

Spotter Newsletter

Fall 2007

Inside this issue:

White, Windy and Wet Spring/
Summer of 2007 3

Spring & Summer, 2007 Proved to be Soaking Sensations for Most of Central, South-Central and Southeast Kansas 5

2007 – A SKY-WARN Success Thank You 7

The National Weather Service Needs Your Reports! 8

Daily Weather Story Unveiled this Past Summer 8

Interested in Providing More Weather Information? Join Co-CoRaHS! 9

Did Soil Moisture And Vegetation Affect This Summer's Weather? 10

Educational Opportunities 11

Science Experiments Now Available On DVD And "YouTube" 12

October 2007

Rain...Rain...Go Away!

By: Janet Spurgeon, Hydrologist

What an active flood season for 2007. I was beginning to think it would never stop raining. It was one flood event after another, starting at the beginning of May and basically going through the beginning of August. During this time period record river flooding was achieved at 7 forecast points across central, south-central and southeast Kansas.



The swollen Fall River one mile south of Fredonia, at crest on the morning of June 30th.

In May, there were two big rainfall events that pushed numerous mainstem rivers into flood. The first event, heavy rainfall occurred the 5th-7th and the next round of intense rains occurred the 23rd-24th.

Record flooding occurred at 3 forecast points in May. On the first flood episode, the Arkansas River at Haven achieved record flooding on the 8th, cresting at 13.08 ft (FS (floodstage)=10 ft). On the second flood event, record flooding took place on the Little Arkansas River at Halstead on the 25th, cresting at 27.22 ft (FS=25 ft), and the Mulberry Creek near Salina on the 24th, cresting at 27.81 ft (FS=24 ft). Flooding

again on the 27th on the Arkansas River at Haven took the gage into **Major flooding** status, cresting at 12.44 ft.

Moderate flooding took place at 10 forecast points. At the beginning of May moderate flooding occurred on the Cottonwood River at Cottonwood Falls; the Neosho River at Erie, Parsons, and Oswego; Mulberry Creek near Salina; the Smoky Hill River near Mentor, and at New Cambria between the 8th and the 10th of the month. Near the end of the month, moderate flooding occurred at Gypsum Creek at Gypsum, and the Smoky Hill River near Mentor and New Cambria between the 24th and the 25th. There were 13 forecast points that crested above flood stage twice in the month...once in the first flood episode at the beginning of the month and then again on the second flood event near the end of the month.

Some of the affects from the record flooding at Haven: farmers reported losing their cattle in the river, 3 miles north of the gage site the levee breached, and numerous roads were washed out in the vicinity of Haven.

From the 1st flood event, the combined high flows from the Smoky Hill River and Mulberry Creek at Salina caused nearly 7 million dollars in flood damage countywide. There were 239 structures which had minor flood damage, ranging from a few inches of water in basements to as much as 6 feet of water in basements. Another 18 structures sustained some structural damage and 9 structures were destroyed. Evacuations took place in the town of New Cambria.

In Hutchinson during the evening hours of May 7th, Cow Creek quickly over-flowed its banks and caused numerous water rescues to be performed. Many roads throughout Reno County were flooded. Damage to public roads, bridges and structures was estimated at 2.5 million dollars.

When the Little Arkansas reached record flood stage at Halstead on the 25th, this forced the community to close all three flood gates.

In Saline County, the 2nd heavy rain event caused widespread flooding for days. Numerous rural and city roads were closed due to high water. The record flooding on the Mulberry Creek on the 24th, resulted in many road closures and evacuations across portions of Salina. The Mulberry Creek looked more like a huge lake than a creek in Salina. The Creek was one mile wide in some places. Mandatory evacuations took place in the communities of Hedville and Bavaria, due to the rapidly rising Mulberry and Spring Creeks.

Once again the rising Smoky Hill River effectively closed all roads leading in and out of New Cambria. Some water rescues occurred across Saline County. Numerous homes and businesses received extensive flood damage, as well as various roads and one bridge across the county.

Four relatively minor flood events occurred in June, but the mother of all floods occurred at the end of June across mainly southeast Kansas. Unprecedented rains occurred over a 5-day period, leading to flooding of epic proportions.

The flooding starting June 28th and lasting into early July will be remembered as one of the most significant and intense areal and river flood events ever across southeast KS. Phenomenal rainfall totals occurred during this period, ranging anywhere from 8 inches, to as much as 21 inches, with the heaviest across southeast Kansas.

River flood warnings were disseminated for 22 forecast points. Within Wichita's service area, flooding occurred at the following forecast points: on the Arkansas River from Derby to Arkansas City; Ninnescah River at Peck and Belle Plaine; Walnut River from Augusta to Arkansas City; Whitewater River at Towanda and Augusta; Chikaskia River near Corbin; the whole expanse of the Verdigris River from Altoona to Coffeyville; Fall River at Fredonia; Cottonwood River near Plymouth; and the whole expanse of the Neosho River from Iola to Oswego.

Major river flooding occurred on the Walnut River at Winfield, cresting at 35.79 ft (FS=18 ft) on July 1st and on the Neosho River: near Chanute cresting at 36.82 ft (FS=23ft) on July 1st; Parsons cresting at 35.05 ft (FS=21 ft) on July 2nd; and Oswego cresting at 30.0 ft (FS=17 ft) on July 2nd. However, Iola on the Neosho River was just 0.10 ft below major flooding levels.

Record flooding occurred at the following 4 forecast points: the Fall River at Fredonia cresting at 41.12 ft (FS=17) on the 30th of June, the Verdigris River: at Independence cresting at 52.4 ft (FS=30 ft) and Coffeyville cresting at 30.7 ft (FS=18 ft) both occurred on July 1st; and the Neosho River near Erie cresting at 40.60 ft (FS=29 ft) on July 2nd. Due to the enormous volume of water in the Verdigris River, the gages at Independence and Coffeyville remained above flood stage for 9 days!

Some of the major impacts due to this flood:

The river overtopped the levees at Erie and Coffeyville. Parts of the levee broke at Erie and Chanute. Officials evacuated parts of Independence, Erie, and Coffeyville. Neodesha was surrounded by water. The cities of Altoona, Fredonia, Elk City, and Independence were without drinking water because water treatment plants were either flooded or without power.

The flooding in Coffeyville, KS caused a major environmental disaster as the Coffeyville Resources Refinery was inundated with flood waters. 71,000 gallons of crude oil spilled into the flood waters, leaving an oily gunk over everything that the oil touched, and contaminating the water for miles.

The only fatality during this massive flooding event occurred in Coffeyville when a gentleman refused to evacuate



71,000 gallons of crude oil spilled into the Verdigris River from the Coffeyville Refinery.

his motel room.

Structures, roads and crop damage were extensive. Preliminary damage assessments for 5 southeast KS counties affected by flooding reveal more than 3,000 homes and businesses have been destroyed or sustained major damage. Here is a preliminary breakdown by county of the number of flood damaged homes and business destroyed or with major damage; in Montgomery County a 1,000; in Wilson County 600; in Elk County 400; and Neosho County 150.

An incalculable number of roads were closed due to high water, and several bridges were either washed out or sustained damage. Thousands of acres of crops sustained severe damage. Thousands of miles of roads were damaged from the flood waters. Evacuations and water rescues were common, as several towns were for a time surrounded and/or engulfed by flood waters. Water became unsafe, as flood waters inundated water and sewage treatment plants. Thousands of residents were without power for an extended period of time. Several counties were declared federal disaster areas. The counties in our warning area included: Allen, Butler, Chautauqua, Cowley, Elk, Greenwood, Labette, Montgomery, Neosho, Wilson, and Woodson. Public and private damages likely exceeded hundreds of millions of dollars, but exact monetary values will be difficult to nearly impossible to determine.

More than 3,000 homes and businesses were damaged or destroyed across 5 southeast Kansas counties.

For the next flood, keep track of high flows on rivers by going to our website at <http://www.weather.gov/wichita> and click on the link "AHPS/River Info." You will be taken to an areal map of our river gage sites. Choose a river gage site to get the latest gage readings and possible forecasts. Also flood warnings are broadcasts on NOAA Weather Radio.

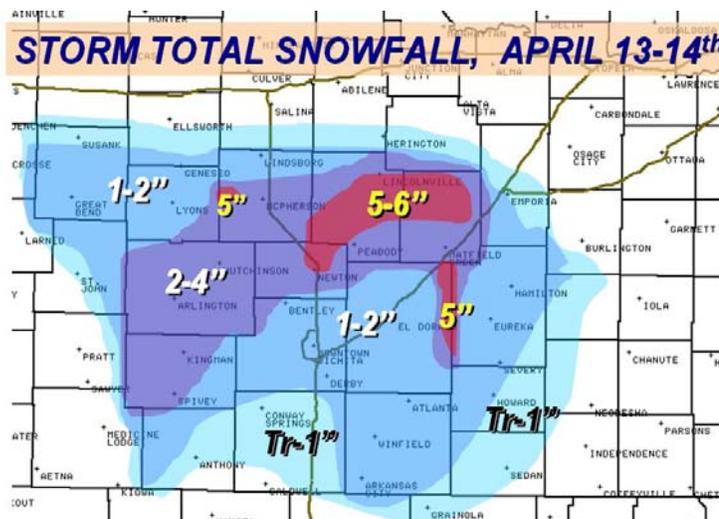
White, Windy and Wet Spring/Summer of 2007

By: Andy Kleinsasser, General Meteorologist

By: Chris Bowman, Meteorologist Intern

Once again, central, south-central and south-east Kansas lived up to its notorious reputation for severe weather in 2007. But instead of the expected high occurrences of tornadoes, large hail and damaging winds, very heavy rainfall and flooding "stole the show." Not to say that tornadoes, large hail and damaging winds didn't occur, because they certainly did, especially during the month of May, and occasionally displayed quite a violent temper. Additionally, heavy snow and well below freezing temperatures affected portions of the area relatively late into the spring months.

While every significant weather event, regardless of magnitude, is treated with the utmost respect and importance by The National Weather Service, only the largest and most noteworthy events will be highlighted in this article. These highlights include (in chronological order): heavy April snowfall and early hard freeze, May 4-6th severe thunderstorms, and May 31-June 1st severe thunderstorms. The major flooding that occurred in May, June and July across portions of the area will be covered in another article.



Heavy April Snowfall and Early Hard Freeze

Early on April 5th, a backdoor cold front pushed southwestward into portions of Central through Southeast Kansas. This front stalled and interacted with an upper level system to develop a rather intense and narrow band of snow, stretching from Russell and Lincoln counties, southeastward across Saline, McPherson and Marion counties, and eventually losing steam across Greenwood and Elk counties. The heaviest accumulations (6 to 8 inches) occurred from southwest

Saline County to southeast Marion County and encompassed the northeast two-thirds McPherson County.

A 2nd powerful spring storm system moved through Kansas from the afternoon of April 13th to the early morning hours of April 14th. A 5 to 6-inch swath of heavy, wet snow blanketed northern Harvey through Chase Counties. Lesser amounts on the order of 2 to 4 inches blanketed areas from Kingman through Reno and McPherson Counties. 1 to 2 inches fell across Sedgwick County with Wichita's Mid-Continent Airport setting a record for the latest measurable snowfall.

Between the two storms, several locations measured over 8 inches, and recorded their snowiest April on record. A few notable amounts include 11.3 inches at Hillsboro, 10.5 inches at McPherson, 10 inches at Cassoday, 10 inches at Marion Lake, 9.4 inches at Lindsborg, and 8.1 inches at Newton.

Furthermore, an unwelcomed late season Arctic blast plummeted nighttime temperatures into the 20s across Central, South Central and Southeast Kansas April 4th through the 8th. Although readings rose above freezing during the daytime hours, the prolonged and bitter cold nighttime temperatures wreaked havoc on Kansas crops. The winter wheat crop was in the jointing stage of development, and thus suffered the most damage. Strangely, some fields received negligible freeze damage, while an adjacent field sustained extensive damage. Central Kansas crops, traditionally known as the heart of Kansas wheat production, felt the brunt of the freeze. Winter wheat crop damage from the Easter Weekend freeze is unknown, but estimates place it at hundreds of millions of dollars.



Destroyed grain silos in Claflin from May 4th-6th severe thunderstorms.

May 4th-6th Severe Thunderstorms

A stalled dryline across western and central Kansas produced several bouts of severe thunderstorms from very late in the day on May 4th through late in the day on May 6th, including the devastating Greensburg tornado. Twenty tornadoes occurred across Barton, Rice, Russell, Lincoln,



More damage near Claflin from May 4th-6th severe thunderstorms.

Harper and Reno counties over the 3 day blight, as well as countless large hail and damaging wind reports. Fortunately, the tornadoes were rated as EF1 or EF0, meaning significant damage to well built structures did not occur. Most of the tornado and wind damage was limited to trees, outbuildings, barns, sheds and power lines. Well built structures such as homes and businesses did receive some damage, but was for the most part relatively minor. Barton County was hit particularly hard a few nights in a row, where 500 power poles including several large transmission lines were downed, causing at least 4.5 million dollars in damage. Additionally, a tornado destroyed five 100,000 bushel grain silos in Claflin, with two of them being flung onto the local Dillon's grocery store. Near the intersection of Highway 56 and 156, another tornado damaged several center pivot irrigation devices, and also damaged a gasoline pipeline terminal and specialized trailer company near the intersection of U.S. 56 and K-156.

Portions of Ellsworth, Rice, Russell and Lincoln Counties were also hit hard by tornadoes and/or damaging straight-line winds.

May 31st –June 1st Severe Thunderstorms

A strong upper level disturbance approaching from the northwest spawned a powerful squall line during the evening hours of May 31st. The squall line moved east to southeast across portions of central and south-central Kansas, producing large hail and high winds in its path. Extreme straight-line winds on the order of 90 to 100 mph ravaged the community of Moundridge in southeast McPherson County, inflicting a narrow swath of substantial damage. Three businesses and one residence received major damage. Numerous trees were uprooted across town. The damage path was relatively narrow, indicating an intense channel microburst. Three individuals received minor injuries.

As the first squall line dissipated around midnight, a 2nd powerful squall line developed over south-central Kansas and moved east, producing high winds across portions of Sumner and Cowley Counties. Damage was rather widespread in and around Arkansas

City, where damaging winds downed numerous trees and power lines/poles, and inflicted roof damage to several homes and businesses. Several grave stones at the local cemetery were damaged and 69 power poles and 24 transformers were damaged or destroyed across the Arkansas City area. In the vicinity of Geuda Springs, numerous trees and power poles/lines were downed, and several buildings and residences received major damage. The strong winds ripped off the roof of an old school gymnasium.



Damage in Moundridge from May 31st severe thunderstorms.

Spring & Summer, 2007 Proved to be Soaking Sensations for Most of Central, South-Central and Southeast Kansas

By: Eric Schminke, General Meteorologist

The 6-month period of March-August, 2007 proved to be a soaking sensation for most of South-Central and Southeast Kansas. In Southeast Kansas, record-setting rainfall resulted in major flooding in May and June. This subject is discussed in great detail in the severe weather segment of this Storm Spotter newsletter.

In Chanute, **14.09 inches of rain** were measured at Martin Johnson Airport from **March 1st-May 31st**. However, such rainfall proved only to 'wet' Chanute's appetite for rainfall, for in June, a staggering **18.13 inches of rain** drenched the town, swamping the previous record wettest June, **12.05 inches in 1942**, by an amazing **6.08 inches**. Of

Chanute experienced its 4th wettest summer on record, measuring 22.75 inches.

this record-swamping total, **a thirst-quenching 13.56 inches, 75% of the June total, occurred from the 26th to the 30th**. From the **28th to the 30th**, the spigot ran full-throttle, when **11.60 inches fell, an all-time record for a 3-day total rainfall for Chanute,**

In July and August, the rains eased up considerably, with **3.41 inches** and **1.21 inches**, respectively, but thanks to June's stupendous soaking, 2007 ranked as the **4th wettest summer on record with a 3-month total of 22.75 inches**. When one adds the 3-month total for March 1st to May 31st, the total 6-month rainfall for Chanute during the spring and summer of 2007 is **36.84 inches, an incredible 11.0 inches above the normal of 25.84 inches for the 6-month period. This makes 2007 the 5th wettest spring-summer period on record for Chanute.**

As stupefying as Chanute's total rainfall was for the month of June, it was greatly overshadowed by rainfall received in neighboring Southeast Kansas counties; most notably, Greenwood, Elk, Chautauqua, Wilson, and Montgomery

counties. Several towns in these three counties were inundated by monthly rainfall that ventured into the **20 to 26 inch range; some 500 percent of normal**. The towns that sailed into the “uncharted waters” were:

June Rainfall:

Fall River (Greenwood County): 26.04

Grenola (Elk County): 23.25

Cambridge (Cowley County): 23.17

Fredonia (Wilson County): 22.81

Longton (Elk County): 22.19

Cedar Vale (Chautauqua County): 21.95

Howard (Elk County): 21.49

Although not nearly as dramatic as the rainfall received in the towns mentioned above, June, 2007 none-the-less

Wichita experienced its 3rd wettest March on record, measuring 5.60 inches.

proved to be quite a gem for Wichita as well. The Air Capital was doused with **8.53 inches of rain, their 10th wettest June on record. This total was 4.28 inches above normal for the month.** In fact, the 6-month period of March 1st to August 31st

proved to be a soaker, with **28.6 inches of rain measured at Wichita’s Mid-Continent Airport.** This is an amazing **8.66 inches above normal, making 2007 the 5th wettest March-August** on record in Wichita’s 119-year climate history. No doubt, June proved to be the greatest contributor to this climatic accomplishment. Spring arrived in a monsoonal mood with **5.60 inches of rain measured in March, the 3rd wettest March on record.**

What is surprising is that despite the exceptional contributions to the excessive rainfall by March and June, neither Spring nor Summer, 2007 was able to crack the Top-10 Wettest Springs or Summers on record for Wichita, although it was close in both cases. During the meteorological spring, which runs from March 1st-May 31st, **12.41 inches of rain** were measured, while **16.19 inches** were measured during meteorological summer, which encompasses June 1st-August 31st. Therefore the “password” to such a wet 6-month period was **consistency.**

Salina experienced its wettest spring on record, measuring 23.25 inches, two-thirds of which occurred in May.

For Salina, 2007 proved to be their wettest spring on record with **23.25 inches** measured at Salina Municipal Airport. The primary reason 2007 claimed to the top spot was due to a record-setting rainfall that occurred in May, when a **colossal 15.96 inches** swamped the city, **69% of the spring total.** However, the faucet was turned off for most of the summer, when 4.38 inches of rain were measured during the 3-month period.

Atmospheric mayhem hit Hutchinson in May, when **13.70 inches of rain** swamped the city, a record for the month of May. Of this total, **7.49 inches** drenched the city on the 23rd to set yet another record, this time for greatest rainfall on a given calendar day.

From a temperature standpoint, the most newsworthy event occurred when Old Man Winter decided to pay Kansas an unwelcome visit Easter Weekend from April 5th to the 8th. An Arctic Front invaded the Great Plains, plunging night-time temperatures into the upper teens in Russell and Salina, where lows of 17 and 19 respectively occurred on the 7th. On the 5th and 6th, Russell’s high temperature barely reached freezing, with highs of 32 and 33, respectively. In South-Central and Southeast Kansas, low temperatures on the 7th and 8th tumbled into the lower 20s. Such bone-chilling temperatures had a devastating effect on crops, especially in Central Kansas which is considered to be the heart of the Kansas wheat crop.

In summation, the spring and summer of 2007 can best be described as being much above normal on rainfall across South-Central and Southeast Kansas, with the spring starting on a bitterly cold note Easter Weekend. We shall see what surprises the fall and winter of 2007-2008 have concealed for us.

Hutchinson experienced its wettest May on record, measuring 13.70 inches, over half of which occurred on the 23rd.

night-time temperatures into the upper teens in Russell and Salina, where lows of 17 and 19 respectively occurred on the 7th. On the 5th and 6th, Russell’s high temperature barely reached freezing, with highs of 32 and 33, respectively. In South-Central and Southeast Kansas, low temperatures on the 7th and 8th tumbled into the lower 20s. Such bone-chilling temperatures had a devastating effect on crops, especially in Central Kansas which is considered to be the heart of the Kansas wheat crop.

2007 – A SKYWARN Success Thank You

By: Dick Elder, Meteorologist-In-Charge

2007 will be a year remembered for the memorable weather events that have occurred all through the United States. Nation-wide we have seen Heat Waves and Drought, along with massive wild fires through the west and southeast. Flooding and severe storms across the nation's heartland and into the northeast. Closer to home, across Central and Southeast Kansas, a quick rundown of what we have experienced:

- **Above Normal Snowfall. 18.3 inches at Wichita (Normal 16.7 Inches), with higher amounts in southeast Kansas.**
- **Late Season Freeze resulting in \$100 million + in crop damage (April 4-8)**
- **32 Tornado Touchdowns. Most Active dates May 4-6th. Yearly Average 18.**
- **20-25+” of rain fell in parts of Southeast Kansas in June alone.**
- **86 Reports of Flash Flooding.**
- **7 of our 18 Main-Stem Rivers had All-Time Record Flood Levels**
- **Every County except Marion in our CWA had at least one Federal Disaster Proclamation signed.**

Through all of this, only one fatality and 3 injuries (1 death and 2 injuries flood related, 1 injury snow. Why were the casualties so low? It's very simple; People were aware of the risk and took the proper precautions to protect themselves. That awareness came from you, our SKYWARN Spotters.

Throughout the year you all have went above and beyond to provide real-time information so we could keep people informed. Sherry Weir, Randy Wing and Jim Enix took over late last year with heading up the SKYWARN Program. They have done an excellent job of further organizing that group and stressing to them that spotting weather is just not confined to tornadoes. We certainly put that to the test this year when they were instrumental passing

Through timely reports and observations, SKY-WARN spotters and other trained volunteers were instrumental in helping save lives during the many natural disasters that struck the region in 2007.

on snowfall amounts, rainfall reports, high water observations, along with the reports of tornadoes, high winds and hail.

The spotters that report directly to the county Emergency Managers, then that is relayed to us, again that information has been so vital in our warning decision process. As we all know, in most counties, the Emergency Manager or local Fire Chief is the one that sounds the outdoor warning devices. This warning device is still very effective and lives continue to be saved because of your actions.

This spring we initiated an on-line chat capability between our office and the television Meteorologists. May 4th, the night of the Greensburg Tornado, this was a vital communication link. Storm chasers that report to the TV folks; that information was coming directly into our office, then we in-turn were passing that on to the Dodge City Office. That information assisted them in their warning decisions. Following that event, the Dodge City and Goodland Offices have now set up similar chat capabilities with our media partners.

Lastly, as we think about our COOP Observers, we typically think of them as the folks that call in rainfall each morning and that's about it. That certainly is something they do, but did you know that many of them are also the ones that go out and manually take river readings? Taking rainfall and river readings is not a big deal on normal days, but during times of torrential rain and flooding it can be down right dangerous. Here are but a few examples of what some of these folks did to get the information to us.

Spotting weather is not just confined to tornadoes and severe thunderstorms—it also includes reporting snowfall and rainfall amounts, sleet and/or freezing rain, and high-water observations.

At Fredonia, KS, the EMS station crew takes the observations. On June 30th, they called in at 6:00 am rather than their normal reporting time of 8:00 am, just to let us know that had received 10 inches of rain. We immediately got this information out which gave legitimacy to the River Forecast Center, TV stations and everybody else that something big was happening. They called again

at 8:00 am to let us know their 24 hour rainfall was 11.76 inches!!

At Erie 2 SW, Mr. Jim Kinne is our River Observer. On July 2nd, when the Neosho River reached its all time record crest of 40.6 feet, flood stage is 29 feet; the road to the bridge where the gauge is was underwater. Jim utilized a

county boat to get to the gauge to get those readings taken and to us.

At Independence, personnel at the Water Plant are our COOP Observers. River readings on the Verdigris are typically done by an automated gauge. On July 1st, the automated gauge quit working. Water Plant employees looked at the river forecast we had provided, based off the automated gauge reading before it went out of service. They compared this to the Staff Gauge at their location that serves as the back-up observation site and noticed the river was rising higher and faster than forecast. They got this information to us and we in-turn were able to get updated forecasts out that proved to be very accurate in a timely manner. Ultimately, the Verdigris at Independence crested at an all-time high of 52.40 feet; the flood stage is 30 feet.

At Coffeyville, personnel at the Water Plant are our observers. As all-time record flooding was evolving there, they were calling in river readings to us about every 30 minutes to keep us apprized on the river levels. With the problems that were occurring in Coffeyville, we were getting many calls from local, state and federal officials, the media and concerned citizens on what was happening and expected. The information the Water Plant provided was vital and greatly appreciated. At Coffeyville the Verdigris River reached an all-time high of 30.7 feet, flood stage is 18 feet.

Margaret Mead once said; "Never believe that a few caring people can't change the world. For, indeed, that's all who ever have." I don't know about changing the world. I do know that our SKYWARN Community and their care and dedication to reporting accurate and timely weather information made a difference. Thank You for your efforts. Together, we made a difference.

The National Weather Service Needs Your Reports!

By: Chance Hayes, Warning Coordination Meteorologist

When was the last time you actually called in a report to the National Weather Service? For many of you, you probably can't even remember. Well, I am hoping that you take the opportunity to renew your interest in being a volunteer storm spotter for us at the National Weather Service. Many of you have gotten calls from our office wanting to know what type of weather is occurring at your location. Well, to be honest with you, by the time we call, the event may have already occurred. That is why we need you to be proactive in reporting hazardous weather. The quicker we can get the information, the better we can serve the fine folks of Kansas.

**Reporting Hotline
1-800-367-5736**

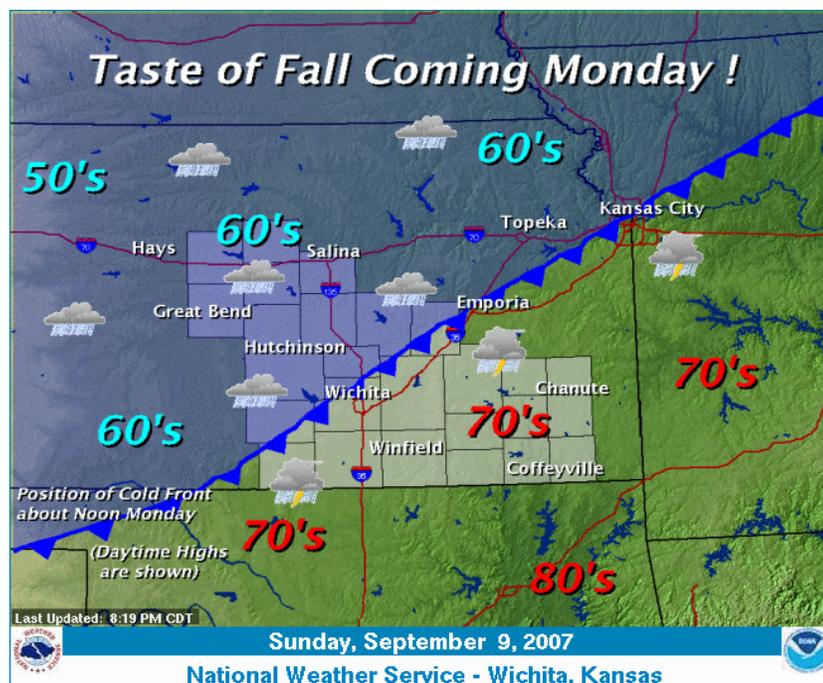
Winter precipitation in the form of snow and ice is just as important as large hail, damaging winds, and tornadoes. It would be safe to say that winter precipitation indirectly produces more damage, injuries, and fatalities each year than those produced by thunderstorms. For this reason, it is extremely important for you to call our office to tell us how much snow has fallen or if the roads have be-

come covered with ice. Your information will help us in our process of notifying the public where the hazards are located. The more people we can keep off of the roads in a winter event, the safer it will be. So the next time you get snow or ice, give us a call to let us know how much you received. Thank you!

Daily Weather Story Unveiled this Past Summer

By: Kevin Darmofal, Lead Meteorologist

All National Weather Service offices in the Central Region began issuing a Daily Weather Story this past June. This graphical product is routinely issued once each day, by 8am, and highlights the most significant weather that will affect the local and regional area during the upcoming seven days. This might include a potential for severe weather, a snow storm, extreme heat or cold, or extreme fire danger, etc. It might also focus on a big change in the weather or an upcoming holiday, so you can better plan your travel or events based on the expected weather. You can access the Daily Weather Story from the home page of our internet site at <http://www.weather.gov/wichita> then click on the "Weather Story" link located in the Top News of the Day section. The direct web address is <http://www.crh.noaa.gov/wxstory.php?site=ict>.



Daily Weather Story example:

“The first taste of Fall-like weather will arrive on Monday, as a strong cold front moves across the area. Plenty of clouds and scattered showers will help keep temperatures in the cool 50s and 60s, from Nebraska into northern and western Kansas. There will be a chance of thunderstorms in the warmer air just ahead of the front, with high temperatures in the 70s and 80s for one more day, from southeast Kansas across much of Missouri, Oklahoma, and northwest Arkansas.”

Interested in Providing More Weather Information? Join CoCoRaHS!

By: Chance Hayes, Warning Coordination Meteorologist

We at the National Weather Service office in Wichita, KS would like to offer you an opportunity to provide more weather information for your location. **CoCoRaHS** is an acronym for the Community Collaborative Rain, Hail and Snow Network. CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow). The focus for this program is to provide the highest quality data for natural resource, education and research applications. One of the main goals is to increase the density of precipitation data available throughout the country by encouraging volunteer weather observing. **At this time, we are only looking for individuals to report daily precipitation amounts.**

The network originated in 1998 with the Colorado Climate Center at Colorado State University. Since then, CoCoRaHS has expanded rapidly, with over 2,500 observers in twelve states. This is a community project. Everyone can help, young, old, and in-between. The only requirements are an enthusiasm for watching and reporting weather conditions, and access to the internet. CoCoRaHS volunteers take measurements of precipitation from as many locations as

CoCoRaHS needs your daily precipitation reports!

To join, go to <http://www.cocorahs.org>.

possible. These precipitation reports are then recorded on the website www.cocorahs.org. The data are then displayed and organized for many end users to analyze and apply to daily situations ranging from water resource analysis and severe

storm warnings to neighbors comparing how much rain fell in their backyards. A handful of CoCoRaHS data users include: The National Weather Service, other meteorologists, hydrologists, emergency managers, city utilities (water supply, water conservation, storm water), insurance adjusters, USDA, engineers, mosquito control, ranchers and farmers, outdoor & recreation interests, teachers, students, and neighbors in the community. By providing daily observations, volunteers can help fill a piece of the weather puzzle that affects many across your area. If you are willing and able to help and are interested in joining, you can go to the CoCoRaHS website <http://www.cocorahs.org> and click on the **Join Co-**

CoRaHS link.

Did Soil Moisture And Vegetation Affect This Summer's Weather?

By: Rob Cox, Lead Meteorologist

As most of you know, it was a very wet spring and summer across the area. Not only did the rain impact those who worked outdoors or those who have outdoor interests, it affected temperatures and humidity levels. In fact, the temperature never reached or exceeded 100 degrees until the first week of August. This is very unusual for this time of the year, because on average the temperature will usually exceed 100 degrees 5 times before August. Why was the temperature cooler? A couple of possible explanations for this will be explained below.

Soil is made up of several different types. This article will only mention three types; Sand, Clay and Loam, but they are one of the most common types found in central and south-east Kansas. See Figure 1.

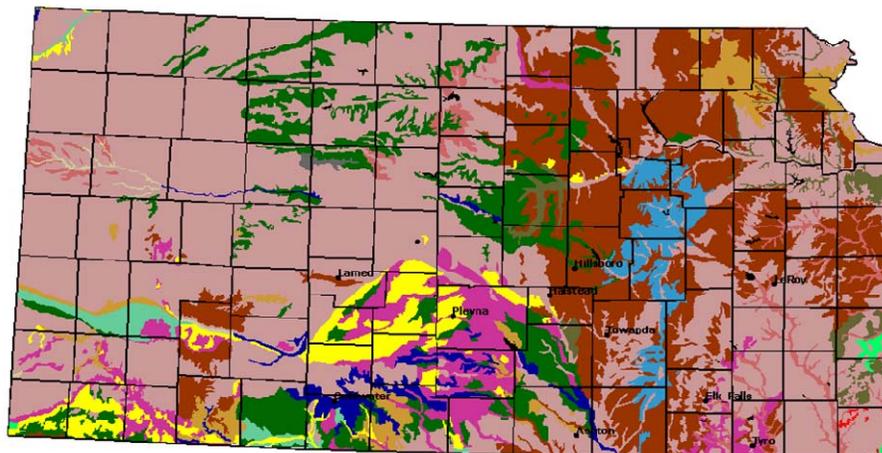
Sandy soil is not very porous, which means that most of the moisture will tend to runoff rather than absorb. As a result, temperatures will tend to warm up faster over Sandy soils and slower over non-sandy soils. On the opposite side of the spectrum, clay soils are much more porous and will tend to absorb more moisture and be slower to warm up. Meanwhile, loamy soils are in between sandy and clay soils with regards to its porosity, which means they will not dry out as fast as sandy, but will not absorb as much as clay. During the months of June and July, the soil moisture anomalies were well above normal which could explain one reason why the temperatures were cooler than normal. See Figure 2.

Believe it or not, farmers can play a role in some local effects on temperature and humidity. In this part of the country, wheat is the leading crop producer. Winter wheat is usually planted around November and starts growing during the early spring. The wheat is then usually harvested during the months of May and June. During the growth period of this crop, the plant develops a stomata on its leaves. The stomata is the part of the plant that takes in CO₂ from the atmosphere and releases moisture. If the soil conditions are relatively moist during the growth period, the moisture will

flow much more freely than when conditions are dry. The rate of this moisture flow is called the transpiration rate. One interesting note about the wheat stomata is that it closes at night and opens during the day. Therefore, if soil conditions are very moist then this will cause an increase in the dewpoints during the day, which will make things much more uncomfortable. However, in turn when you add moisture to the atmosphere, it will tend to be cooler, because it is much more difficult to heat up a moist air mass as opposed to a dry one, because of latent heat effects. What is latent heat you may ask? To put it simply, this happens when you sweat. On a hot, dry day, your body will generate heat, which will cause you to sweat. If the atmosphere is dry, your sweat will evaporate, which will tend to cool you off. The term "latent" means delayed or inactive, so when you say latent

Strangely, the temperature didn't reach 100 degrees until the first week in August. The very wet spring/summer months was likely a big contributor to this feat.

Kansas Soil Texture



Clay	Very Fine Sandy Loam	Stony-Silt Loam
Cobbly-Loam	Loam Fine Sand	Loam
Clay Loam	Loamy Sand	Gravelly-Silty Clay Loam
Very Cherty-Silt Loam	Silty Clay Loam	Silty Clay
Flaggy-Silt Loam	Silt Loam	Stony-Silty Clay Loam
Stony-Fine Sandy Loam	Sandy Loam	Shaly-Silty Clay Loam
Fine Sandy Loam	Stony-Clay Loam	Unclassified
Gravelly Loam	Fine Sand	
Gravelly-Sandy Loam	Stony-Loam	

Data Source: STATSGO
Map by A. Cialella 6/96

Figure 1. Soil composition across Kansas.

heat it means delayed heat. Why is it delayed? It will first heat up the water and cause it to evaporate before the atmosphere heats up.

Corn is another common crop that can really play a role on the weather. The corn crop usually grows during the months of May through July, and is harvested in July or August. The one interesting note on this crop is that the stomata stays open all the time, which means the moisture is moving through the plant on a continuous basis if the soil is moist. Therefore, your relative humidity will tend to be higher over this cropland than the wheat crop.

On the opposite side of the spectrum, if your vegetation is drier than normal or has been harvested, then the transpiration rates will be lower, which will favor temperatures a few degrees higher and lower relative humidity. This occurred in August when temperatures finally went above the century mark.

Of course, soil moisture and vegetation was not the sole impact of why conditions were cooler and more humid this summer, but it does play its most pronounced affect when a surface high pressure system is in place along with a light wind.

Meteorologists are continuing to investigate the effects of soil moisture and vegetation and how much of a role they play during the severe weather season, fog forecasting etc, etc. Stay tuned.

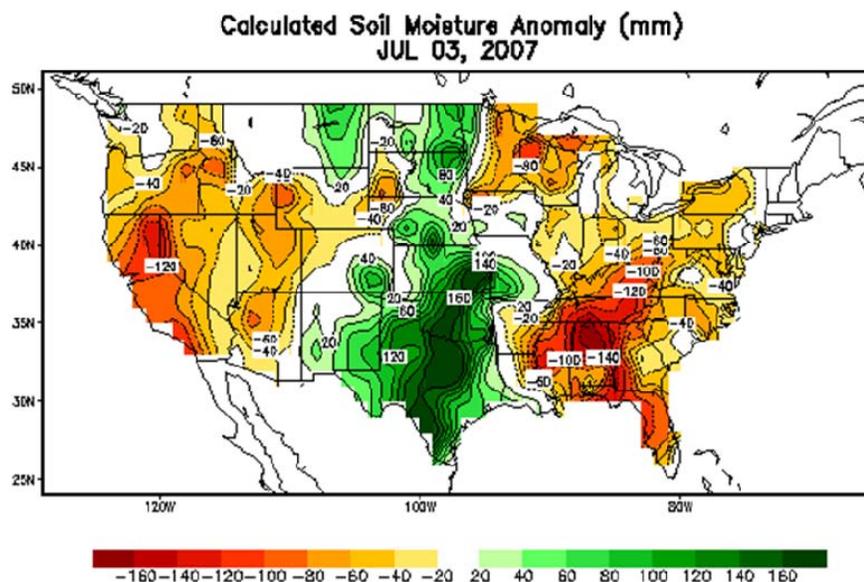


Figure 2. Notice the high soil moisture anomalies over the central and southern plains—a direct result of the heavy rainfall received during the spring and summer months.

Educational Opportunities

By: Chance Hayes, Warning Coordination Meteorologist

The National Weather Service Office in Wichita, KS, strives to educate the public (both children and adults) on all aspects of Weather Safety such as Tornadoes, Thunderstorms, Lightning, and Flash Floods. Some of the Outreach Opportunities we offer at no charge to the public are:

1. Weather Presentations with dramatic video and safety guidelines for different age groups.
2. Safety Fairs in malls and other locations.
3. Career and Science Fairs at schools.
4. Businesses and Industries.

If interested, contact Gloria Dill at (316) 942-8483, Ext. 221 or Chance Hayes at Ext. 726.

Science Experiments Now Available On DVD And “YouTube”

By: Chance Hayes, Warning Coordination Meteorologist

If you want to know how the atmosphere works, you can now view some of this information through science experiments on a DVD or at <http://www.youtube.com>. These science experiments demonstrate pressure, how clouds are formed, static electricity, and how tornadoes develop. We developed six experiments that can be used in a classroom or at home. However, we urge teachers, parents or guardians to play a role in supervising these experiments, since they involve fire and boiling water. Our YouTube ID is “NWSICT.”

If you would like more information about these experiments, go to the following web site: <http://www.weather.gov/wichita> and then click on Weather DVD's. You may also contact Chance Hayes at Chance.Hayes@noaa.gov to receive a copy of this DVD. Unfortunately, the DVDs are only available for delivery to the residents of Kansas.

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“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.”