issue severe weather warnings and handle severe weather operations. We will have scheduled weather-balloon launches where you will be able to see how we prepare weather balloons and radiosondes, and then learn how the weather information that is gathered is so vital to our weather forecasting process. There will be several unique and informative exhibits hosted by the NWS Topeka as well as some of our emergency preparedness partners. These exhibits will cover such topics as preparedness and awareness of hazardous weather, weather safety tips, and how weather observations are made. We also will host some special weather presentations throughout the event to help you learn even more about various weather topics. Additionally, there will be several interactive exhibits that will be perfect for kids, allowing them to make a tornado, make lightning, simulate a flash flood, and much more!

So if you've always been fascinated by the weather or just simply want to learn more about the diverse world of weather forecasting that occurs at the NWS, then make sure to stop by our Open House on October 1st! It will be fun for the entire family! More details about the Open House will be posted in the future on our website www.weather.gov/top, on Facebook (US National Weather Service Topeka Kansas), and on Twitter (NWSTopeka).

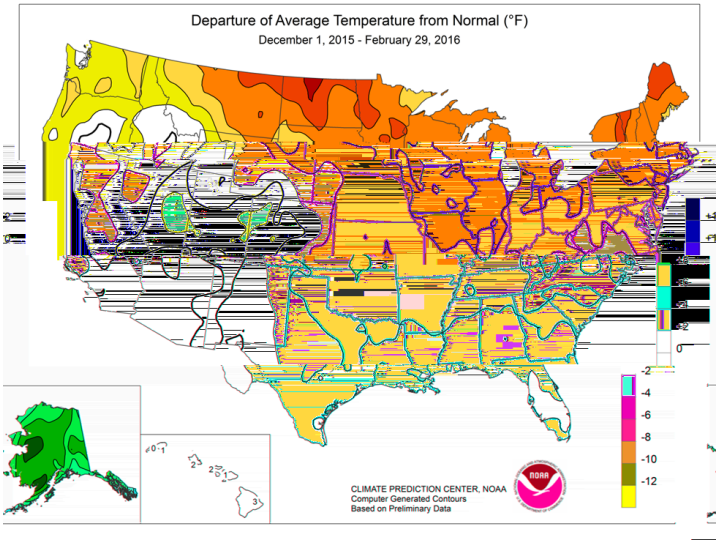
Winter of 2015-2016 Statistics

By Emily Heller, Meteorologist Intern and Kyle Poage, Forecaster

This winter, characterized by the three month period from December 2015 to February 2016, showed trends of being warmer than normal with varied amounts of precipitation each month.

The average temperature for December was the fifth warmest of any December on record. The normal value for the month is 32.0 degrees, while this past December saw mean temperatures of 39.9 degrees. The warmest day was on December 9th when the high temperature reached 70 degrees, setting the record for that day. January was much closer to normal concerning temperatures once the month was averaged out. The second to last week of the month high temperatures maxed near the 20s and 30s, while the last week of the month highs frequented the 50s and 60s. The maximum temperature for the entire month was on the 29th at 68 degrees. February continues the warmer than normal trend of the winter with the month having the twelfth warmest average temperature on record. Record high temperatures of 78 and 76 degrees were set on February 18th and 20th, respectively.

Precipitation amounts varied month to month this winter, although it can be said most of the area saw less than average snowfall amounts. For the December to February period, Billiard Airport in Topeka saw only 3.5 inches, 12.4 inches below the normal value for snowfall of 15.9 inches. For Concordia, the amount is much less drastic with a total snowfall of 13.6 inches for the winter, only 3.3 inches below the normal of 16.9 inches. For precipitation in general, December actually saw wetter than normal conditions with a total of 2.71 inches at Topeka Billiard Airport compared to the normal value of 1.35 inches. This has placed December 2015 as the eleventh wettest December on record. In January, precipitation amounts were very close to normal. One of the most impactful events of the month produced little in measurable precipitation, and was a freezing drizzle event on January 18th that led to numerous traffic accidents. February fared significantly drier than normal, making this month the twentieth lowest on record for total precipitation.



Map depicting the departure of average temperatures from normal for the winter. Northeast Kansas was roughly 4 degrees warmer than normal.

May 6, 2015 Tornado Outbreak

By Bryan Baerg, Meteorologist Intern

Douglas County, Kansas hosted its annual severe weather symposium on March 5th at The University of Kansas' student union. This year, two of our meteorologists from the National Weather Service office in Topeka, Kris Sanders (General Forecaster) and Bryan Baerg (Meteorologist Intern), presented a case study regarding the May 6, 2015 tornado outbreak across north-central Kansas and south-central Nebraska.

Article continues on page 6...

Tornado Climatology for NWS Topeka's County Warning Area (CWA)

By Bill Gargan, Lead Forecaster

Since 1950 a total of 777 tornadoes have been reported. On average this is about 12 tornadoes that occur each year. The most tornadoes reported in a year across the CWA was 36 in 2004. Only one tornado was reported in 1994.

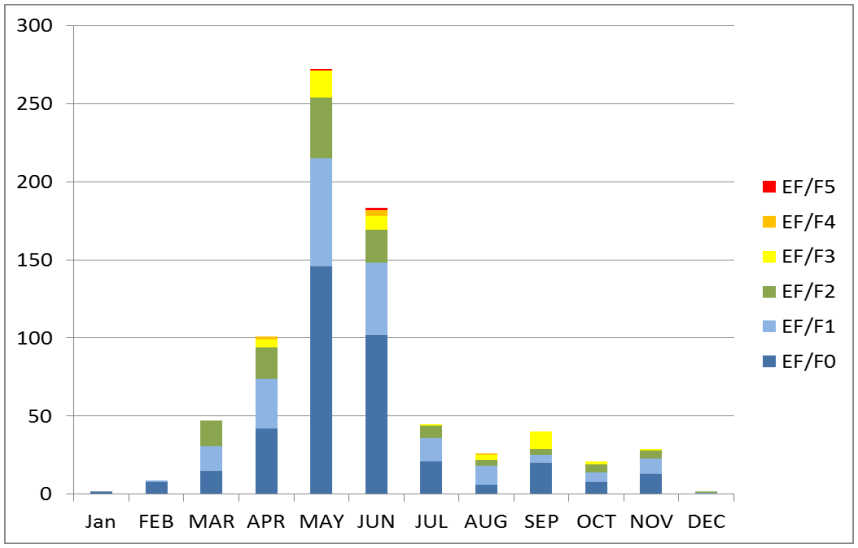


Figure 1

Every month of the year has recorded at least one tornado. The greatest number of tornadoes have occurred in May, with 272 tornadoes over the past 66 years. June had the second most tornadoes with 183. Both December and January had the fewest tornadoes with only 2 each reported (see Figure 1).

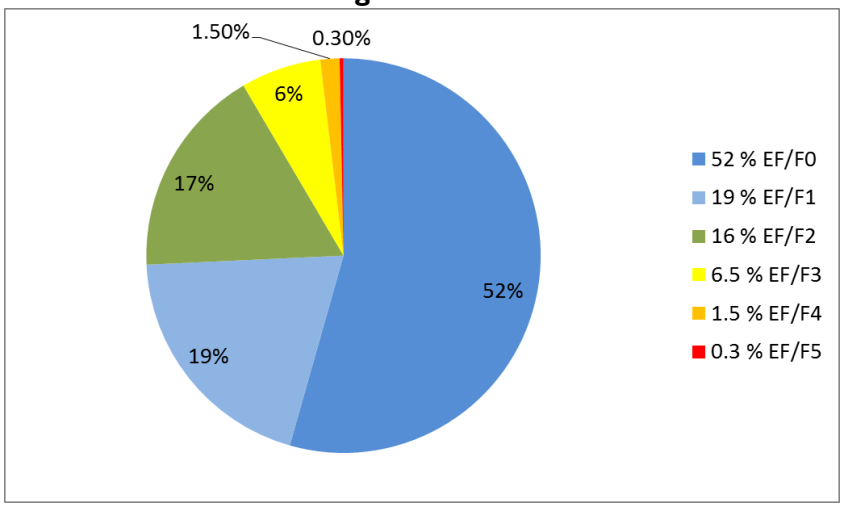


Figure 2

53% of the tornadoes were only EF/F0 on the Enhanced Fujita/Fujita scale. 19% percent of the tornadoes were rated EF/F1 (see Figure 2). There have only been 2 tornadoes rated F-5 within the CWA. The first F5 tornado occurred in central Franklin County back on May 20, 1957. The second F5 was the infamous Topeka tornado of June 6, 1966 that went through the southwest and central portions of Topeka.

The most frequent time of day for tornadoes to occur across the CWA since 1950 is between the hours of 4 PM CST (5 PM CDT) to 7 PM CDT (8 PM CDT) as shown by Figure 3. The greatest number of tornadoes, 118, occurred between 6:01 PM – 6:59 PM. There have never been any tornadoes reported since 1950 across the CWA during the hours of 5 AM, 6 AM and 9 AM.

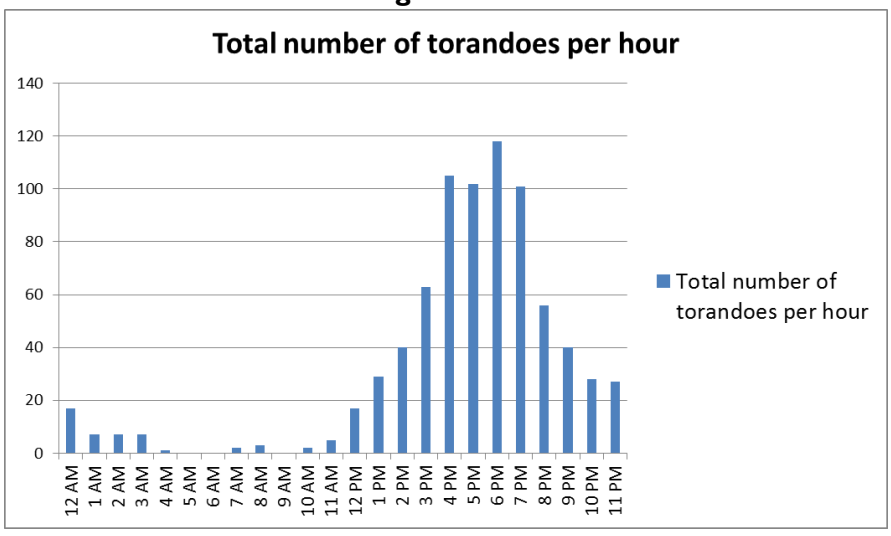


Figure 3

By Chad Omitt, Warning Coordination Meteorologist

Severe weather season is upon us here in Kansas and it's important to understand your risk from severe storms and learn about ways to reduce that risk. Here in Kansas over the past 20 years there have been 37 fatalities from tornadoes, 23 from floods, and 10 from lightning strikes. The greatest danger in a tornado is the result of the blowing and crushing debris so we need to do everything in our power to reduce the risks from the debris. You can reduce your risk from tornadoes significantly by just following the principle of getting as low as possible and putting as many walls between you and the outside. A basement or engineered safe room is your best option. Try and get underneath something sturdy like a table or staircase and use helmets for head protection! A bike helmet, baseball or softball helmet works great, too! If you don't have a basement or safe room go to the lowest floor in an interior room and try to get underneath something sturdy or cover up with heavy blankets and don't forget your helmets! If you live in a mobile home you must evacuate the mobile home and shelter somewhere else. Go to your community shelter or if you don't have a community shelter than find a friend or relative nearby that has a basement or safe room and ask if you can shelter there. Practice your plan so you know how long it takes to get to your designated shelter and remember to stay aware of what's happening so you don't wait to leave until it's too late. If you own a business it is critical that you have a severe weather plan.

That brings us to situational awareness or simply knowing what is possible in the next several hours or what is going on now. Check www.weather.gov/top and check out our sit-rep outlook document for the latest on severe weather risks. Another source of outlook information is available via www.spc.noaa.gov Monitor your local TV and radio media for the latest on watches and warnings and put an app on your mobile device that can deliver watch and warning information for your location. There are many free and low cost options out there including tornado from the Red Cross. There is another free opt out alert service called Wireless Emergency Alerts that originates from FEMA. You will receive flash flood warnings and tornado warnings through this free opt out service. Ultimately, your safety and the safety of your family are up to you and by being prepared and staying aware you can significantly reduce the risk of serious injury or death from tornadoes.

When it comes to flooding we say "turn around, don't drown". The vast majority of flood fatalities occur when people drive into flooded roads in vehicles and get caught in the current and drown. You can reduce your risk from flash flooding here in Kansas by simply not driving through flooded roads especially at night when you can't tell the depth of the water or condition of the road under the water. Turn around and find another route. It's simply not worth the risk since it only takes a few feet of water to float a vehicle. **Article continues on page 6...**

D L Z Y P M W Z J Y D M J Y N R G W M T
R D Z K M Z X X T L J Z J W J G G T G L
I P Q P L D J T I B N W D K G P L P K L
Z P A L P W Z G T M J N E T T P L G T M
Z W L R X D H A R X F G E D T R A I N Y
L G L C T T T R U R V E X H L G D V M Y
E R O L N L T L E T L W U T O R N A D O
D L R I L C Y E Z S U N R F B Q Y B V L
D T N T L L Z C S T D M R D F X N T W R
N G N O B E W U L E T O N R M W Q P L P
L V U O D C M I R O S S E W O B N I A R
Y D S L R M O S N T U E A T G N A Q T J
Y R P R E F T L J T Z D S C M H Y J T R
T R R R J O M T D I E Y Y U R D Y Q W N
Z R I L R R G R N F Y R Y J N E H O T R
M R N M T K R G A W R G L I T N V D N M
R R G G P N R Z O W G O W G P B Y O K T
A Y G K B A M N Z O G M N J D Y K P P R
W P M D I L S K F L T Y K T Z P J M R D
B L X N D M J K D R N P G Z D V V L J W

Young Meteorologist's Word Search:

Cloudy
Sunny
Rainy
Partly Cloudy
Windy
Thunderstorm
Snowy

Hot
Cold
Warm
Front
Cold
Front
Tornado
Lightning
Dew

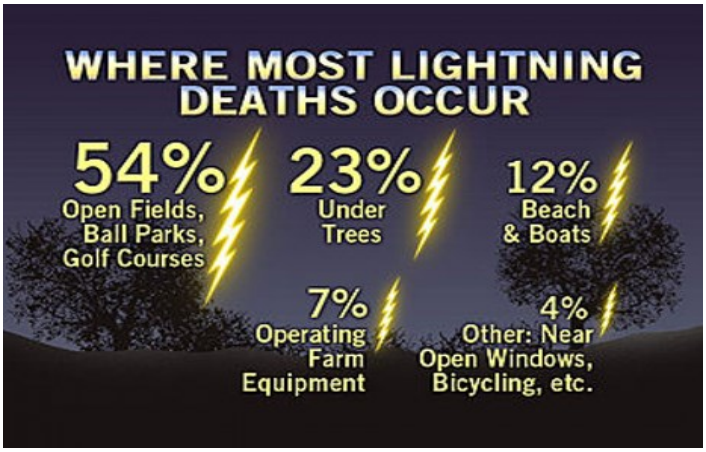
Frost
Freeze
Warm
Rainbow
Foggy
Drizzle
Overcast

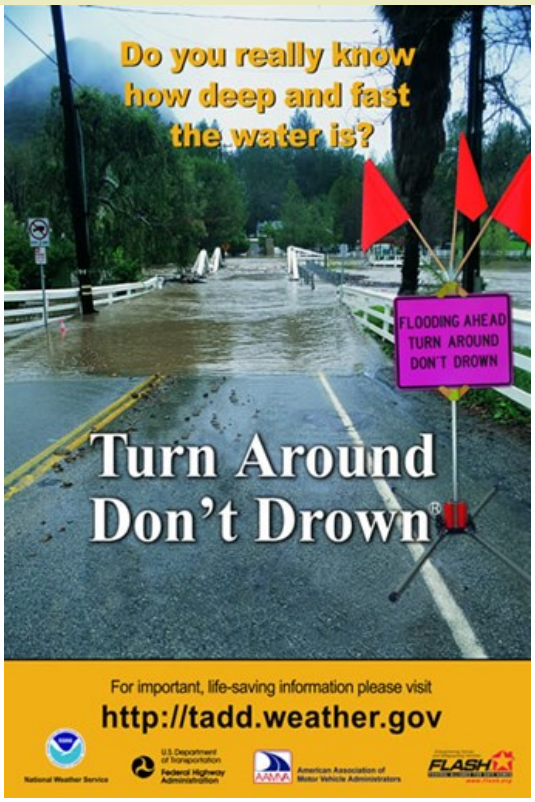
Hail
Sleet
Freezing
Rain
Summer
Spring
Autumn
Winter

Answers on page 9!

Spring Has Sprung! (Continued…)

Finally, when it comes to lightning if you can hear thunder you are close enough to being struck. Remember "when thunder roars go indoors". Get into an enclosed building or structure or if none are available get inside your car, roll up the windows and keep your hands on your lap. The body of the vehicle acts like a cage and will allow a lightning strike to conduct through the vehicle into the ground. How can you estimate the distance of a lightning strike? Count the number of seconds between a flash and the bang and divide by 5. This can provide a rough approximation the distance in miles between you and a lightning strike.





In summary, severe weather including tornadoes, lightning and flooding are going to happen like they do every year. The risks associated with those hazards can be reduced with proper preparedness and by staying aware before and during severe weather. As mentioned, your safety and the safety of your family are up to you and by being prepared and staying aware you can significantly reduce the risk of injury or death from severe weather here in Kansas.

May 6, 2015 Tornado Outbreak (Continued…)

May 6th was an unusual event in which values of Convective-Available-Potential-Energy (CAPE) and 0 to 6 kilometer shear vectors were well below the norm for tornado outbreaks. Overall, 14 tornadoes occurred across the Topeka forecast area, 2 of which were "significant". The first significant tornado occurred across Republic County, where it remained on the ground for over 25 miles. Damage was limited as the tornado remained over mainly rural areas and narrowly missed the town of Scandia, Kansas. However, numerous livestock were killed and an ethanol plant just west of Scandia was heavily damaged. An EF-2 rating was assigned to the tornado with winds near 130 mph. The second tornado had a much shorter duration but was rated an EF-3 rating and winds approaching 160 mph. The greatest damage occurred to a farmstead in which the house was completely wiped from its foundation. For more details regarding this tornado outbreak visit: weather.gov/top/May_6_2015_Tornadoes

Tornado Climatology for the NWS Topeka's County Warning Area (CWA) (continued…)

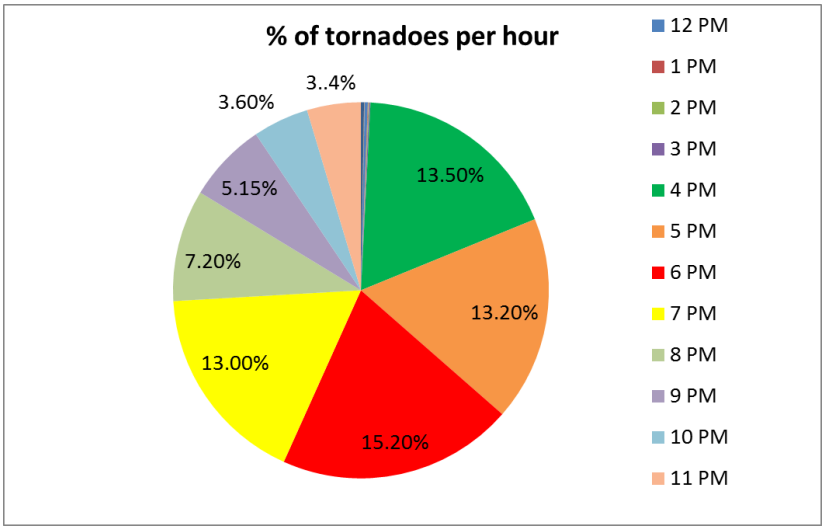


Figure 4

55% of all reported tornadoes across the CWA since 1950 have occurred between 4 PM CST (5 PM CDT) and 7 PM CST (8 PM CDT) as shown by the pie chart labeled Figure 4. The early morning hours were not labeled since they are close to 0 %.

The map (Figure 5) shows the number of tornadoes reported in each county of Topeka's National Weather Service CWA since 1950. The greatest number of tornadoes have occurred in Republic County with 66 tornadoes reported. Anderson County has seen the fewest with only 15. Some differences in the number of tornadoes reported for each county may also depend on population density. The more densely populated counties may have slightly higher reports.

It is difficult to forecast the number of tornadoes that may occur during the spring and summer of 2016. According to NOAA's Climate Prediction Center, the sea surface temperatures across the tropical Pacific during the winter months have been some of the warmest on record which categorizes the ENSO during the winter months as a very strong El Nino. Looking back on winter seasons with strong El Nino, we can only find two years that have had winter months with very strong El Nino leading into the spring and summer. These two years are 1983 and 1998. When comparing these two years we find that 1983 had a total of 12 tornadoes and 1998 had a total of 32 tornadoes. Nearly 70 percent of these tornadoes that occurred were rated F1. There were only two significant tornadoes of F2 and F3 in 1983, with no significant tornadoes reported in 1998. One interesting finding when comparing the previous two very strong El Nino winter was that the first tornado to occur in the CWA in 1983 was May 6th. In 1998 the first tornado did not occur in the CWA until June 8th. So the very Strong El Nino winters leading into the spring may delay the occurrence of tornadoes across northeast Kansas until late spring.

One theory to why very strong El Nino winters may cause a late start to observed tornadoes across northeast Kansas would be due to the strength of the subtropical jet stream across the southern US that have been observed during strong and very strong El Nino winters. Having a stronger subtropical jet with embedded shorter wave troughs may prevent the return of deep Gulf of Mexico moisture into the central plains until later in the spring.

Given the lack of very strong El Nino winters it is difficult to infer if the very strong El Nino winters of 1982-83 and 1997-1998 will have similar outcome for 2016.

The winter season of 1965-66 was ranked as a strong El Nino and the first tornado was not reported until May 11th in the spring of 1966. June of 1966 was a very active month with the F5 Topeka tornado occurring on June 6, 1966.

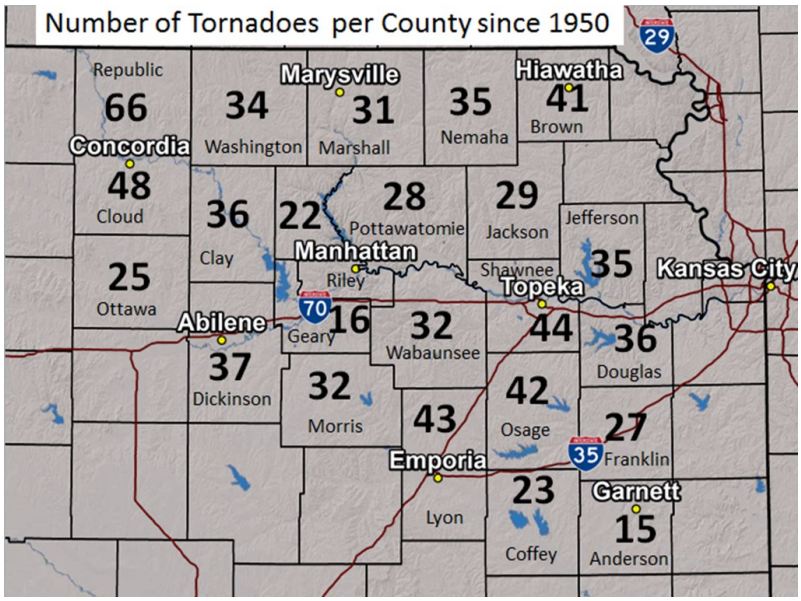


Figure 5

COOP Corner

By Shawn Byrne, Observation Program Leader

Well, Spring is in the air as warm temperatures have returned to the area. I encourage all of the Cooperative Observers to place their inner measuring tubes and funnels back on their main rain gauge housing for the summer season.

We have gotten off to an early start this year! Many of our observer visits have already occurred for 2016, and we will continue to try and finish our visits over the course of the next month or two! Of course, we are available to service your equipment should any of you have issues over the remainder of the year. Please, don't hesitate to contact me should you need anything at 1-800-432-3929 or shawn.byrne@noaa.gov

We have also presented a few Length of Service Awards this year! Congratulations go out to the following individuals for your continued service:

Maurice Heiman of Baileyville, KS, for 35 years of service!

Joleen and Bruce Day of Bushong, KS, for 20 years of service!

Bob Peterson of Lousiville, KS, for 15 years of service!

Dave Hammet of Marysville, KS, for 10 years of Service!

We have several more to award this year, so stay tuned!

We appreciate each and every observer for their dedicated service! The nation's climate program would not be as long or as robust with all of our Cooperative Observers. Thank you to all of you!

Jeff Johnson, Meteorologist in Charge WFO Topeka, presents a Length of Service Award for 35 years to Maurice Heiman of Baileyville, KS.

Jeff Johnson (MIC) presents a Length of Service Award of 10 years to Dave Hammet of the City of Marysville, KS.

Did You Know These Fun Weather Facts?

⇒ The fastest recorded temperature rise was **49 degrees (F) in 2 minutes.** This occurred in Spearfish, SD on 1/22/1943

⇒ The coldest temperature recorded on Earth was a numbing **-128.6 degrees (F)** in Antarctica on 7/21/1983

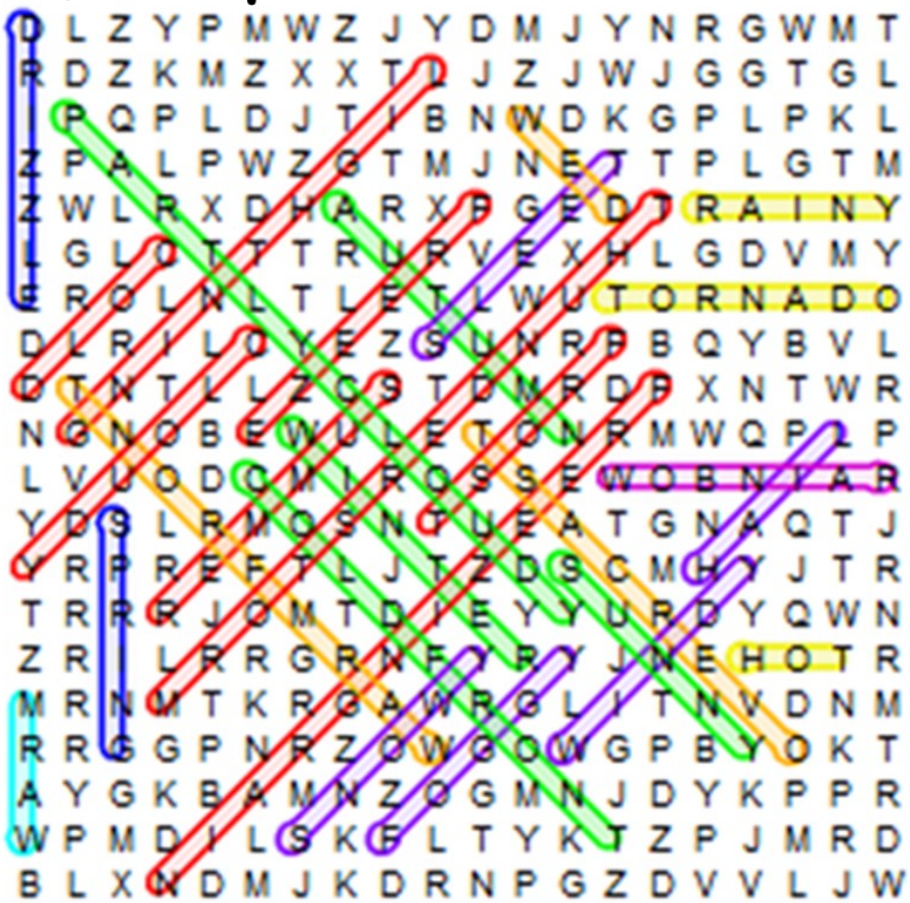
⇒ The greatest recorded one hour rainfall occurred just to our east in Holt, MO. On June 22, 1947, **12.0 inches of rain fell in 42 minutes!**

⇒ Tropical cyclone Denise set the world record for single-day rainfall with **71.9 inches of rain measured in 24 hours** in Cilaos, Reunion in January of 1966.

⇒ In 1971-72, Mt Rainier, WA received **102 feet of snow** and this stands as the record for most snow in a 12-month period.

⇒ The largest diameter hail ever measured fell in Vivian, SD on 7/23/2010. The hailstone was **8.0 inches** in diameter!

Word Search Answers:



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Severe Weather Spotting 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

Time and Date of Event

Location and Duration of Event

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