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Lincoln, Illinois

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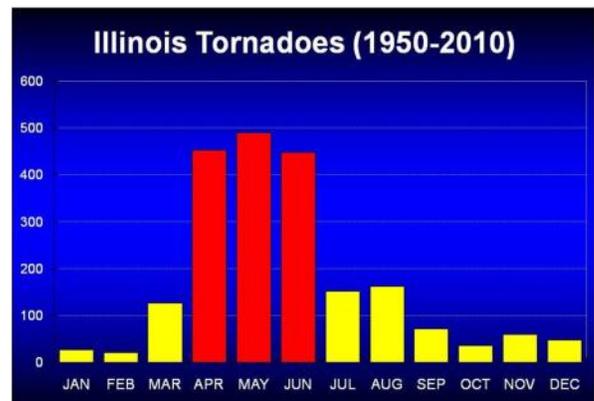
Severe Weather Preparedness Never Takes a Holiday

By: *Patrick Bak, Senior Meteorologist*

Considering how snowy and cold the winter has been thus far across Illinois, it would be easy to forget about our severe weather safety rules and preparedness activities. However, as residents of the Lake Petersburg area can attest, we need to be prepared for severe weather year round. A tornado rated EF3 on the Enhanced Fujita scale, with a maximum estimated wind speed of 136 mph, struck the Menard county community on New Year's Eve 2010. The tornado caused significant damage and resulted in 1 injury.

One of the most important severe weather safety rules to remember is that tornados and other severe weather can occur any time of the day and any day of the year. Since 1950, tornados have been reported in every month of the year across Illinois. In fact, more tornados have been reported in the months of November and December than in the month of October.

It is important to keep up-to-date with the latest forecasts to know what type of weather to expect on any given day. If thunderstorms are forecast, even in the middle of winter, remain alert for hazardous



weather and be prepared to take action if necessary. A NOAA Weather Radio (<http://www.crh.noaa.gov/ilx/?n=nwr>), as well as our website (www.weather.gov/lincoln), is a great source for weather forecasts and warn-

ings for central and southeast Illinois. For more information on weather safety and preparedness, please check the following page on our website: <http://www.crh.noaa.gov/ilx/?n=wxsafty>



Tornado damage to a house at Lake Petersburg on New Year's Eve. Additional information on this event is available at <http://www.crh.noaa.gov/ilx/?n=LakePetersburgTornado31Dec2010>

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Case Review:

December 3 Snow Event over Central and Southeast Illinois

By: Dan Smith, Senior Meteorologist

Light snow was forecast to spread southeast across central Illinois late Friday into Saturday (12/03/2010-12/04/2010) and produce accumulations of 1 to 3 inches, mainly along and north of Interstate 74. However, snow accumulations of from 6 to 9 inches occurred in a very narrow band from Marshall county southeast through northern McLean, central Champaign to southern Vermilion county. The actual storm system pushed south along the Ohio Valley, a good track for producing accumulating snows in our area.

The snow was expected to develop from northwest to southeast Friday evening and continue intermittently through the night into early Saturday morning. Sounding data from central Illinois (KILX) for 6 pm CST (figure 2 below) continued to indicate the low levels of the atmosphere would be

rather dry early in the evening, with the low levels eventually saturating after dark which would bring in a steadier snowfall. However, the low levels began to saturate more quickly late in the afternoon and early evening as the snow band shifted southeast into our area.



Figure 1: Total Snowfall for December 3-4, 2010

Winter Weather Advisories were issued for central and east central Illinois for Friday night into Saturday for the potential of up to 3 inches of snow with some locally higher amounts. Forecasters through the day Friday saw the potential for some banding of the snow which can bring isolated enhanced snowfall rates and accumulations but thought the system would be more progressive across the area during the overnight hours, which unfortunately was not the case.

One of the high resolution models that was used during this event (Figures 3 & 4 on next page)

Snowfall Totals from December 3-4:

- Urbana, 9"**
- Champaign, 8.5"**
- Savoy, 7.5"**
- Roanoke, 7.4"**
- Saybrook, 7"**
- Chenoa, 7"**
- Mahomet, 6"**

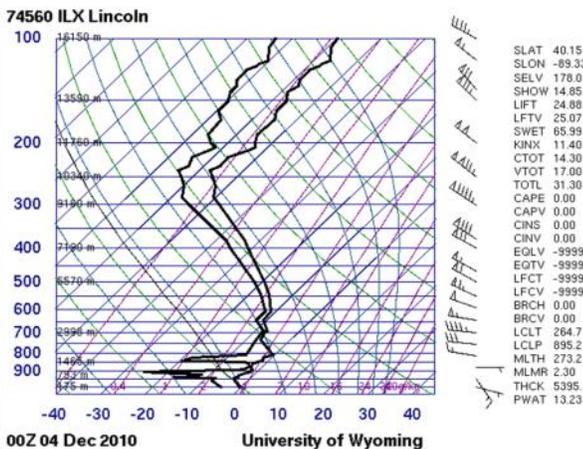


Figure 2: 6 pm upper-air sounding from Lincoln

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December 3 Snow Event over Central and Southeast Illinois

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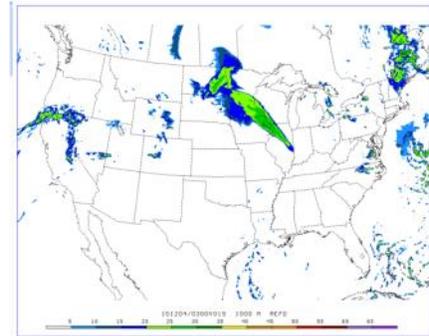
indicated a northwest to southeast band of snow would push across the forecast area Friday evening and then shift off to our east by 6 am Saturday morning. The second of the two figures indicate the band was once again right over the Interstate 74 corridor. The darker shading that is shown in both figures indicates a higher power return to the radar suggesting a narrow band of heavy snow. Notice the band is no more than 25 miles wide. Although the higher resolution models suggested the potential for some banding of the snow across parts of our area, none of the models were able to capture the small scale nature of the event or the fact that the band became stationary across parts of north central and northeast Illinois Friday evening.

In this narrow band of precipitation, snowfall rates of one half to one inch per hour were common, but again the band was at most 25 miles wide. The bulk of the snow accumulations occurred from 6 pm Friday evening until 3 am Saturday morning. Winter Weather Advisories were issued late Friday afternoon for the anticipation of several inches of

snow but needed to be upgraded to a Winter Storm Warning from just east of Wyoming southeast through east central Illinois to Tuscola and Paris. In the narrow band of snow, Total accumulations ranged from 6 to 9 inches. Profiler data (Figure 5) indicated a narrow band of low and mid level convergence was occurring from southeast Minnesota southeast through east central Illinois as of 800 pm CST Friday evening. This narrow axis of lift was present across the same location through 09z (3 am CST) which continued to provide the lift needed for the enhanced snowfall. Operational models were forecasting this axis of lift to shift off to our east by midnight, with a second area of forcing/lift expected to move across central Illinois by morning. Based on the above reasoning, forecasters were expecting a decrease in coverage and intensity of the snow by midnight with a short lull in the precipitation until dawn Saturday, and then for the snow to pick up again during the day as the second area of lift moved across the region. It didn't quite work out that way as the narrow axis of lift remained nearly stationary across north central through east central

Illinois into the early morning hours of Saturday.

Figure 6 represents an estimate of storm liquid precipitation from the Central Illinois radar and clearly shows the path the heavier snow band took that evening. Areas along and north of Interstate 74 to just south of Champaign were hit the hardest (dark shade of blue, indicating estimates of between a quarter to one half inch liquid amounts).



Figures 3 and 4: Model simulated radar reflectivity at 6 pm (top) and mid-night (bottom)

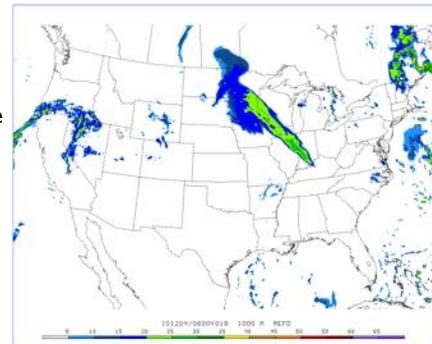


Figure 6 (below): Radar estimated precipitation (liquid equivalent) for the event.

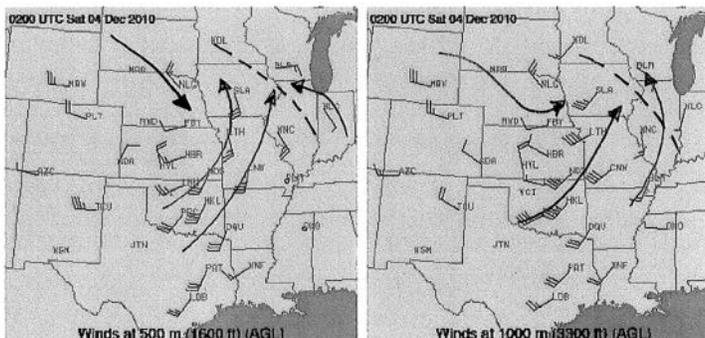
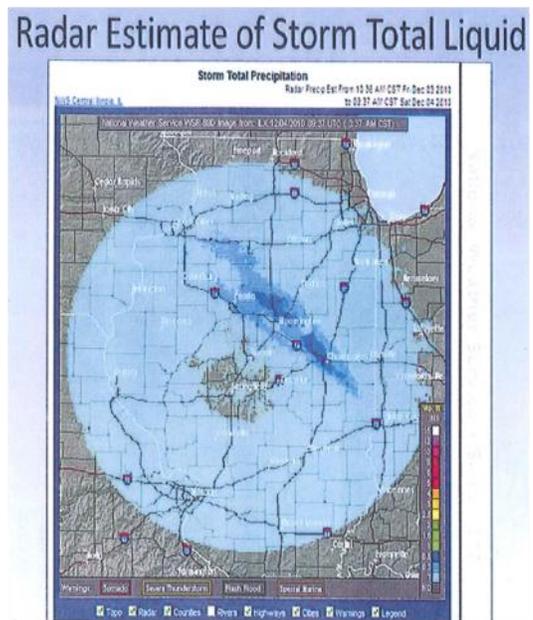


Figure 5: Profiler wind data for 1600-3300 feet above ground level, at 8 pm Friday evening

NWS and Radio Over the Years

By: Chris Geelhart, Meteorologist

The NOAA Weather Radio (NWR) network currently numbers around 1,000 transmitters. The network has more than doubled in size over the last 20 years. However, its origins go back much, much further.

Clarence J. Root, Meteorologist in Charge (MIC) of the Springfield Weather Bureau Office from 1911-1932, first suggested to Weather Bureau Headquarters in 1915, that "wireless telegraph" messages would be a good way to disseminate forecast information. The idea was tested using experimental station 9ZK out of Illiopolis, from a station operated by Harry J.E. Knotts of the local State-Center Record newspaper. The station covered the entire state of Illinois.

"I believe that wireless will in the future be the method of distributing weather forecasts," Root said. "The plan has never been used before. It's much quicker, of course, than the mails. In times of frosts or approaching storms the information is of inestimable value to farmers and growers, and particularly valuable if it reaches them some hours before the forecast atmospheric changes take place, as can be done with wireless."

Many Weather Bureau offices eventually began to do routine broadcasts on local commercial radio stations. By 1951, 460 radio stations across the country carried Weather Bureau broadcasts, conducted by a total of 170 offices. The Peoria office began such broadcasts in 1935 on WMBD. These continued through 1976.

Early, dedicated weather radio stations were originally designed to broadcast aviation information. Stations KWO-35 in New York City, and KWO-39 in Chicago, were the initial stations which signed on in the early 1950's. According to the history files of the Chicago office, KWO-39 continued to broadcast aviation weather through 1958. Ivan Brunk, MIC at the Chicago Weather Bureau, suggested that marine broadcasts would also benefit from a dedicated station, and KWO-39 switched formats on an experimental basis. The marine broadcasts were an immediate success, and the service became permanent in May 1960. Later in the 1960's, weather information for the general public was added, and the network was further expanded.

Partially driven by the April 1974 "Super Outbreak" of tornadoes, the

White House designated the NWR network as the sole government-operated radio system to provide direct warnings into private homes, for both natural disasters and nuclear attack. The network was expanded to over 300 stations by the late 1970's, including stations in Springfield (WXJ-75), Champaign (WXJ-76) and Peoria (WXJ-71) in late 1977.

By the early 1990's, the network had around 450 transmitters. Another large tornado outbreak, occurring across the southeast United States on Palm Sunday 1994, led to further expansion of the network, to its present size.

Broadcasts were initially done manually, utilizing tape recording systems. As the network expanded, and the NWS office network was reorganized and consolidated, this system became impractical. To reduce the manpower needed to operate the network, and to replace increasingly obsolete equipment, the Console Replacement System was deployed in the late 1990's. This system utilized synthesized computer voices, which automatically updated the broadcasts as new data became available.

NOAA Weather Radio Debuts in Central and Southeast Illinois:

Springfield — 8/1/77

Champaign — 12/1/77

Peoria — 12/21/77

Jacksonville — 4/1/00

Newton — 10/20/00

Shelbyville — 2/1/01

Paris — 2/15/01

Bloomington — 10/10/01

Galesburg — 10/25/01



Status of Student Employee Programs for 2011

Although changes may be on the horizon, the NWS has proceeded with the announcement for acceptance of Student Career Experience Program (SCEP) and Student Temporary Employment Program (STEP) applications for 2011. Prior regulations will remain in effect, at least until such time as regulations to implement the new Internship Program become final and effective. Accordingly, agencies may continue to hire and employ people under these programs.

What should students do? Information regarding the SCEP/STEP announcement information

was distributed to colleges/universities on January 19. Students are encouraged to apply and participate in the program. You may also want to check with your college/university to ensure they received the announcement. Applications for the SCEP program will be accepted through February 28, 2011. Students should refer questions to NWS.scep-reply@noaa.gov.

The NWS apologizes that we were not able to provide more timely information on the SCEP program for this year. We have been awaiting guidance from NWS which

was slow to be issued in the midst of the changes in Federal intern/student programs.

Applications for the SCEP/STEP program are available on our web site at <http://www.weather.gov/lincoln>

The NWS also has volunteer positions available during the summer as well. These are open to college students, generally in their sophomore or junior years. Single-day job shadows are also available for college and high school students who have an interest in weather. Contact Billy.Ousley@noaa.gov for more details.

Fall Climate Statistics:

Peoria:

- Average temperature: 55.2 °F (2.2 °F above normal)
- Total precipitation: 8.31" (0.56" below normal)
- Total snowfall: Trace (2.1" below normal)

Springfield:

- Average temperature: 57 °F (2.1 °F above normal)
- Total precipitation: 10.72" (2.40" above normal)
- Total snowfall: Trace (1.6" below normal)

Lincoln:

- Average temperature: 54.2 °F (0.8 °F above normal)
- Total precipitation: 9.49" (0.55" above normal)
- Total snowfall: Trace (1.5" below normal)

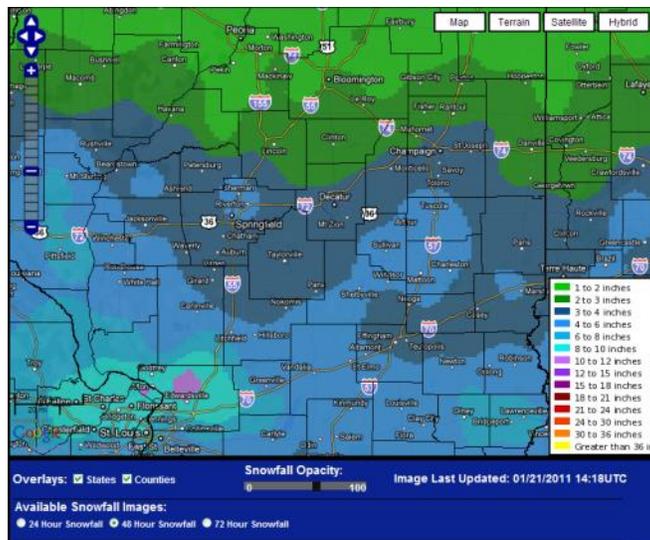
New Precipitation Analysis Tools

The NWS is testing two new precipitation analysis tools. These analyze totals reported by the Cooperative Observer network, as well as the CoCoRaHS network. Results are displayed on a Google Maps background, where you can pan and zoom to specific areas.

Snowfall data is available for the last 24, 48, or 72 hours, while the precipitation data is available in several time increments, from the last 3 hours to the last 90 days.

The image at the right shows the 48-hour snowfall ending at 7 am on January 21.

Links are listed at the right; the top one is the snowfall, and the bottom is the precipitation.



<http://www.srh.noaa.gov/ridge2/snow/index.php?lat=40&lon=-90&zoom=4>

http://www.srh.noaa.gov/ridge2/RFC_Precip/index.php?lat=40&lon=-90&zoom=4

Climate Statistics for 2010

Peoria:

- Average temperature: 52.4° F (1.6° F above normal)
- Highest temperature: 94° F on August 3 and 12
- Lowest temperature: -11° F on January 10
- Total precipitation: 44.14" (8.12" above normal)
- Most in 24 hours: 1.90" on May 31-June 1
- Total snowfall: 47.0" (20.7" above normal)
- Most in 24 hours: 6.6" on December 24
- Highest wind speed: 51 mph on October 27

Springfield:

- Average temperature: 54.3° F (1.6° F above normal)
- Highest temperature: 98° F on August 13
- Lowest temperature: -10° F on January 10
- Total precipitation: 46.92" (11.36" above normal)
- Most in 24 hours: 3.56" on September 1-2
- Total snowfall: 24.7" (0.1" above normal)
- Most in 24 hours: 4.2" on December 24
- Highest wind speed: 55 mph on August 13

Lincoln:

- Average temperature: 51.6° F (0.4° F above normal)
- Highest temperature: 96° F on August 3
- Lowest temperature: -16° F on January 10
- Total precipitation: 43.13" (4.83" above normal)
- Most in 24 hours: 2.46" on June 22
- Total snowfall: 25.3" (5" above normal)
- Most in 24 hours: 5.2" on December 24

Snowy December:

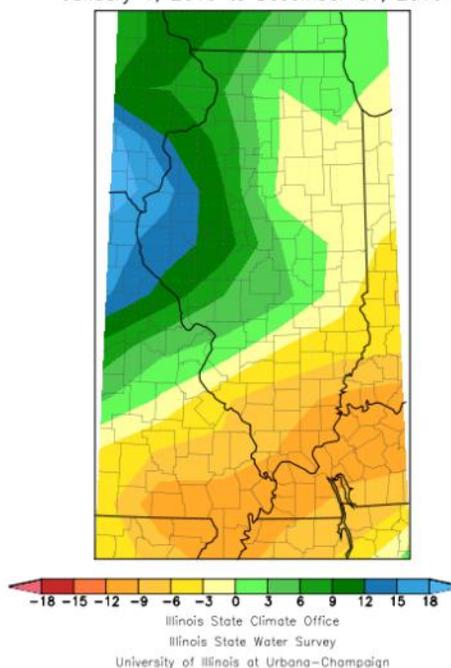
The following snow totals were reported for the month of December:

- Altona 17.6"
- Bradford 21.4"
- Chenoa 23"
- Hoopston 17.9"
- Normal 18.1"
- Ogden 23.2"
- Peoria 19.2"
- Rantoul 19"
- Roanoke 23.6"
- Sidell 26.8"
- Urbana 20.4"

Area Weather Highlights for 2010

- The warmest temperature reported was 101° F at Flora, on August 4th and 10th.
- The coldest temperature was -17° F at Altona, on January 10th.
- Sullivan reported 4.78" of rain on July 20th, the most in a 24-hour period at an official station.
- St. David reported 13.75" of rain in June, the most reported in one month.
- Urbana reported 20.4" of snow in December, with 7.7" of that in 24 hours on the 4th. These were the highest for their respective categories.
- The strongest tornado of the year, EF-3 strength, occurred south of Petersburg in Menard County on New Year's Eve. This was the first tornado in Menard County since April 2, 2006, and the strongest one since April 19, 1995.
- Eight tornadoes occurred across central Illinois on June 5th, mostly in Knox and Peoria Counties, the strongest of which was EF-2 strength at Elmwood. A tornado in the city of Peoria was the first there since 1974.

Total Precipitation (inches): Departure from Mean January 1, 2010 to December 31, 2010



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www.weather.gov/lincoln

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2010 U.S. Weather Highlights:

NOAA's National Climatic Data Center reports the following highlights of what occurred across the United States during 2010:

- 2010 was the 14th consecutive year with an annual temperature above the long-term average. Since 1895, the temperature across the nation has increased at an average rate of approximately 0.12°F per decade.
- Precipitation across the contiguous United States in 2010 was 1.02 inches above the long-term average. Like temperature, precipitation patterns are influenced by climate processes such as El Niño-Southern Oscillation (ENSO). A persistent storm track brought prolific summer rain to the northern Plains and upper Midwest. Wisconsin had its wettest summer on record, and many surrounding states had much above-normal precipitation. Since the start of records in the U.S. in 1895, precipitation across the United States is increasing at an average rate of approximately 0.18 inches per decade.
- The year began with extremely cold winter temperatures and snowfall amounts that broke monthly and seasonal records at many U.S. locations. Seasonal snowfall records fell in several cities, including Washington; Baltimore, Md.; Philadelphia; Wilmington, Del.; and Atlantic City, N.J. Several NOAA studies established that this winter pattern was more likely by the combined states of El Niño and the Arctic Oscillation.
- Twelve states, mainly in the Southeast, but extending northward into New England, experienced a record warm June-August. Several cities broke summer temperature records including New York (Central Park); Philadelphia; Trenton, N.J.; and Wilmington, Del.
- Preliminary totals indicate there were 1,302 U.S. tornadoes during 2010. The year will rank among the 10 busiest for tornadoes since records began in 1950. An active storm pattern across the Northern Plains during the summer contributed to a state-record 104 confirmed tornadoes in Minnesota in 2010, making Minnesota the national tornado leader for the first time.
- During 2010, substantial precipitation fell in many drought-stricken regions. The U.S. footprint of drought reached its smallest extent during July, when less than 8% of the country was experiencing drought conditions. The increased precipitation and eradication of drought limited the acres burned and number of wildfires during 2010. Hawaii had near-record dryness occurring in some areas for most of the year.

Scientists, researchers and leaders in government and industry use NOAA's monthly reports to help track trends and other changes in the world's climate. This climate service has a wide range of practical uses, from helping farmers know what and when to plant, to guiding resource managers' critical decisions about water, energy and other vital assets.