National Weather Service Dodge City, KS

Wild West Weather

May 2012
Summer Edition

This newsletter was produced by your National Weather Service office in Dodge City, KS. Comments and suggestions can be sent to:

w-ddc.webmaster@noaa.gov

National Weather Service Dodge City can be found on the web at http://weather.gov/ddc.

We are also on Facebook

www.facebook.com/US.NationalWeatherService.DodgeCity.gov

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week.

www.crh.noaa.gov/ddc/?n=nwr

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Jesse Lee and Scott Reiter

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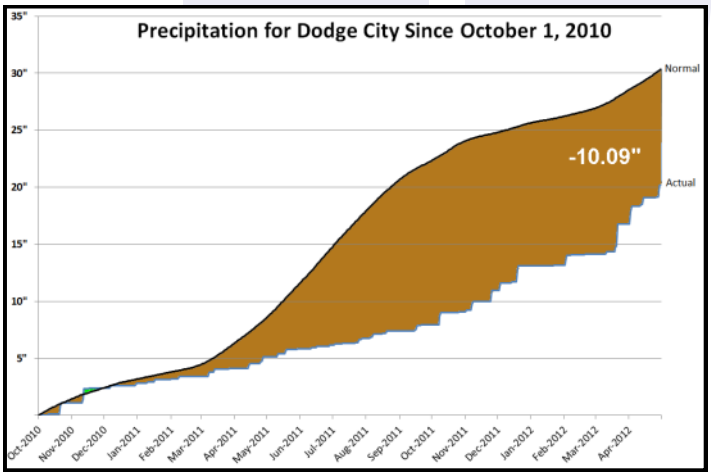
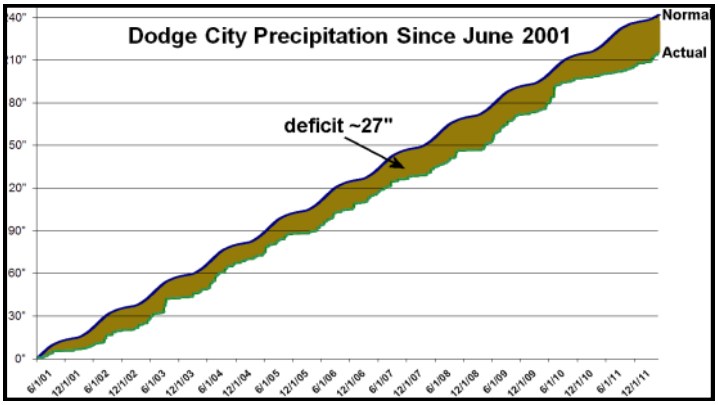
Long Term? Yes, It's Still Dry

By Jeff Hutton (Warning Coordination Meteorologist)

It certainly has been nice having beneficial rains around Kansas this spring after the devastating drought and heat of 2011. The result of the moisture (along with early warm temperatures) has been a significant green-up around the region. Some folks have exclaimed that the drought is over. But is it? The top layers of the earth are certainly moist at most locations but probing into the deeper layers of the ground yields dry conditions.



As a testament, take a look at the precipitation deficit at Dodge City. Since October 1, 2010 there was a 10.09" deficit of moisture as of April 30, 2012. Going all the way back to June of 2001 the deficit was a whopping 27 inches as of the end of April! Similar conditions exist at other locations. If it becomes dry for an extended period then rapid browning will occur as the topsoil moisture is used up by growing vegetation. Fortunately, there does not appear to be an "extended" dry period anticipated, at least at the current time.



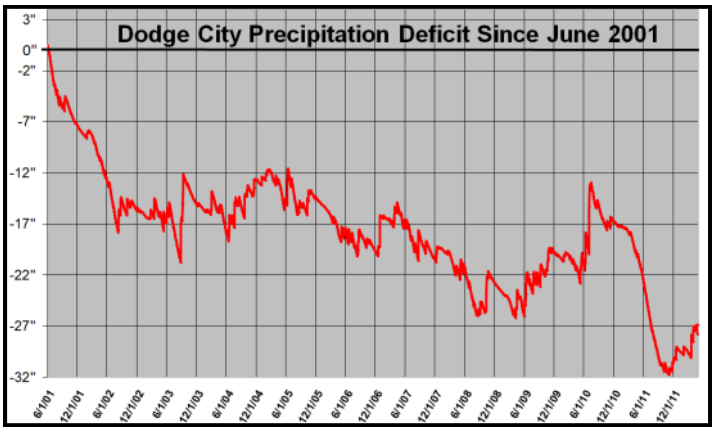


Photo Review of The Greensburg EF5 Tornado - Five Years Later by Jeff Hutton

May 4, 2007 will remain etched in the minds of many people, not just the citizens of Greensburg Kansas as folks from all over the world helped, in part, the rebuilding of the small western Kansas town. It's been five years now and below are some images of the rebuilding and changes that have taken place.

Above: Downtown before the tornado.
Below: Downtown May 2012.

Above: Downtown after the tornado.
Below: Devastated Greensburg High School

Houses now stand in place of the high school

As of May 5th, 2012 the "Big Well" attraction was nearly completed

Cooperative Observers:

This section is dedicated to information directed towards our Cooperative Observing Program

STATION VISITS

We are in the process of finishing up the annual visits and should be done sometime in July. The visits will consist of cleaning the outside temperature unit and/or leveling the rain gauge. If you need any supplies or need equipment moved or worked on, give us a call at 1-800-824-9943. Ask for Jesse Lee or Duane Wolfe. If neither one of us is here please leave a message and we will get back to you. My e-mail address is jesse.lee@noaa.gov and Duane's is duane.wolfe@noaa.gov.

AWARDS

There are several length of service awards that will be presented this year. The observers that will be presented with the awards are:

Nanc Burns of Meade	25 Years
Lance & Gloria Morgan of Alexander	25 Years
W.F. & Paula Greenway of McCracken	25 Years
Darrell Woods of Kalvesta	20 Years
Tim McGonagle of Scott City	20 Years
Swede Holmgren of Ellis	10 Years

NEW OBSERVER

Jeff Delaney is the new cooperative observer at Larned. He took over the duties from Bart Baxter in February. Brian Taylor was the primary observer for Tyree Ag at Kinsley. Beverly Alvarez took over for Brian in April. We welcome Jeff and Beverly to the cooperative observing program.

RAIN GAGES

If you have not done so already, you may put the inner tube back in the rain gauge and place the funnel on top.

PAPERLESS FORMS

The National Climatic Data Center is in the process of making of all cooperative observer forms paperless. By the end of August we will no longer mail the observing forms to the climate center. However, you can still mail the forms to us. What we will do is enter the data into a web site called WxCoder. Once I close a month out on the web site, the climate center will be able to download the data.

WXCODER

For those who do not use the weather coder program, you can use it if you have a computer with internet and want to report your weather data every day. This is a website where you can enter your data and it would allow us to incorporate your station data in our daily report. If you are interested in using this program please give us a call and we will set you up with an account. For those who routinely use the program and still mail in their weather forms, you do not have to mail in the form, as we can download the form at our office. At the end of the month when you are done, check over your data to see if you have any missing temperature, precipitation or snow data entries. If any data are missing, please enter an M.

Meet our Information Technology Officer (ITO) Scott Reiter

Scott was raised in the small farm town of Pocahontas, IA where he developed his love for science and computers. After 4 years in the US Air Force where he served as an electronics technician, Scott decided to pursue a degree in meteorology from the University of Northern Colorado, graduating in 1993. He's held positions from Student Meteorologist at WFO Cheyenne, WY (1992-1993) to Meteorologist Intern in Aberdeen, SD (1993-1996). He advanced to General and Lead Forecaster at WFO Dodge City and served as the "focal point" for many IT related duties. In 2005, Scott had the opportunity to move to the relatively new ITO position and has served in that role since then. In his off duty time, Scott likes to travel to the western US with his family. He loves photography, camping/hiking, and rock hunting with his son.

NWS Dodge City WSR-88D Dual Polarization Upgrade

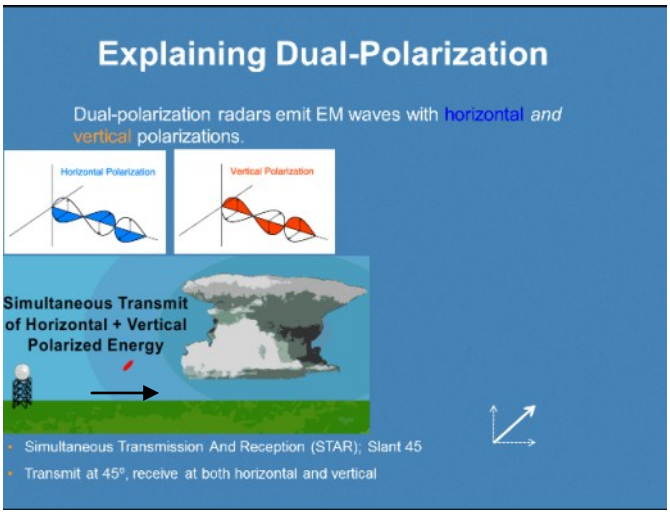
Dual-Pol Benefits on 14 April 2012 Tornado Outbreak by Aaron Johnson

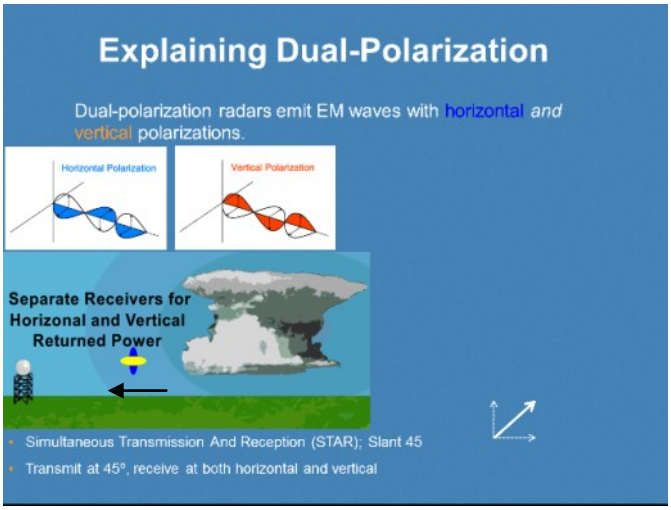
Science and Operations Officer NWS Dodge City KS

During a two-week period starting 3 January 2012, the Dodge City KS WSR-88D Doppler radar underwent a major upgrade to incorporate new technology. This exciting new capability is called dual-polarization, or **dual-pol,** and results in 14 new radar products that enable us to continue providing our suite of high quality products and services to the public. This new technology and data primarily help forecasters identify the type of precipitation that is falling as well as improve rainfall estimates. However, in the case of the 14 April 2012 severe weather outbreak, it also aided in confirmation of a significant tornado.

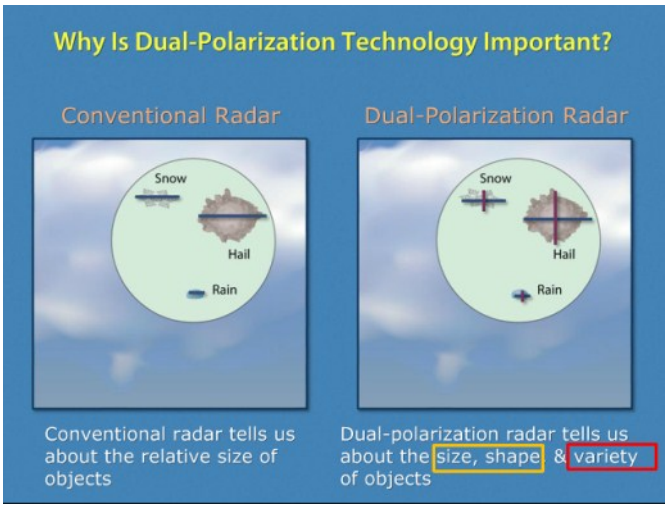
Why Upgrade to Dual-Pol?

Prior to the upgrade the Dodge City KS WSR-88D Doppler radar would transmit and receive pulses of radio waves in a horizontal orientation only. As a result, the radar would only measure the horizontal dimensions of targets (e.g. cloud and precipitation droplets). After the Dual-Pol radar upgrade the radar now transmits and receives pulses in both a horizontal and vertical orientation as shown below.





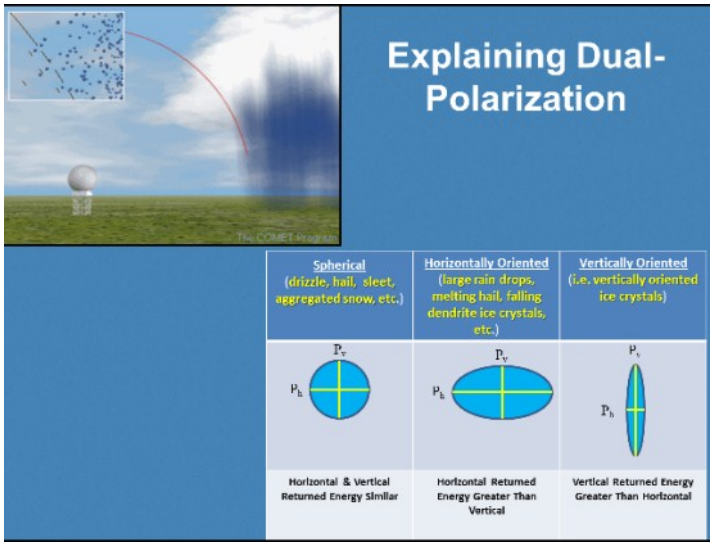
With this Dual-Pol capability , the Dodge City KS WSR-88D radar now measures both the horizontal and vertical dimensions of targets. This allows forecasters to infer not only the relative size of objects as was done with the conventional radar, but the average shape and variety of objects.

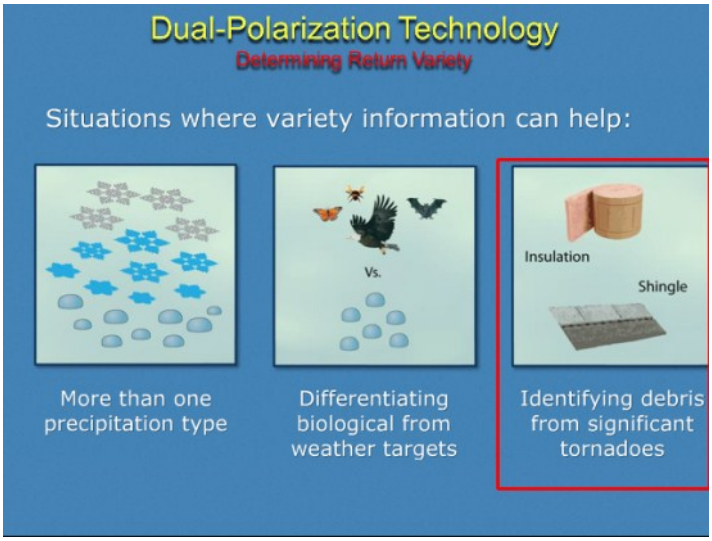


The Benefits of Dual-Pol

Since the radar receives energy from horizontal and vertical pulses, we can obtain better estimates of the size, shape, and variety of targets as shown in the images below. It is expected that this will result in significant improvements in the following areas:

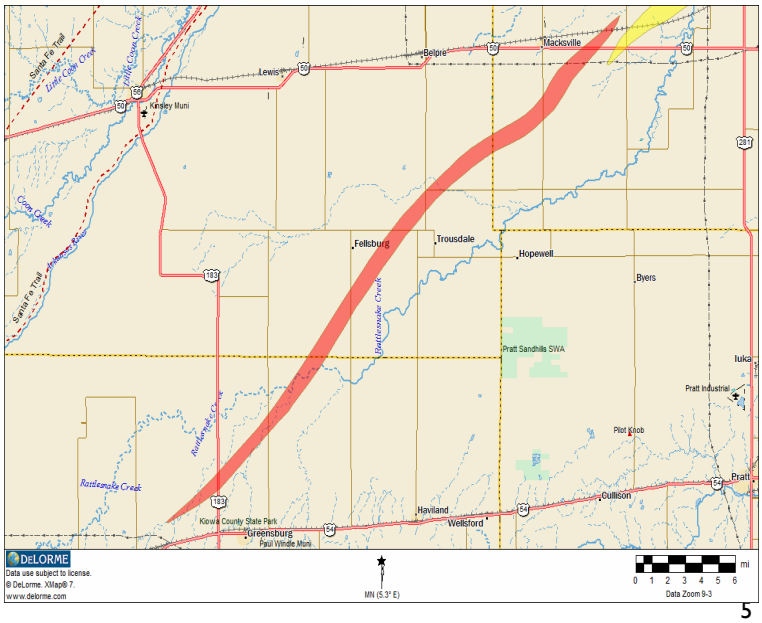
- Better estimation of total precipitation amounts
- Better estimation of the size distribution of hydrometeors (raindrops, snowflakes, hailstones, drizzle)
- Much improved ability to identify areas of extremely heavy rainfall that are closely linked with flash floods
- Improved detection and mitigation of non-weather related radar echoes (chaff, smoke plumes, ground clutter)
- Easier identification of the melting layer (helpful for identifying snow levels in higher terrain)
- Improved ability to classify precipitation type
- Easier identification of strong to violent tornadoes by detection of a Tornado Debris Signatures (TDS).





Dual-Pol Benefits Realized on 14 April 2012 Tornado

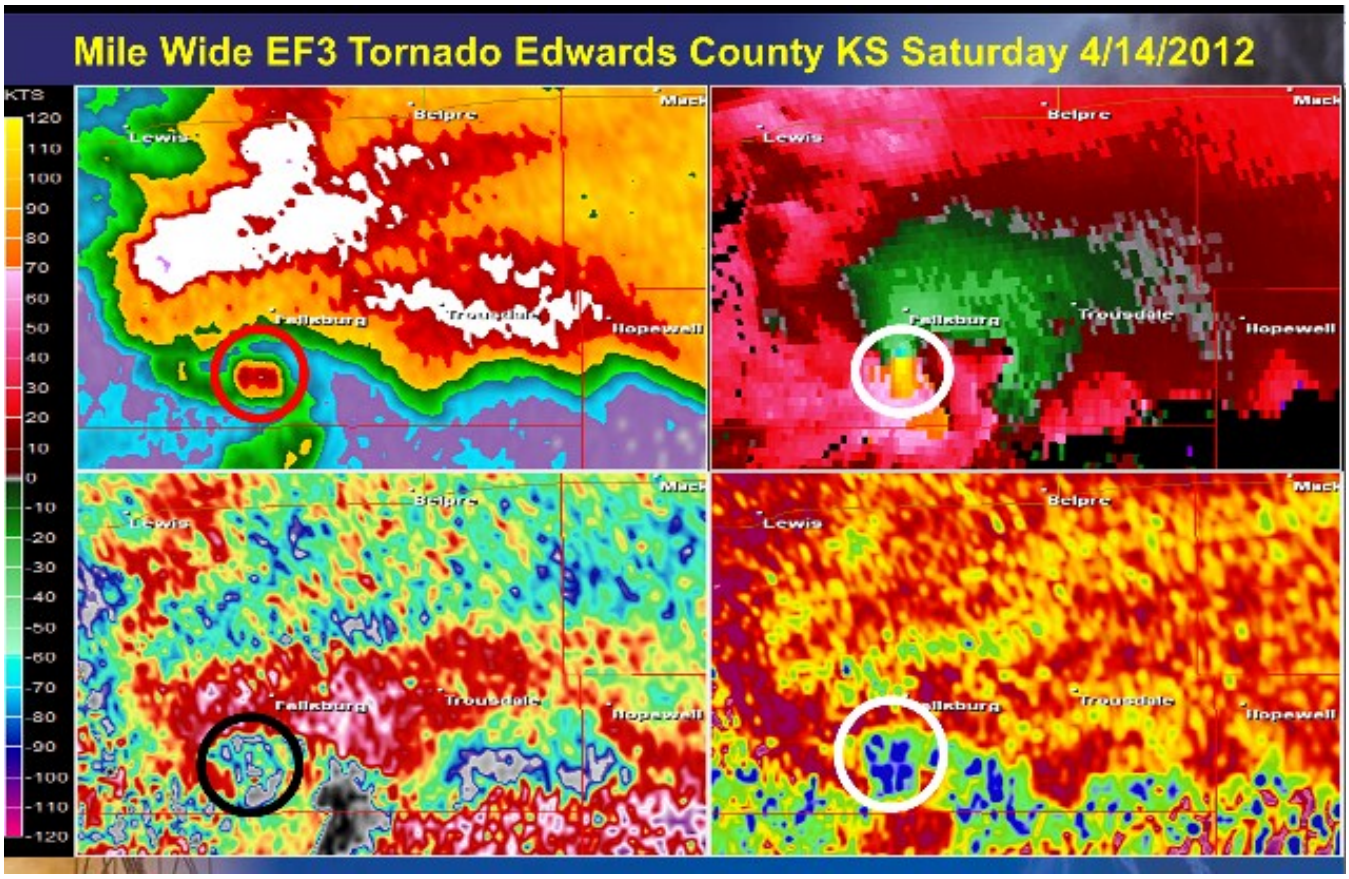
On 14 April 2012, a classic tornado outbreak occurred over portions of Kansas, Oklahoma, and Nebraska. Numerous supercell thunderstorms tracked across the area from late morning into the evening hours. Many of these supercells produced long-track tornadoes including a large EF3 tornado that developed west of Greensburg and traveled across some of the same area that was hit in 2007. The tornado started at 827 PM 4.4 miles west of Greensburg and quickly grew in size. The tornado traveled 38.0 miles and was one mile wide at times. It did significant damage to a few homes, power poles, trees, outbuildings and equipment and pivot irrigation sprinklers (damage path shown in image to the right). This was the first significant tornado event since the Dual-Pol upgrade in January 2012. Further, this event allowed NWS warning meteorologists to test the new capabilities of the Dodge City KS WSR-88D radar as shown on the next page.



Dual-Pol Benefits Realized on 14 April 2012 Tornado

A rotating supercell thunderstorm developed over the northern Texas panhandle during the evening hours of 14 April 2012 and tracked northeast across portions of southwest and south-central Kansas. Preceding tornado development, conventional Doppler velocity products indicated strong low-level rotation, and from this information storm warning meteorologists at the Dodge City NWS determined conditions may support a possible tornado. A tornado warning was then issued 24 minutes before the first report. However, despite strong low-level rotation in Doppler velocity products, numerous storms similar to this one never produce a tornado even though they have identical radar signatures. This uncertainty leaves warning meteorologists unsure if a tornado is occurring with the warned storm and reluctance to use high impact based wording/information until a storm spotter either confirms or refutes the existence of a tornado. Dual-Pol radars provide the capability of differentiating precipitation from non-meteorological objects/debris such as leaves, tree limbs, grass, and other objects that are lofted into the air by a storm. If a non-meteorological object/debris signal occurs in the same area as strong low-level rotation indicated in Doppler velocity products, warning meteorologists can be very confident that a strong to violent tornado is ongoing since the vortex is strong enough to lift debris into the air from objects impacted on the ground.

An excellent example of this capability is shown in the image below from 14 April 2012. The image was taken when the mile wide tornado was tracking across southern Edwards county. The image displays conventional radar reflectivity in the upper left, Doppler velocity in the upper right, and two new Dual-Pol products in the lower 2 panels. The red circled area in the upper left image depicts a unique ball like signature in radar reflectivity that is co-located with strong rotation seen in the white circled area of the Doppler velocity product in the upper right. In the past meteorologists understood that this returned energy could be a tornado debris signature **OR** just large precipitation such as wet hail given the nearby precipitation north of the red circle indicating similar reflected energy. However, the bottom two Dual-Pol products confirm that areas highlighted by a black circle in the lower left and a white circle in the lower right, are NOT precipitation but non-meteorological objects such as leaves, tree limbs, grass, and other objects. Putting this information together with the strong low-level rotation signature in the upper right Doppler velocity image, confirms the existence of a strong to violent tornado BEFORE the first spotter report of this tornado was received at the NWS office in Dodge City! In the case of this event, this additional information provided by the Dual-Pol upgrade allowed NWS meteorologists to issue critical life saving information well ahead of the tornado path. The full benefit of Dual-Pol capability will continue to increase over the coming years as NWS forecasters and research meteorologists gain more real-time expertise.



Fill out this page and place on your fridge or other highly visible area

Severe Weather Safety Worksheet

⇒ **Where is the safest place in the event of severe weather or tornadoes? Hints: Underground and under a sturdy object like the stairwell. If you don't have a basement, go to a bathroom or small closet on the lowest floor and as far away from windows and outside walls as possible. If you are in a mobile home, evacuate to a substantial structure (check with your park management if you don't know.).**

The designated tornado shelter for our home is: _____

_____

⇒ **Do you conduct a tornado drill at home? Hint: Pick a day each year that you and your family will remember and conduct a drill. It's easy and only takes a few minutes.**

What day will you use to conduct your annual tornado drill? _____

_____

⇒ **Now that you know <u>where</u> to go in the event of a tornado, do you know <u>when</u> to go to shelter? We recommend you take an active role in your personal safety and the safety of your family. The sooner you know bad weather is coming the more likely you'll be ready to take action when the time comes.**

1. Each morning, check out the day/week's forecast (NOAA Weather Radio, TV, local radio stations, internet, etc.) and note any mention of severe weather potential
2. Look or listen for follow-up information during the course of the day.
3. Use good judgment! If threatening clouds are moving in, it's probably time to be preparing for action.

Here's some examples of where you can get great forecast and severe weather information:

- Weather Radio: You can get one of these at many electronics retailers or on-line (keyword "All Hazards Radio with Weather Alert"). Weather radios are great because, as long as you have fresh batteries, they will work during a power outage!
- Daily weather forecast: http://www.weather.gov. Just click the map for your area and you will be sent to the nearest National Weather Service (NWS) website.
- Additional information can be found on the NWS Facebook page (ex: http://www.facebook.com/US.NationalWeatherService.DodgeCity.gov
- There are now many services that will send text messages or alerts to cell phones. Although many are not as timely and reliable as Weather Radio, they can work in a pinch.

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National Weather Service Dodge City

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Phone: 620-225-6514
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http://www.weather.gov/ddc

Your National Weather Service 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.

Severe Weather and Snowfall Reporting Only:

1-800-824-9943

Wild West Weather

Photo taken by Gwen Hovoraka near Spearville, KS