The Natural State Scribe

Summer 2007

A few words from the editor

By the time this edition of the Scribe hit the streets, the calendar is telling us summer is almost done. It seems the heat and humidity we are all familiar with in Arkansas lagged a month or so behind this year but the true dog days of summer now seem to be upon us. Not only do we have our usual severe weather concerns to deal with, we must also be aware of the threat that heat can bring. Heat-related concerns not only include ourselves, but our animals as well. Heat-related illnesses often strike swiftly and with little advanced warning. This edition of the Scribe will hopefully bring to light the problems excessive heat can bring along with the usual assortment of what I hopeare interesting tidbits about your National Weather Service. As always, feedback is appreciated in both a good and not so good format. Here is hoping you keep cool...

Joe Goudsward- Editor

IMET Update

Joe Goudsward

One of the many hats I wear at the Little Rock NWS office is that of Incident Meteorologist or IMET. The IMET has to be able to go on a moment's notice to any place in the country to provide on site weather support for anything from oil spills to wildfires.

Some of the equipment that we used to pack up was a satellite dish that weighed well over 100 lbs and was often an adventure to bring on airplanes. The dishes have been replaced by a satellite receiver that is about the size of a lap top computer. Weighing in at a little over 6 lbs, the new receiver can be carried on airplanes and allows me to get on the Internet in a matter of minutes to provide live weather support. The joys of technology!

Autumn begins September 23 at 4:51 a.m. Central Time.

"There is really no such thing as bad weather, only different kinds of good weather"

John Ruskin

"Some people are weather wise, but most are otherwise."

Benjamin Franklin

Inside this issue:

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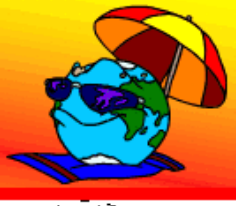
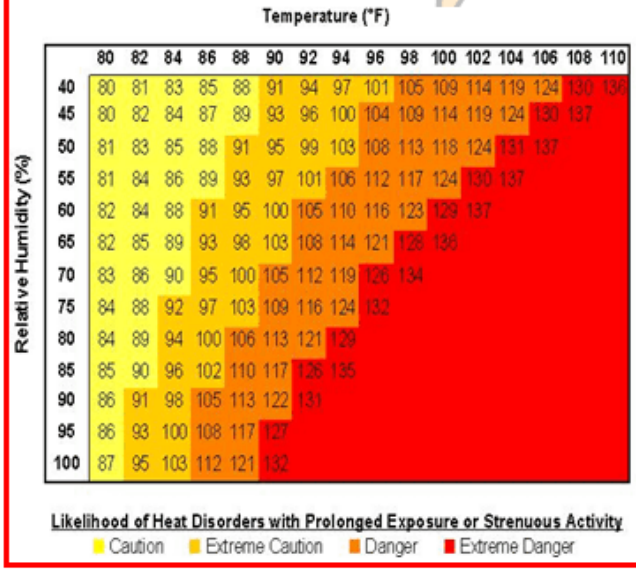


The Heat is on !

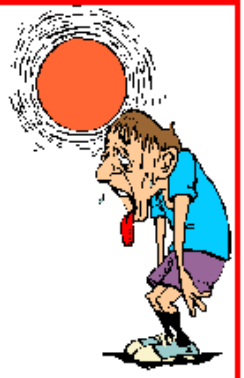
Joe Goudsward

A common phrase heard this time of the year is "it's not the heat but the humidity." In the case of the heat index, this indeed rings true.

According to U.S. Natural Hazards Statistics, about 240 heat-related deaths occur every year. Our bodies dissipate heat by varying the rate and depth of blood circulation, by losing water through the skin and sweat glands, and as a last resort, by panting, when blood is heated above 98.6°F. Sweating cools the body through evaporation. However, high relative humidity retards evaporation, robbing the body of its ability to cool itself.



When heat gain exceeds the level the body can remove, body temperature begins to rise, and heat related illnesses and disorders may develop. Heat Index (HI) is defined as the temperature the body feels when both heat and humidity are combined.



The chart at the bottom of the page shows the heat index that corresponds to the actual air temperature and the actual relative humidity. This chart is based upon shady, light wind conditions and exposure to direct sunlight can increase the heat index by up to 15°F. In addition, strong gusty winds, particularly with hot dry air, can be dangerous as well. A level of 105°F and above may cause increasingly severe heat disorders with continued exposure and/or physical activity. This is the level that your NWS will start issuing heat advisories.

Heat Index	Possible Heat Disorder
80-90 F	Fatigue possible with prolonged exposure and physical activity.
90-105 F	Sunstroke, heat cramps and heat exhaustion possible.
105-130 F	Sunstroke, heat cramps and heat exhaustion likely, heat stroke possible.
Over 130 F	Heat stroke likely with continued exposure and minimal physical activity.

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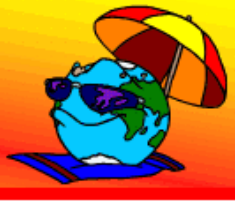

The Heat is on !

Continued

Heat disorders generally have to do with a reduction of the body's ability to shed heat. When heat gain exceeds the level the body can remove, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise and heat-related illness may develop.

Ranging in severity, heat disorders share one common feature: the individual has overexposed or over-exercised for the person's age and physical condition. Sunburn, with its ultraviolet radiation burns, can significantly retard the skin's ability to shed excess heat. Studies indicate that, other things being equal, the severity of heat disorders tend to increase with age. Heat cramps in a 17-year-old may be heat exhaustion in someone 40, and heat stroke in a person over 60.

There are some things you can do to stay cool. **Slow down**. Strenuous activities should be reduced, eliminated, or rescheduled to the coolest time of the day. **Dress for summer**. Lightweight light-colored clothing reflects heat and sunlight, and helps your body maintain normal temperatures. **Put less fuel on your inner fires**. Foods (like proteins) that increase metabolic heat production also increase water loss. Drink plenty of **water or other non-alcoholic fluids**. Your body needs water to keep cool. Drink plenty of fluids even if you don't feel thirsty. Avoid alcohol. **Spend time in air-conditioning** Air conditioning in homes and other buildings markedly reduces danger from the heat. **Don't get too much sun**. Sunburn makes the job of heat dissipation much more difficult; use plenty of sunscreen.

Don't forget the dogs!

It's important not to forget our furry friends during the summer heat. Dogs lack sweat glands and must rely on panting to cool themselves off if they must be outside. Dogs dehydrate very quickly in the summer sun, so be sure to refill a large water dish often throughout the day. Make sure plenty of shade is available or erect a shelter, even if your yard is well-shaded. A molded plastic pool is a cheap and efficient way to keep our best friend comfortable.

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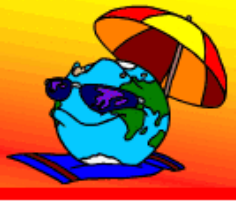


Extreme Temperatures

When summer is really locked in, the National Weather Service will issue heat related watches, warnings or advisories when the heat index reaches or is expected to reach pre-determined critical level. These criteria are for the Little Rock NWS office and will differ slightly amongst other offices.

Heat Advisory: Issued when the forecasted heat index meets or exceed 105 degrees for three hours **and** with overnight lows in the mid 70s for a minimum of two days.

Excessive Heat Watch: Issued when the forecasted heat index could exceed 115 degrees for one hour **and** with overnight lows in the mid 70s for a minimum of two days.

Excessive Heat Warning: Issued when the forecasted heat index meets or exceeds 115 degrees for one hour **and** with overnight lows in the mid 70s for a minimum of two days.

The next time you hear a complaint about how hot it is, just remember it could always be worse. Take a look at these records...

World Record: 136 degrees in El Azizia, Libya on September 13th, 1922.

U.S. Record: 134 degrees at Greenland Ranch, Death Valley, California on July 10th, 1913.

Arkansas Record: 120 degrees in Ozark on August 10th, 1936.

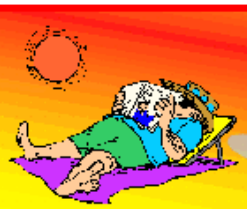
Worlds longest hot spell: Marble Bar, Australia, 100 degrees or above for 162 straight days, October 30th, 1923 to April 7th, 1924.

Antarctica Record: 59 degrees at Vanda Station on January 5th, 1974 .

Highest average mean temperature: Dallol, Ethiopia, average temperature of 94 degrees between 1960 and 1966.

Most rapid temperature change: Occurred in Great Falls, Montana when the temperature rose 47 degrees in 7 minutes from -32 to +15 degrees on January 11, 1980.

Greatest 24 hour temperature change: Occurred in Loma, Montana on January 15th, 1972 when the temperature rose 103 degrees from -54 to +49 on January 15th 1972.



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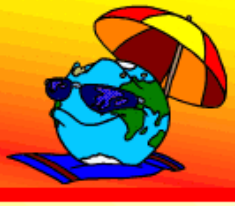
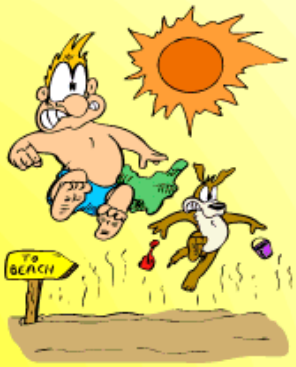


In the United States, heat is the number one non-severe weather-related killer. Unlike the roar of an approaching tornado, heat waves kill with silence. In an average year, about 175 Americans succumb to the effects of heat. From 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat. Using improved heat-wave forecasting, plus greater public awareness and education, the National Weather Service is working to help reduce the number of heat-related deaths.

United States summers are hot, with a heat wave in one section or another. East of the Rockies, heat waves tend to combine high temperatures and humidity, although some of the worst heat waves in history have occurred in dry climates.

The stagnant air with heat waves will trap pollutants and add this stress to the dangerously high temperatures, creating an even more serious risk for health problems.

Cities in the Northeast and Midwest typically have a high number of heat related deaths because the weather is more variable. People living in highly variable summer climates are not well adapted to extreme heat, mainly because it occurs so irregularly. As a result, cities like Boston, Chicago and New York exhibit extreme increases in the number of deaths reported when an intense heat wave occurs compared to more tropical cities.



The high inner-city death rates also may be attributed to the lack of air conditioning, particularly in houses made of materials such as brick that can trap hot and humid air. While air conditioning may be a luxury in normal times, it can be a lifesaver during heat waves.

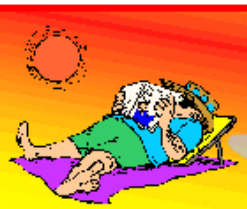
Recent Historic Heat Waves

The July 2006 California heat wave led to 466 heat-related deaths

The August 2003 European heat wave led to 35,000 heat-related deaths.

The 1995 Chicago heat wave led to 600 heat-related deaths over a five day period.

In the summer of 1980, 1250 people across the United States died due to heat.



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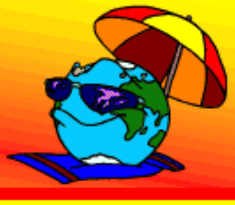

The February 24th, 2007 southeast Arkansas severe weather event

Chris Buonanno / Brian Smith

A powerful storm system affected much of the Mid South on February 24, 2007. Over twenty tornadoes were reported, eight of which affected southeastern Arkansas. Thirty nine injuries were reported as a result of the tornadoes in Arkansas with the community of Dumas, taking a direct hit.

Early in the morning of February 24, a powerful storm system approached Arkansas from the west.

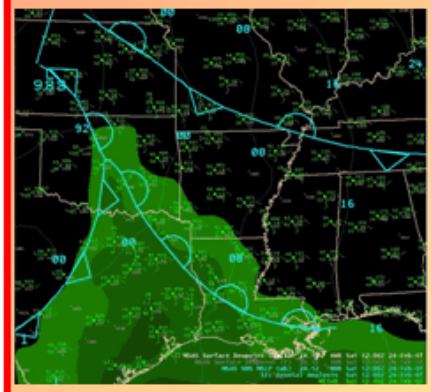

Figure 1. Surface analysis from 6am on February 24, 2007.

By early afternoon, this system had entered Arkansas. An area of warm, moist, and unstable air had entered southern portions of the state. This warm sector region was coincident with a pronounced region of wind shear; that is, winds that change direction and speed with height.

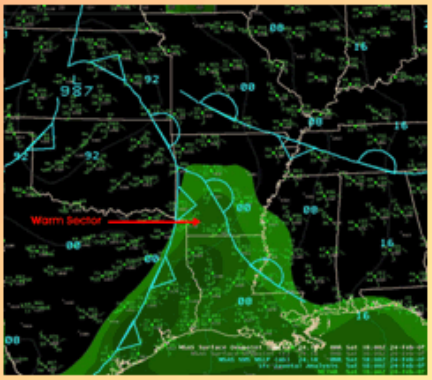

Figure 2. Surface analysis from noon on February 24, 2007.

This particular orientation of wind shear, along with the distribution of instability provided an environment where...

1) thunderstorms that formed could develop into supercell thunderstorms, and
2) supercell thunderstorms that did form would have the potential to produce tornadoes.

Although there were many thunderstorms that occurred during the daylight hours of February 24, only storms that formed in, and remained in the warm sector were able to grow large enough to produce tornadoes.

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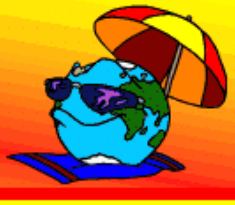

The February 24th, 2007 southeast Arkansas severe weather event Continued...

Tornado	Start Time	End Time	Length (mi)	Scale
1	135 pm	152 pm	26	EF3
2	158 pm	221 pm	21.7	EF2
3	236 pm	307 pm	29.1	EF3
4	320 pm	325 pm	5	EF1
5	401 pm	417 pm	14.8	EF2
6	430 pm	439 pm	8.5	EF1
7	433 pm	434 pm	0.9	EF1
8	444 pm	446 pm	1	EF0

Table 1. Tornadoes affecting Southeast Arkansas on February 24, 2007

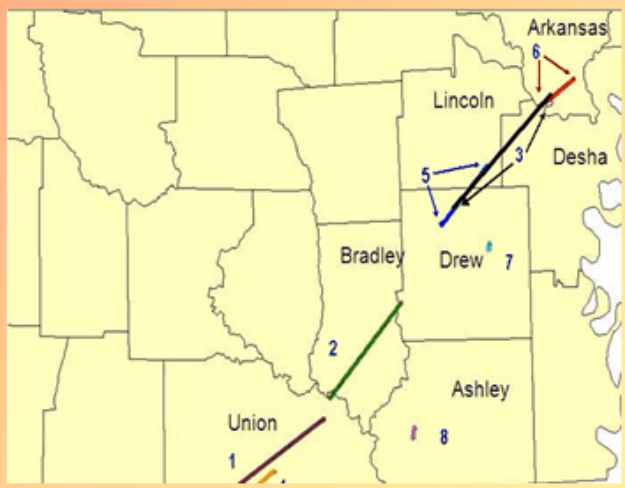

Figure 3. Map of February 24, 2007 Southeast Arkansas Tornadoes.

Of particular note was the tornado that affected Dumas, Arkansas (tornado #3 on the chart and graph). This tornado was rated as producing EF-3 damage on the Enhanced-Fujita scale. EF-3 damage is associated with wind speeds between 136 and 165 miles per hour. Damage estimates as a result of the damage in Dumas reached forty five million dollars. The storm system moved quickly eastward, and by sunset, had moved east of the state.

Figures 4 and 5. Damage in Dumas.

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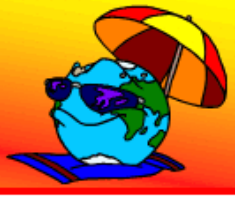

Weather Word Search

Y R O S I V D A T A E H T S T

T E B Q G U K I F X C H O E R

C U M U L U S C L O U D S V E

S G A I L R N W O N A D H E L

E D A T C M A P D X N D U R A

H H U Z H R L E U I O L M E E

C Y V O N E R B W A X A I W N

T T R I L S A Y C G T A D E O

A L N M T C T V O U N Y I A Z

W G O O W S L L Y D I J T T O

S V R U U V K E F R A H Y H S

T M M G U Q E V N A A N H E O

L I G H T N I N G N I I R R F

O H C E K O O H B F U P N O K

Y C I W V D R V L Y G F G R T

Summer often brings a variety of weather conditions to the Natural State ranging from blistering heat to destructive tornadoes. The puzzle to the left contains 15 words that we all are familiar with, or should be familiar with, when it comes to our summertime weather. So sharpen up your pencils and have a go at our latest Weather Word Search.

Cumulus Clouds
Hail
Hook Echo
Ozone Alert
Tornado
Funnel Cloud
Heat Advisory
Humidity
Severe Weather
Watches
Gusty Winds
Heavy Rain
Lightning
Thunderstorm
Warnings

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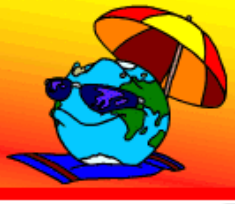

The Enhanced Fujita (EF) Scale

Joe Goudsward

The Dumas Tornado was one of the first opportunities the National Weather Service had to use the new Enhanced Fujita Scale to rate tornadoes. The EF scale has been fully implemented since February of this year and has replaced the original Fujita (F) Scale. The EF Scale continues to rate tornadoes on a scale from zero to five like the old F scale but ranges in wind speed will be more accurate with the improved rating scale.

The EF Scale takes into account additional variables which will provide a more accurate indication of tornado strength and will provide more detailed guidelines that will allow the National Weather Service to more accurately rate tornadoes that strike in the United States.

The original F Scale came to be in 1971 by Dr. T. Theodore Fujita of the University of Chicago. Dr. Fujita developed the F scale after the super tornado outbreak of that year in order to rate tornadoes and estimate associated wind speed based on the damage they cause. The EF Scale refines and improves the original scale. It was developed by the Texas Tech University Wind Science and Engineering Research Center, along with a forum of wind engineers, universities, private companies, government organizations, private sector meteorologists and National Weather Service meteorologists from across the country.

Limitations of the original F Scale may have led to inconsistent ratings, including possible overestimates of associated wind speeds. The EF Scale incorporates more damage indicators and degrees of damage than the original F Scale, allowing more detailed analysis and better correlation between damage and wind speed. Twenty eight Damage Indicators (DI) are used in the new system with Degrees of Damage (DOD) to determine wind estimates. Different types of buildings, depending on building materials, will have their own DI's and DOD's.

The original F Scale historical data base will not change. An F5 tornado rated years ago is still an F5, but the wind speed associated with the tornado may have been somewhat less than previously estimated. A correlation between the original F Scale and the EF Scale has been developed. This makes it possible to express ratings in terms of one scale to the other, preserving the historical database .

Since the new system still uses actual tornado damage to estimate the storm's wind speed, the National Weather Service states that the new scale will likely not lead to an increase in the number of tornadoes classified as EF5 (the lower wind speed ranges have been adjusted as better estimates of what is needed to incur the damage). The upper bound of the wind speed range for EF5 is open — in other words, there is no maximum wind speed designated.

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The Enhanced Fujita (EF) Scale

Category	Wind Speed	Potential damage
EF0	65-85 mph	Light damage
EF1	86-110 mph	Moderate damage
EF2	111-135 mph	Considerable damage
EF3	136-165 mph	Severe damage
EF4	166-200 mph	Devastating damage
EF5	> 200 mph	Incredible damage

The one and the only...

As you can imagine, an F5 tornado is a very rare event. While Arkansas sees an average of 26 tornadoes a year, only one twister in our state's history has been classified as an F5. This tornado, now known as the Sneed tornado, tracked through northeast sections of the state on April 10th, 1929. When it was finally over, the death toll was listed at 23, with another 59 people injured. The tornado reached its maximum strength as it moved

through the communities of Pleasant Valley and Sneed. Both of these communities, located about 2.5 to 3 miles north of Swifton, were virtually destroyed. Historical accounts indicate the tornado was 1/2 mile wide at this point. The tornado then weakened and passed just to the southeast of Alicia. Pleasant Valley was located on what is now Jackson County Road 72 while Sneed was located on what is now Jackson County Road 630.

Summer 2007

Arkansas River Flow 2007

Lance Pyle

The Arkansas River ran very high and fast through much of the spring and early summer. It may seem to Arkansans that there has not been enough rain to keep the river high for so long. However, the answer lies upstream. Days and days of torrential rains across southeast Kansas, southwest Missouri, and northeast Oklahoma led to record flooding on both the Verdigris and Neosho Rivers in southeast Kansas. These rivers just happen to flow into the Arkansas River. Rainfall in May and June this year was above normal in many locations of the Arkansas River watershed. Rainfall amounts in the area were as follows:

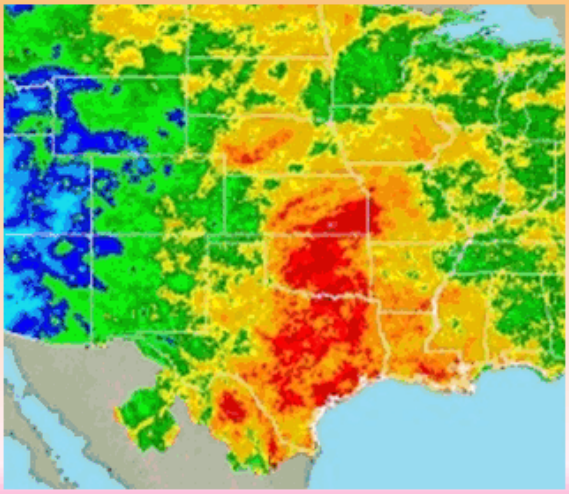
Tulsa, OK		Normal
June	9.17 inches	4.72 inches
May	10.03 inches	6.11 inches

Joplin, MO		Normal
June	17.12 inches	6.42 inches
May	5.10 inches	5.07 inches

Springfield, MO		Normal
June	8.11 inches	5.02 inches
May	4.07 inches	4.57 inches

Wichita, KS		Normal
June	8.53 inches	4.25 inches
May	4.11 inches	4.16 inches

Below is a map of the precipitation over the last 90 days as of July 24, 2007. The heavy precipitation amounts can easily be noted across Kansas, Missouri, Oklahoma, and Texas. As a matter of fact, 35 to 40 inches have fallen in parts of southeast Kansas.



Rain fell in this area due to high pressure anchored over the southeast United States and an area of low pressure that was stuck over Oklahoma and Texas. The low was unable to move due to the high pressure over the southeast. The upper level flow was well north of Oklahoma and unable to move the low center east. Therefore, the low continued to spin over Oklahoma and Texas and the counterclockwise rotation brought moisture continuously out of the Gulf of Mexico.

Summer 2007

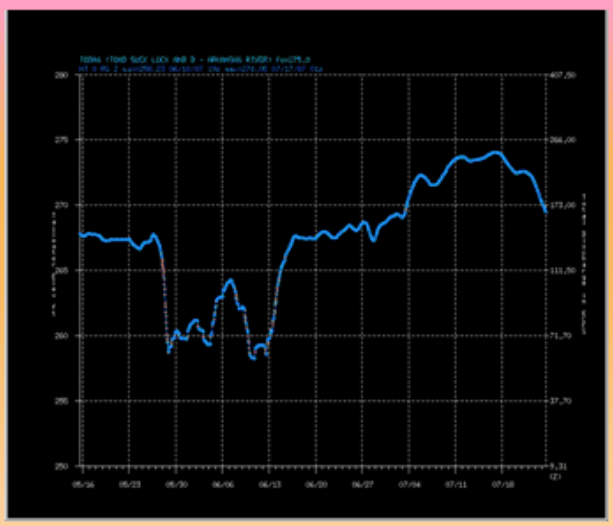
Arkansas River Flow 2007

Continued

Record flooding in southeast Kansas was the result of heavy rainfall day after day. The Verdigris River at Independence, KS crested at 52.40 ft. on July 1 at 8am, 22 ft. above flood stage. This was almost 5 ft. above the previous record of 47.60 ft. set on May 19, 1943. The Neosho River at Erie, KS reached 40.60 ft. July 2 at 7am. The old record was 36.96 ft. on November 5, 1998.

As a result of the heavy and prolonged rains across the area, the Arkansas River has remained high and flowing dangerously swift all spring and into the early summer. Most of the reservoirs in northeast Oklahoma were close to maximum pool. Therefore, the Corps of Engineers needed to steadily release water out of the reservoirs. On May 15 the flow below Toad Suck Lock and Dam was about 150,000 cubic feet per second (cfs) as seen in the image in the next column.

The flow decreased June 10th to about 60,000 cfs, but then rapidly rose to 150,000 cfs by June 17 and peaked at about 250,000 cfs July 17. One week later, on July 24, the flow at Toad Suck was 160,000 cfs and continuing to fall. Normally, flow rates would be 20,000 to 50,000 cfs. A Small Craft Advisory is normally issued by the Corps of Engineers when the flow reaches 70,000 cfs. During much of the spring and early summer, flow rates were dangerous for small watercraft.



For the latest information on flow rates along the Arkansas River, visit the Little Rock District of the U.S. Army Corps of Engineers on the web at http://www.swl-wc.usace.army.mil

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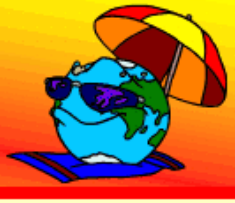


Aviation Update...

Marty Trexler

Flight Services Consolidation.

Lockheed Martin was awarded a contract late last year by the Federal Aviation Administration (FAA), to reorganize and consolidate weather briefing operations performed by FAA Flight Service Stations (FSS). The process continues, with the usual growing pains, and will continue through much of this year.

Future Aviation Weather Forecasts.

The Federal Aviation Administration (FAA) and National Weather Service (NWS) are working together to develop a better way to get weather information to the aviation community. For decades, text-based weather information, AIRMETs (Airmen's Meteorological Information) have provided a broad-scale description of hazardous aviation weather. This summer, this enroute, aviation weather product will be called Graphical Area Forecast (GFA). The first part of a phased approach towards implementation of the GFA, will be called "Graphical-AIRMET" (G-AIRMET), which promises to provide a decision-making tool based on weather "snapshots" at shorter time intervals. The G-AIRMET will be able to identify hazardous weather in space and time more precisely than text, enabling pilots to maintain higher safety margins while flying efficient routes. It will use interactive and easy to understand graphical displays, which will depict weather aviation hazards across the county. Testing of the experimental G-AIRMET will be this summer, and then sent forward to the FAA for regulatory approval.

Changes to Aviation Forecasting in the National Weather Service.

The National Weather Service Instruction 10-813, for the preparation of Terminal Aerodrome Forecasts (TAFs), is in the process of being updated and will be out late this summer. One of the significant changes will be to TAF writing. Currently, a NWS TAF consists of the expected meteorological conditions significant to aviation at an airport (terminal) for a 24 hour time period. The U.S. definition of a terminal is the area within five (5) statute miles of the center of an airport's runway complex. Forecasters must also keep in mind the Critical TAF Period; defined as the first 2-6 hours of the TAF. Over the past several years, if information sources, such as surface observations, were missing, unreliable, or not complete, forecasters could NIL a TAF, i.e. stop writing a TAF, due to not knowing the latest weather information. Now forecasters will append NIL AMD to the end of a TAF. A NIL TAF should not be issued, with one exception. In cases where observations have been missing (i.e. no observation at all due to total Automated Surface Observing System-ASOS failure) for extended periods of time (i.e. more than one TAF cycle of six hours), and the total observation concept cannot provide sufficient information to construct a TAF (e.g. data sparse regions) then a NIL TAF may be used.

Summer 2007

Aviation Update...

Continued... **Marty Trexler**

TWEB Forecasts to End in September.

The Transcribed Weather Broadcast (TWEB) forecasts will end at the end of September, 2007. After an extensive review of the product and how the aviation community was, or was not using the product, the decision was made to terminate the Transcribed Weather Broadcast (TWEB) forecasts effective September 30, 2007. National Weather Service Instruction (NWSI) 10-805 governing TWEB forecasting will be rescinded with the same effective date.

Latest from the Transportation Security Administration (TSA).

Make your trip better using the 3-1-1 approach.

The latest information on carry on items is the 3-1-1 approach, which means 3 ounce bottle or less; 1 quart-sized, clear, plastic, zip-top bag; 1 bag per passenger placed in screening bin. One-quart bag per person limits the total liquid volume each traveler can bring. 3 oz. container size is a security measure. You are allowed reasonable amounts over 3 ounces of the items above in your carry-on baggage, but you will need to perform the following:

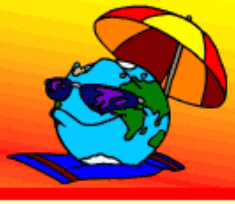
1. Separate these items from the liquids, gels, and aerosols in your quart-size and zip-top bag.

2. Declare you have the items to one of our Security Officers at the security checkpoint.

Present these items for additional inspection once reaching the X-ray. These items are subject to additional screening. It is also recommended to consolidate bottles into one bag and X-ray separately to speed screening. Each time TSA searches a carry-on it slows down the line. Practicing 3-1-1 will ensure a faster and easier checkpoint experience. For short trips, if in doubt, put your liquids in checked luggage. You should also declare larger liquids, especially prescription medications, baby formula, juice and milk. When traveling with an infant or toddler, you are allowed reasonable quantities exceeding three ounces and are not required to use the zip-top bag. Be sure to declare these items for inspection at the checkpoint. Always come early and be patient. During heavy travel periods and with the enhanced security process, longer lines at security checkpoints may be experienced.

TSA does work with airlines and airports to anticipate peak traffic periods, so they can be ready for increased numbers of the traveling public. Also, they have taken steps to ensure the security of the boarding areas after you pass through the security checkpoints. Therefore, any liquid, gel or aerosol, such as coffee or soda, purchased in the secure area beyond the security checkpoint is allowed aboard your plane. Note that if you have a layover and are re-screened at your connecting airport, the current rules for carry-ons do apply. Always check the latest guidelines on the tsa.gov web site before traveling.

Summer 2007



Aviation Update...

Continued... **Marty Trexler**

TSA Enhances Security with Employee Screening.

One of the newest enhancements to aviation security is roving patrols of Transportation Security Officers screening employees on the secure side of the airport. The program, started in the fall of 2006, deploys officers anywhere, anytime to inspect workers, their property and vehicles. These officers ensure workers follow proper access procedures when entering secure areas, display the appropriate credentials, and do not possess items unrelated to their work that may pose a security threat.

"Anyone accessing sterile and secure areas of the airport should expect that they could be screened at any time," said Earl Morris, TSA's Deputy Assistant Administrator for Security Operations. "This initiative is one more measure that adds to our strong, layered approach to aviation security." Outside the airport, random inspections include scrutinizing delivery trucks or personal vehicles at access gates. Inside the airport, roving patrols screen workers with handheld metal detectors and examine property for threat items that are unrelated to their work. Temporary checkpoints are also created beyond access points to ensure access protocols are followed and workers are screened before entering the terminal. These measures do not impact wait times at security checkpoints. Employees receive security threat assessments that consist of a criminal history records check and vetting against terrorist watch lists. These are required for not only airport personnel but also individuals with access to public areas that possess airport credentials. This includes taxi drivers, parking lot attendants, vendors and shuttle bus drivers who have identification issued by the airport.

Airports are also required to develop Airport Security Plans that lay out physical security measures, procedures for safeguarding access control and other protocols specific to the facilities and area around an individual airport. Individuals who violate security protocols may receive a civil penalty that varies depending on the action and circumstance.

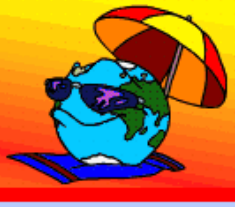
Federal Aviation Administration

Did you know...

It may surprise you to learn that less than 2 percent of all aircraft delays are caused by the weather. A convenient place to find all sorts of information regarding airport delays including real time status and delays can be found at:

http://www.faa.gov/airports_airtraffic/

Summer 2007



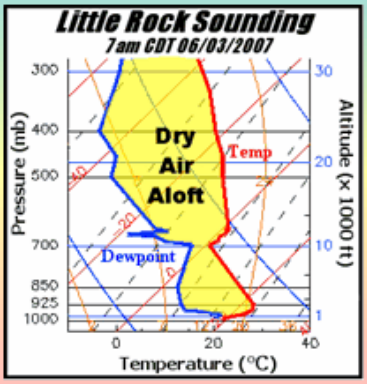
Summer Storms...

John Lewis

When Summer arrives, mostly dry and hot weather take over in Arkansas...with lesser chances for severe weather (than in the Spring). Even so, severe storms can still occur...and they are most likely during the heat of the afternoon and evening. Pulse storms are the most common type of severe storm in Summer. They generally develop vertically very quickly, and then collapse just as fast (a life cycle of 30 minutes or less). Due to weak steering winds aloft, they remain nearly stationary.

In the picture: A look at a pulse severe storm near England (Lonoke County) from 25 miles away at the North Little Rock Airport on 08/18/2007.

As a pulse storm grows, warmth and moisture are driven into a somewhat dry atmosphere aloft. Given this, some of the moisture will evaporate at first...which creates cooling. The more cooling that occurs, the more the air aloft will have a tendency to sink toward the ground. The cooling process and sinking motion can become extreme on a hot (temperatures approaching 100 degrees) and dry day, with strong to damaging winds driven toward the ground.

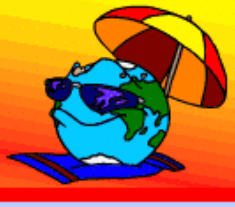


In the picture: A sounding (temperature and dewpoint profile) at Little Rock (Pulaski County) as of 7 am CDT on 06/03/2007. The sounding showed limited moisture was available (temperatures and dewpoints far apart), but there was just enough to create isolated thunderstorms

These "downburst" winds spread out once they hit the ground, and are often marked by outflow boundaries on the WSR-88D (Doppler Weather Radar). As the boundaries spread out, storms are cut off from their fuel supply (warmth and moisture)...and they tend to weaken quickly.

Before they collapse, pulse storms can produce heavy to excessive rainfall in a small area (especially if they last longer than their normal life cycle). Motorists can go from not even a drop of rain to a deluge and possible flash flooding almost instantly.

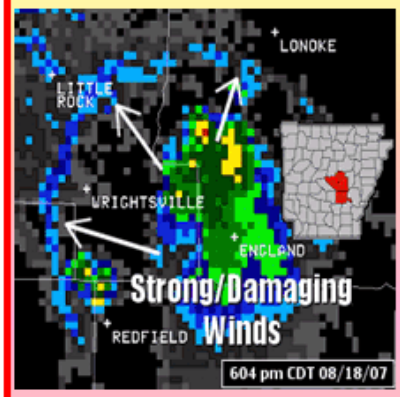
Summer 2007



Summer Storms...

John Lewis

There can also be large hail (penny size or larger) mixed with the rain, with the hail forming as temperatures cool aloft. In addition... lightning strikes can increase markedly in a short time frame.



In the picture: The WSR-88D showed an outflow boundary (leading edge of strong to damaging winds) speeding away from a rapidly weakening storm in southwest Lonoke County around 604 pm CDT on 08/18/2007.

Pulse storms are especially dangerous because there is often not much time to prepare for such an event. These storms can seemingly come out of nowhere, and catch people off-guard. That is why it is important to have weather information handy, and to stay informed when storms begin to build. To keep track of developing storms on radar, you can use the following links:
http://radar.weather.gov/ (nationwide radar)
http://radar.weather.gov/ridge/radar.php?rid=lzk (Little Rock radar site)

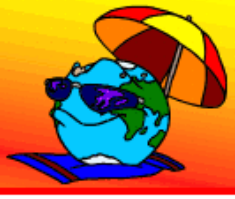
Award Winners !

Cooperative observers are both an important and integral part of the National Weather Service. Cooperative observers have been trained by the National Weather Service to provide high and low temperatures (both air and soil), precipitation, and river data on a daily basis. Some individuals and institutions have made the commitment to provide this data for a number of years, and have been awarded for their efforts. The following awards have been presented to some of our cooperative observers since the first of the year:

25 year Length of Service Award
Gerald and Christina Emerson of Chimes.

30 year Length of Service Award
Russell Carter of Evening Shade.

Summer 2007



Spotting tips for estimating...

Hail Size

HAIL SIZE	DESCRIPTION
1/4 inch	Pea Size
1/2 inch	Small Marble Size
3/4 inch	Penny Size
7/8 inch	Nickel Size
1 inch	Quarter Size
1 1/4 inches	Half Dollar Size
1 1/2 inches	Ping Pong Ball Size
1 3/4 inches	Golf Ball Size
2 inches	Lime Size
2 1/2 inches	Tennis Ball Size
2 3/4 inches	Baseball Size
3 inches	Large Apple Size
4 inches	Softball Size
4 1/2 inches	Grapefruit Size

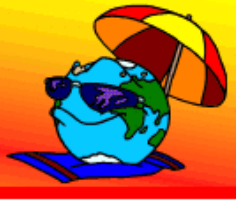
Wind Speed

ESTI-MATE	DESCRIPTION
25-31 mph	Large branches in motion; whistling heard in telephone wires
32-38 mph	Whole trees in motion; inconvenience felt walking against the wind
39-54 mph	Twigs break off trees; wind generally impedes progress
55-72 mph	Damage to chimneys and TV antennas; pushes over shallow rooted trees
73-112 mph	Peels surfaces off roofs; windows broken; light mobile homes pushed or overturned; cars pushed off road
113-157 mph	Roofs torn off houses; cars lifted off ground; severe and widespread damage.

Rainfall amount and intensity

Light	Ranging from scattered drops that do not completely wet an exposed surface regardless of duration to a condition where individual drops are easily seen; slight spray is observed over pavement; puddles form slowly; sound on roofs ranges from slow pattering to gently swishing; steady, small streams may flow in downspouts. Hourly accumulation of rain is up to .10 inches per hour with a six minute accumulation up to .01 inches.
Mod-erate	Individual drops are not clearly identifiable; spray is observable just above pavement and other hard surfaces; puddles form rapidly; downspouts on buildings are 1/4 to 1/2 full; sound on roofs ranges from swishing to a gentle roar. Hourly accumulation of rain is .11 to .30 inches per hour with a six minute accumulation of .01 to .03 inches.
Heavy	Rain seems to fall in sheets; individual drops are not identifiable; heavy spray to height of several inches is observed over hard surfaces; downspouts on buildings run more than 1/2 full; visibility is greatly reduced; sound on roofs re-sembles roll of drums or distant roar. Hourly accumulation of rain is greater than .30 inches per hour with a six minute accumulation of more than .03 inches.

Summer 2007



Severe weather reports

Joe Goudsward

Arkansans have long experienced just about all Mother Nature can throw at us, from tornadoes to ice storms and everything else in between. In order to issue both timely and accurate watches and warnings, the NWS uses a team of dedicated weather enthusiasts to report real time weather information to us.

Storm spotters are trained to recognize severe weather before it occurs. While we use our spotter network extensively, we welcome any report.

Remember severe weather is not just restricted to spring and summer, it can and does occur at any time of the year.

We also like to get reports of winter weather such as heavy snow or ice. To provide real time reports, call us at : **1-501-834-0308**. We are staffed around the clock to take your report.

Please give your location as precisely as you can and as much information about the severe weather that's occurring. The form below may be filled in and used if you want. Make numerous copies to use if you wish. You do not have to keep the form after you use it. Please relay your report as soon as you can safely do so; it is needed to issue new warnings or monitor existing ones. Do not assume we know about it already and therefore are not interested in your report; we are always looking for more information. Yours could be the first report we receive.

While we prefer real time reports, this is not always possible. If your report must be delayed, please pass it along as soon as you can. It is still very valuable. If your report is more than 2 hours old, you can still call it in or file it on our Internet site:

www.srh.noaa.gov/lzk

Your Name (optional) _____

Your Location_____

Type of Storm_____

Location of Storm_____

Time of Storm_____

Movement of Storm_____

Damage_____

National Weather Service
Forecast Office
8400 Remount Road
North Little Rock AR, 72118
Phone: 501-834-0308

We would love to hear from you
Drop us a line, we are here
around the clock.

Visit us on the web !
www.srh.noaa.gov/lzk

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The following sources outside National Weather Service sources were used in the assembling this publication.

Puzzlemaker at Discoveryschool.com
Hypertextbook.com
Wikipedia.org
Bureau of Transportation Statistics, Airline Service Quality Performance 234
Arkansas Online; Focus