



Central Illinois Lincoln Logs

National Weather Service, Lincoln, IL

Summer 2007

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Have You Ever Seen a Green Thunderstorm?

By: Ed Shimon, Lead Meteorologist



Recorded accounts of thunderstorms that appear green are rare, although records of their observation go back more than a century. They have often been regarded as indicators of severe weather, including tornadoes. But is that necessarily true?

Several hypotheses over the past 25 years have tried to explain the phenomenon,

ranging from the relative positions of the sun, storm clouds, and the observer to the reflection of sunlight off of hail inside the clouds or off of green foliage on the ground. One of the two leading hypotheses suggests that storm clouds act as a sort of dark backdrop, against which sunlight scattered by air molecules will appear blue. Combining this with the reddish color of the sun at sunset can give the clouds a greenish appearance.

The other hypothesis suggests that the green color comes from the thunderstorm itself, with the absorption of light by liquid water or water coated hail within the thunderstorm clouds providing blue light, which combined with the red light of sunset, creates the greenish appearance.

The second hypothesis was developed in the spring of 1995, when a University of Oklahoma graduate student used a special device called a spectrophotometer to measure the wavelength of light emitted from thunderstorm clouds during Project VORTEX. His research confirmed green, greenish-yellow, and greenish-blue colors of the clouds, while ruling out lush farmland as the source of the green color. But the researcher concluded that the actual green color observed may be different for different people. In other words, what may look strikingly green to one person, might be more greenish-blue or greenish-yellow to someone else. Maybe not even green at all. Green and other color clouds were found in thunderstorms dropping hail. Although they also concluded that most likely hail alone could not produce the green color. Hail can produce a small amount of the green, but more likely, a dense area of liquid water is needed as well.

While the exact reason why some thunderstorms appear green may not entirely be known, researches have confirmed the existence of this phenomenon to validate the anecdotal evidence that has surfaced over the

Indoor Lightning Safety

The safest place to be during a thunderstorm is inside of a sturdy well-made building or house. But did you know that there are some precautions that you should take while indoors to insure the safety of yourself and your family?

1. Phone use is the leading cause of indoor lightning injuries in the United States. Do not use corded phones in a thunderstorm. Exercise extreme caution when using cordless phones, as the electricity from a lightning strike can arc from the phone base to the phone if you are standing too close. Keep all phone use to a minimum.

2. Stay away from windows and doors, as it provides a direct entrance for a lightning strike.

3. Do not use electrical appliances, as lightning can enter the home through electrical wires and cause injury. Keep in mind that standard surge protectors are not engineered to withstand a direct lightning strike, unplugging them well in advance of an approaching storm is recommended.

4. Stay away from showers, bathtubs, sinks, and anything that involves water. Electricity can travel through plumbing pipes and the water itself.

5. Also remember that the family pets need to take shelter indoors. Dog houses are not lightning safe. Not only that, but dogs attached to trees by a metal chain, or on wire runners, are definitely at risk.

Listen to NOAA All Hazards Radio and your local weather forecast to know when thunderstorms are approaching your area. Most importantly, be aware of your surroundings. If you start to see dark clouds gathering, take action to keep you and your family out of danger.

years. It has not been determined, however, whether all severe thunderstorms appear green at some point. Possibly numerous cumulonimbus clouds appear green at some point, but one needs to be in the right place at the right time to see it.

Do YOU Hear Thunder?

By: Heather Stanley, Meteorologist



Lightning Safety Awareness Week is June 24-30. Summer is a perfect time to brush up on your lightning safety rules, as summer time thunderstorms are well known for popping up in the afternoon hours and interrupting some outdoor activities. But in order to keep ourselves and our loved ones safe...there are a few guidelines to follow. For example, did you know that if you can hear thunder, you are close enough to be struck by lightning? Even if there are no clouds overhead, and it isn't raining! Lightning can strike 10 miles away from a thunderstorm!

Summer is the peak season for one of the nation's deadliest weather phenomena—lightning. In the United States, on average, 66 people are killed each year by lightning. That's more than the annual number of people killed by tornadoes! No place is absolutely safe from lightning; however, some places are much safer than others. The SAFEST location during lightning activity is a large enclosed building, not a picnic shelter or shed. The second safest location is an enclosed metal vehicle (car, truck, van, etc.), but NOT a convertible, bike or other topless or soft top vehicle. A common myth is that the tires insulate you from the strike, but **THIS ISN'T TRUE!** It's the metal framework of the car that conducts the electricity around you.

Knowing your weather forecast should be a critical part of planning your outdoor activities every day. In case thunderstorms develop and threaten your outdoor activities, here are some tips to keep the lightning from threatening you and your family.

IF YOU HEAR THUNDER:

1. Get to a **safe building**, one that is fully enclosed with a roof and four walls -- a home, school, office building or shopping center. Picnic shelters, pavilions, tents, dugouts, or sheds are **NOT** safe. A tent or picnic shelter may keep you dry, but they will NOT keep you safe.
2. If you cannot get to a safe building, get in a **safe vehicle**, one with a hard top. Roll up all windows and close the doors. Avoid any metal surface within the car.
3. If you cannot get to safe shelter or in a car, and are caught out in the open, do not seek shelter under tall isolated trees; the tree will increase your risk of being struck. Lightning often hits the tallest object, which could be you in an open field. If caught in the open, get low to the ground, on the balls of your feet in a crouching position. The goal is to be as low as possible while minimizing your contact with the ground.
4. Know the weather forecast. If there are thunderstorms in the forecast, change or your plans to include an action plan should you hear thunder.
5. The vast majority of lightning injuries and deaths on boats occur on small boats with NO cabin. It is crucial to listen to the weather on a small boat without a cabin. If thunderstorms are forecast, don't go out. If you are out on the water and skies are threatening, get back to land and find a safe building or vehicle.
6. Get personal watercraft OFF THE WATER and get to a safe shelter.
7. Keep informed by listening regularly to a NOAA Weather All Hazards radio broadcast for forecasts and changing weather conditions.
8. Do not return to outdoor activities until 30 minutes after the last rumble of thunder is heard.

Don't let thunderstorms ruin your fun! Being prepared is the best way to stay safe **AND**

Spring 2007 Climate Statistics:

Peoria:

5th warmest spring on record

* Average temperature 54.9°F (3.9°F above normal)

* Precipitation 12.76" (2.20" above normal)

* Trace of snow (4.2" below normal)

Springfield:

7th warmest spring on record

* Average temperature 56.5°F (3.8°F above normal)

* Precipitation 6.48" (4.09" below normal)

* Snowfall 0.2" (3.9" below normal)

Lincoln:

Tied for 7th warmest spring on record

* Average temperature 55°F (4.2°F above normal)

* Precipitation 7.68" (3.48" below normal)

* Trace of snow (2.7" below normal)

keep everyone happy. On days with rain or thunderstorms in the forecast, plan an excursion to a museum or shopping center, plan other **indoor** activities, or reschedule if possible. If caught by surprise, have activities to keep the family entertained when seeking shelter in the car.

NWS Participates in Logan County Relay for Life



Staff from the Lincoln NWS office participated in the Logan County Relay for Life on May 19, to raise funds for the American Cancer Society. The relay was held at the Lincoln Christian College, located across the road from the NWS office. The NWS raised nearly \$900, contributing to the overall county total of over \$100,000.

Pictured from left to right are John Parr, hydrometeorological technician; Dan Smith, lead meteorologist; Llyle Barker, Science & Operations Officer; and Chris Miller, Warning Coordination Meteorologist. Not pictured are meteorologists Mike Hardiman and Heather Stanley.

New Severe Weather Section of Homepage

National Weather Service Central Illinois
Severe Weather Summary Page

Home Site Map News Organization Search for:

Watches, Warnings, Advisories (Click to zoom)

Read watches, warnings & advisories

Zoom Out

Tornado Warning
Flood Warning
Flood Watch
Flood Statement
Short Term Forecast
Hazardous Weather Outlook

Radar and Satellite (Click for larger image)

Tornado Warning(s)
all or portions of the following counties, in Illinois: Christian, Macon, Moultrie, Piatt, Sangamon, Shelby

Severe Thunderstorm Warning(s)
None

Flash Flood Warning(s)
None

Last map update: Wed, Apr. 25, 2007 at 3:00:26 pm CDT

Local Links		Region - National	
Hazardous Weather Outlook	Local Storm Reports	Convective Outlooks	Mesoscale Discussions
Rivers & Lakes (AHPS)	E-Spotter	Current Watches	Storm Reports
Office Home		Excessive Rainfall	Flood Outlook

A new severe weather summary page recently debuted on our homepage.

At first glance, this appears similar to the map on the main page. Watches, warnings, advisories and forecasts are listed by color codes for each county. However, this map also includes polygons which are included in tornado, severe thunderstorm, and flash flood warnings. These polygons are drawn to indicate the greatest threat area for the warned phenomenon.

National Weather Service Central Illinois
Severe Weather Summary Page

Home Site Map News Organization Search for: _____

Sangamon County, IL (April 25, 2007 3:04pm CDT) Text | Zoom Out

Watch/Warning Polygons

Warnings & Follow-Up Statements
 Tornado Warning (#0006 issued at 2:58pm)

Other Products
 Hazardous Weather Outlook

Radar

Local		Regional-National	
Hazardous Weather Outlook	Local Storm Reports	Convective Outlooks	Mesoscale Discussions
Rivers & Lakes (AHPS)	E-Spotter	Current Watches	Storm Reports
Office Home		Excessive Rainfall	Flood Outlook
		U.S. Hazards	Weather Safety

When you click on an individual county, you will be brought to a page dedicated to that county. Besides showing a map (with towns) depicting the greatest threat, you have quick access to all watches, warnings and statements valid for that particular county. Other links include discussions from the Storm Prediction

Center, storm reports, river and rainfall forecasts, and more.

To access this page, click on the “Watches/Warnings” link that is found on the top part of the left-hand menu of our homepage, or go directly to

<http://www.crh.noaa.gov/hazards/ilx>

New Upper Air System Coming to Lincoln

By: Dan Kelly, Meteorologist Intern

The evening of July 20th will mark the end of an era for upper air observations, in central Illinois. This will be the last upper air (weather balloon) sounding using the old “Automatic RadioTheodolite” (ART) tracking system. After the evening flight, ART will be turned off for the last time, then will be dismantled on Monday July 23rd, to make way for the new state-of-the-art upper air tracking system known as the “Radiosonde Replacement System” (RRS).

Weather balloons are launched all over the world twice a day from about 500 stations, and from about 70 stations in the continental U.S., including Lincoln. Balloons are launched at 5 am and 5 pm CST (6 am and 6 pm CDT). On occasion, when there is a threat of significant weather, additional launches are performed at 11 am CST (Noon CDT) or 11 pm CST (midnight CDT). The weather balloon carries a meteorological instrument known as a “radiosonde,” which measures temperature, relative humidity, and barometric pressure. Data are collected every 6 seconds with the ART system, and are sent back to the ground station as a series of tones via a radio transmitter, and received by a tracking dish. With the ART system, the change in elevation and azimuth are used to compute minute winds every minute. This is known as a Radio Direction Finding (RDF) tracking system. Wind values are interpolated between minutes. With the RRS system, data is received via Global Positioning System (GPS) tracking.

In both systems, a typical flight lasts around 2 hours and the balloon usually bursts at an altitude of 19 to 21 miles. At this level, the atmospheric pressure is approximately 1% of the pressure here at the Earth’s surface. A parachute will deploy, and the radiosonde will return safely to the ground and, if found, can be re-used for future flights.

ART is based on World War II technology, and has had a few upgrades over the years. One of those upgrades took place in 1984, when the old transistor tubes were replaced with solid state components. The ART system presently in use at the NWS in Lincoln was originally installed at Leckrone Airport in Salem, IL. On December 5, 1988, it was



Tracking antenna for the Radiosonde Replacement System (RRS)



Radiosonde used by the RRS

County Codes for Programmable Weather Radios:

Henry – 017073

Mercer – 017131

dismantled and moved to Barkley Airport in Paducah, KY. Finally on February 9, 1995, ART was moved from Paducah to the newly opened NWS office in Lincoln.

Upper Air stations are not new to central Illinois. In September 1944, balloon observations began at Chanute AFB in Rantoul, and were taken 4 times a day. This function was moved to the Peoria Weather Bureau office on September 12, 1956; in October 1957, the observations were cut back to twice daily. Upper air observations continued in Peoria until February 14, 1995, when the equipment was moved to the NWS office in Davenport, IA.

The new radiosonde, like the present radiosondes, will measure temperature, relative humidity, and pressure, and transmit the data back to our office using a radio signal. However, the meteorological sensors on the new radiosondes will take readings every second. In addition, the new radiosondes will have a GPS receiver, and will send GPS data back to the ground station. The new computer system will compare the GPS readings from a receiver at our office, to the GPS readings from the radiosonde, and use this difference to compute 1 second winds (the present system will compute 1 minute winds). Wind data computed from GPS data is far more accurate than the wind data computed using the RDF method presently in use. Also, higher resolution data will be available in the upper air sounding plots. This higher resolution data will benefit the numerical weather prediction models, as well as climate and air pollution models.

Look for this higher resolution and more accurate data to be coming from the Lincoln office during the first week of August!

NOAA Weather Radio News

By: Chris Geelhart, Hydrometeorological Technician

Galesburg NOAA Weather Radio Coverage Area Expanded

Henry and Mercer Counties of northwest Illinois have been added to the coverage area of station KZZ-66 in Galesburg (162.400 MHz). Watches, warnings and advisories will be aired for these counties, from bulletins provided by the NWS office in the Quad Cities.

As with many areas, these counties are also covered by a neighboring NWR station, in this case WXJ-73 in Rock Island. Because neither WXJ-73 nor KZZ-66 fully covers both counties, listeners can decide for themselves which station comes in better in their area, and set their radio accordingly.

Streaming Audio of NOAA Weather Radio

A few of our NWR stations are available over the Internet, via streaming audio. As of this writing, the stations in Bloomington, Champaign, and Springfield are available. We are currently investigating ways to get our remaining stations available.

To access these stations, or other ones across the country, go to

<http://www.nws.noaa.gov/nwr/streamaudio.htm#livestream>

Local 3-Month
Temperature Outlooks
for Summer (June-
August):

Decatur – 43% chance of above normal, 33% near normal, 24% below normal

Effingham – 34% chance of above normal, 33% near normal, 33% below normal

Peoria – 34% chance of above normal, 33% near normal, 33% below normal

Springfield – 33% chance of above normal, 34% near normal, 33% below normal

Urbana – 42% chance of above normal, 33% near normal, 25% below normal

Area Forecast Discussion Expanded for Aviation Interests

By: James Auten, Lead Meteorologist

On May 15th, the Central Illinois National Weather Service office starting sending out a forecast discussion designed for the general aviation community. This small discussion is included as a separate section in the regular Area Forecast Discussion, and is issued four times a day around 12:30am, 6:30am, 12:30pm, and 6:30pm CDT. (During CST it will be issued at 5:30am, 11:30am, 5:30pm, and 11:30pm.) The new aviation section discusses the weather for the next 24 hours and uses terminology geared toward pilots and other aviation customers. Typical aviation terminology includes specific cloud heights, visibilities, and wind speeds. Timing of these features, as well as thunderstorms and other forms of precipitation will be included in the discussion. The discussion will also be focused on the five major airports in central Illinois:

- Greater Peoria Regional Airport in Peoria (PIA)
- Central Illinois Regional Airport in Bloomington-Normal (BMI)
- Abraham Lincoln Capital Airport in Springfield (SPI)
- Decatur Airport (DEC)
- University of Illinois-Willard Airport in Savoy (CMI) (south of Champaign).

Quiet Start to 2007 Severe Weather Season - Do Not Become Complacent

By: Patrick Bak, Lead Meteorologist

The 2007 severe weather season in the Lincoln NWS's County Warning Area (CWA) has started slowly, especially when compared to the record breaking season of 2006. However, we should not become complacent and expect the remainder of the season to remain as quiet as it has been.

The following table shows the number of tornadoes that have occurred in the Lincoln CWA between January 1st and May 31st each year since 2000.

Year	2000	2001	2002	2003	2004	2005	2006	2007
Tornadoes Through May 31st	18	1	7	53	21	4	61	5

I chose to use tornadoes as an example, because the numbers are smaller and easier to quantify than severe thunderstorm (hail and wind) events. It is not intended to diminish the dangers posed by severe thunderstorms not producing tornadoes. It is easy to see how variable severe weather seasons can be from year to year. However, it is not easy to predict when it will be a slow year, or if a year that starts slow will

Open House Planned for September 29

The Lincoln NWS is planning to host a public Open House on Saturday, September 29, from 10 AM to 4 PM!

It has been several years since our last open house, in 1998. Come out and see all that has changed since then!

Due to NOAA security restrictions, no bags (backpacks, purses, etc.) will be allowed on the tour. Also, security guidelines will require us to cancel the open house, if the Department of Homeland Security raises the terror threat level for our area to "Orange" or "Red".

Be sure to check for later updates on our homepage, or via announcements on NOAA Weather Radio.

remain slow.

One negative aspect to a quiet weather season is that we do not have many real time opportunities to put our knowledge of weather safety rules and preparedness into action. As with any other skill, if you don't use it you lose it. If you have not already done so this year, now is a good time to review severe weather safety rules and make sure you are prepared if severe weather strikes.

While 2007 has started slowly with respect to severe thunderstorms and associated hazards, we do not know what the rest of the year will hold. A little time spent reviewing weather safety and preparedness guidelines now, may save your life later.

For more information on weather safety and preparedness, please check the following page on our website:

<http://www.crh.noaa.gov/ilx/wxsafety.php>

Student Summer Volunteers at the Lincoln NWS



The NWS office in Lincoln is hosting 3 student volunteers this summer.

Megan Mulford (left) will be a senior at Western Illinois University in Macomb, majoring in meteorology.

Alyssa Halm (right) will be a senior at the University of Illinois this fall, getting a degree in meteorology via an Individual Plan of Study (U of I currently does not have an undergraduate degree in meteorology).

Angie Reside (lower left) will also be a senior at WIU in Macomb, majoring in meteorology.



Each volunteer will complete 160 hours of work at the NWS office through about mid August. They will learn about many aspects of the operation of the office, from forecasting to data acquisition, and will work with the staff on special projects.

Central Illinois Lincoln Logs

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(8:30 am to 4 pm weekdays)

The *Central Illinois Lincoln Logs* is a quarterly newsletter of the NWS office in Lincoln, and is available on our Internet page at

<http://www.weather.gov/lincoln>

Your comments are welcomed and can be addressed to either editor at our office.

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NOAA Predicts Above-Normal 2007 Atlantic Hurricane Season

NOAA's Climate Prediction Center is forecasting a 75% chance of the Atlantic hurricane season being more active than normal. The forecast calls for 13 to 17 named storms, with 7 to 10 of those becoming hurricanes, and 3 to 5 of those reaching major hurricane status (115 mph or greater).

The long-term average is 11 named storms, 6 hurricanes, and 2 major hurricanes.

Climate patterns responsible for the expected above normal 2007 hurricane activity continue to be the ongoing multi-decadal signal (the set of ocean and atmospheric conditions that spawn increased Atlantic hurricane activity), warmer-than-normal sea surface temperatures in the Atlantic Ocean and the [El Niño/La Niña](#) cycle.

Last year, seasonal hurricane predictions proved to be too high when an unexpected El Niño rapidly developed and created a hostile environment for Atlantic storms to form and strengthen. When storms did develop, steering currents kept most of them over the open water and away from land.

"There is some uncertainty this year as to whether or not La Niña will form, and if it does how strong it will be," said Gerry Bell, Ph.D., lead seasonal hurricane forecaster at the NOAA Climate Prediction Center. "The Climate Prediction Center is indicating that La Niña could form in the next one to three months. If La Niña develops, storm activity will likely be in the upper end of the predicted range, or perhaps even higher depending on how strong La Niña becomes. Even if La Niña does not develop, the conditions associated with the ongoing active hurricane era still favor an above-normal season."

The list of storm names for 2007 is: Andrea, Barry, Chantal, Dean, Erin, Felix, Gabrielle, Humberto, Ingrid, Jerry, Karen, Lorenzo, Melissa, Noel, Olga, Pablo, Rebekah, Sebastien, Tanya, Van, and Wendy.

Up-to-date information on tropical weather systems can be found on the National Hurricane Center's homepage, at <http://www.nhc.noaa.gov>.

