

## **2014: A Review of the Year's Weather across Central Kentucky and South-Central Indiana**

2014, considering precipitation, temperatures, flooding, heat and severe weather, was not too remarkable. No real extremes stood out for this past year. After a chilly first 3 months, spring arrived on schedule and without any major flooding or tornadic outbreaks. Summer was pleasant; we were fortunate that July was significantly cooler than normal. We did need rainfall by August, and August delivered, with three of our climate sites experiencing a top 10 wet August. September and October had near normal temperatures. October saw 7 tornadoes over a two day span, which is quite rare for October. November was chilly, with two accumulating snows prior to Thanksgiving.

### **2014 Monthly Temperature Statistics for Louisville, Lexington, Bowling Green & Frankfort:**

<b>Average Monthly Temperature (Departure from Normal )</b>	<b>Louisville</b>	<b>Lexington</b>	<b>Bowling Green</b>	<b>Frankfort</b>
January	28.6 (-6.3)	26.8 (-6.1)	29.4 (-6.3)	25.5 (-7.0)
February	32.9 (-5.9)	32.2 (-4.7)	35.2 (-4.5)	30.2 (-6.2)
March	43.9 (-3.9)	41.7 (-3.8)	43.7 (-4.7)	40.5 (-4.4)
April	59.9 (+1.9)	58.4 (+3.1)	58.7 (+1.0)	56.6 (+1.4)
May	69.1 (+2.0)	66.5 (+2.0)	68.3 (+1.9)	65.0 (+1.1)
June	77.8 (+2.2)	74.9 (+2.2)	76.4 (+1.4)	73.5 (+0.9)
July	75.8 (-3.8)	73.3 (-2.9)	75.0 (-3.7)	71.9 (-4.4)
August	78.5 (+0.1)	75.9 (+0.6)	78.1 (+0.6)	74.8 (-0.4)
September	71.2 (+0.2)	69.4 (+1.3)	69.9 (-0.2)	67.1 (-0.5)
October	59.7 (+0.2)	58.5 (+1.5)	59.5 (+0.7)	55.9 (-0.5)
November	41.9 (-6.8) <b>#9</b>	39.5 (-6.8) <b>#5</b>	42.1 (-6.3) <b>#5</b>	38.8 (-7.2)
December	41.0 (+3.1)	38.6 (+2.6)	41.7 (+3.1)	38.5 (+3.2)
<b>2014 Total</b>	<b>56.7 (-1.5)</b>	<b>54.6 (-1.0)</b>	<b>56.5 (-1.5)</b>	<b>53.2 (-2.1)</b>

*Rank within the bottom 10 coldest months on record.*

### **Monthly Precipitation:**

<b>Monthly Precipitation (Departure from Normal )</b>	<b>Louisville</b>	<b>Lexington</b>	<b>Bowling Green</b>	<b>Frankfort</b>
January	2.41 (-0.83)	2.31 (-0.89)	1.75 (-1.86)	2.28 (-0.98)
February	3.75 (+0.57)	4.73 (+1.53)	5.42 (+1.46)	3.92 (+0.62)
March	2.30 (-1.87)	2.89 (-1.18)	3.73 (-0.68)	2.22 (-2.16)
April	7.01 (+3.01)	5.99 (+2.39)	6.57 (+2.23)	6.61 (+2.92)
May	4.04 (-1.23)	5.43 (+0.17)	3.11 (-2.50)	5.75 (+0.90)
June	1.65 (-2.14)	5.59 (+1.15)	1.72 (-2.48)	3.92 (-0.17)
July	3.61 (-0.62)	3.23 (-1.42)	2.53 (-1.57)	3.03 (-1.36)
August	6.40 (+3.07) <b>#8</b>	9.56 (+6.31) <b>#3</b>	11.33 (+8.00) <b>#1</b>	5.56 (+2.20)
September	3.31 (+ 0.26)	4.45 (+1.44)	0.37 (-3.56) <b>#5</b>	2.83 (-0.50)
October	3.51 (+0.29)	4.47 (+1.34)	5.38 (+2.00)	4.61 (+1.37)
November	1.71 (-1.88)	2.36 (-1.17)	2.52 (-1.70)	1.92 (-1.81)
December	3.57 (-0.26)	3.30 (-0.63)	1.69 (-3.11) <b>#9</b>	3.15 (-0.86)
<b>2014 Total</b>	<b>43.27 (-1.64)</b>	<b>54.21(+9.04)</b>	<b>46.12 (-3.77)</b>	<b>45.80 (+0.18)</b>

Above, blue indicates the month's rank in the top 10 wettest months on record for that location.

Above, red shows the month's rank in the top 10 driest months on record for that location.

- Louisville's coldest year since 2004
- Lexington's coldest year since 2003
- Bowling Green's coldest year since 1997
- Frankfort's coldest year since 1996

### Temperature/Wind:

Category	Louisville	Lexington	Bowling Green	Frankfort
Highest temperature	97 July 13 <sup>th</sup>	93 July 13 <sup>th</sup>	96 July 27 <sup>th</sup>	94 July 13 <sup>th</sup>
Lowest temperature	-3 Jan 6 <sup>th</sup>	-6 Jan 22 <sup>nd</sup>	0 Jan 6 <sup>th</sup> and 7 <sup>th</sup>	-8 Jan 22 <sup>nd</sup>
Yearly max sustained winds	41 Jan 25 <sup>th</sup>	43 June 19 <sup>th</sup>	39 Oct 3 <sup>rd</sup>	36 Nov 24 <sup>th</sup>
Yearly max wind gust	58 July 27 <sup>th</sup>	59 Aug 20 <sup>th</sup>	59 Oct 3 <sup>rd</sup>	50 Nov 24 <sup>th</sup>

### Monthly Snowfall:

Monthly Snow Total (inches)	Louisville	Lexington	Bowling Green
January	8.3	8.6	2.1
February	7.7	8.7	2.0
March	4.1	7.5	5.1
April	0.1	0.3	T
October	T	T	0
November	3.7	1.6	0.3
December	T	T	T
<b>2013 Total</b>	<b>12.9</b>	<b>11.1</b>	<b>5.0</b>
<b>2014 Total</b>	<b>23.9</b>	<b>26.7</b>	<b>9.5</b>

## A cold and icy winter...

The first three months of 2014 were cold and icy, with several ice storms and occasional heavy snow. Average temperatures for January through March were well below normal, as the below chart indicates.

	Departure from average (January through March)	Rank
Louisville (Standiford)	-5.4 degrees	15 <sup>th</sup> coldest
Lexington	-4.9 degrees	12 <sup>th</sup> coldest
Bowling Green	-5.2 degrees	11 <sup>th</sup> coldest

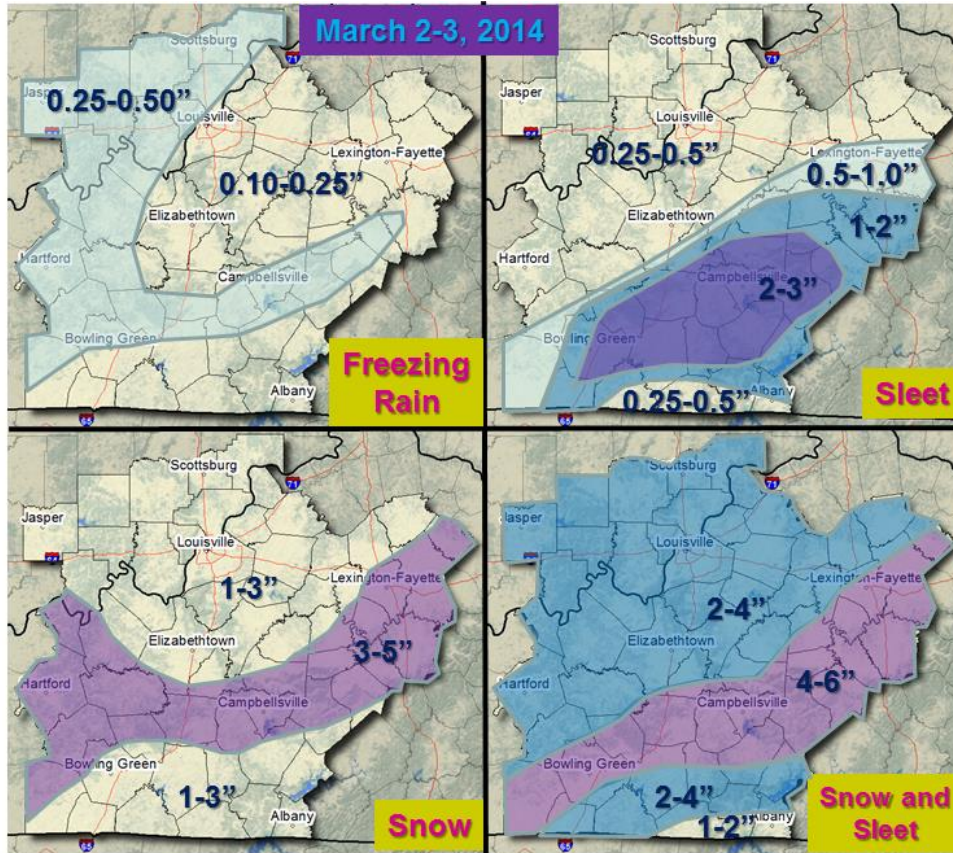
**Heavy** snow fell on the 2<sup>nd</sup> through the 3<sup>rd</sup> of February, followed by significant icing on the 4<sup>th</sup> and 5<sup>th</sup>. From the 4<sup>th</sup> to the 5<sup>th</sup> of February, up to one third of an inch of ice fell across northern and central Kentucky. Below are a couple of pictures of this ice accumulation. The first photo came from the National Weather Service office just south of Louisville. The second shows icing in Oldham County.



**Heavy** snow fell over a brief period across southern Indiana on Valentine's Day, February 14<sup>th</sup>. Although only 3 to 5 inches fell, the snowfall rate was intense. The picture below shows snow in Sellersburg, in Clark County, courtesy of Brian Bell.



**Our** most widespread winter storm developed in early March. Mixed wintry precipitation developed across all of southern Indiana and central Kentucky, with the heaviest amounts falling in an east-west strip across central Kentucky. Some counties across the southern Bluegrass such as Mercer, Garrard, and Madison received almost 2 inches of sleet, followed by several inches of snow!



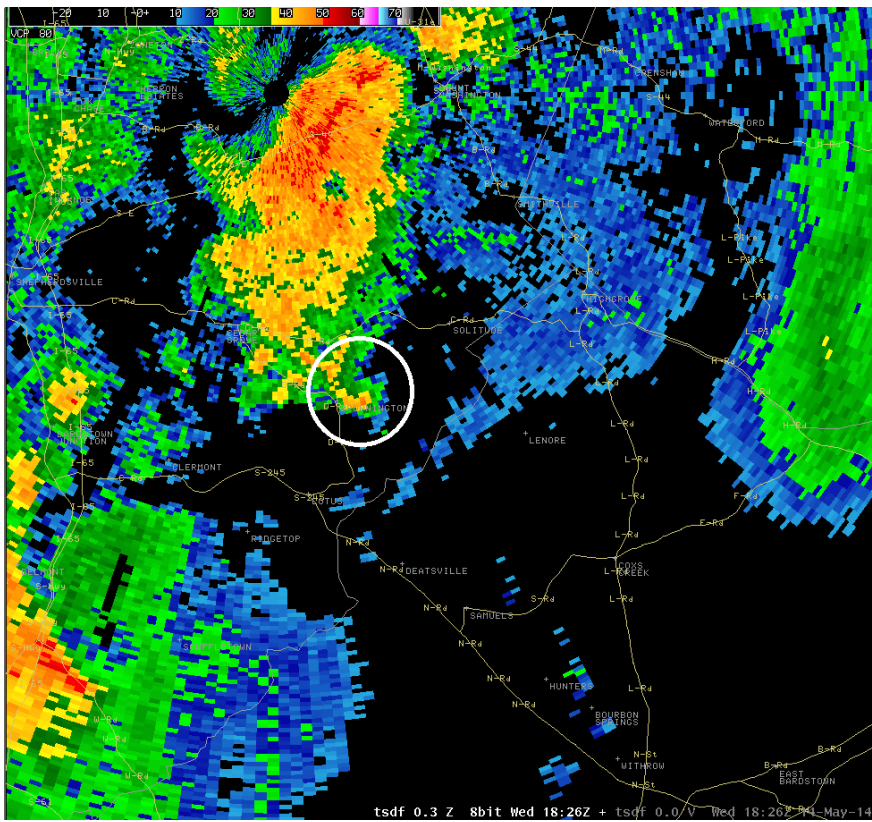
A wide variety of precipitation fell on the 2<sup>nd</sup> and 3<sup>rd</sup> of March, as is indicated to the left.

**National Weather Service – Louisville, Kentucky**

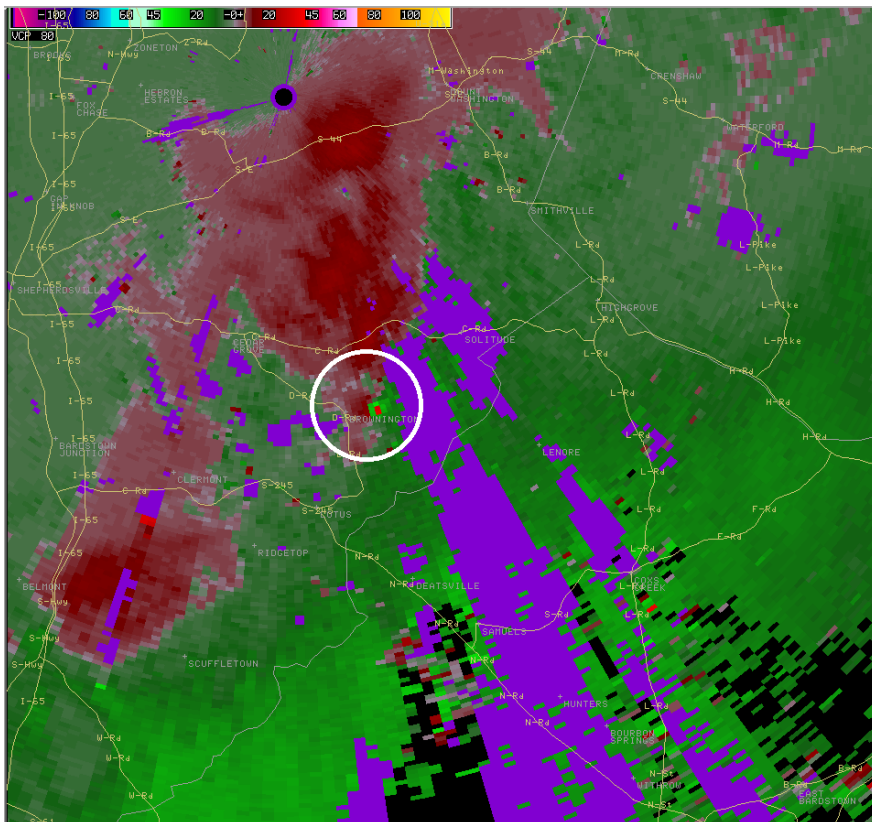
INWSLouisville
 National Weather Service Louisville
 @NWSLouisville

## **Our only spring tornado...**

Our spring was very quiet, with no significant severe weather outbreaks. The National Weather Service surveyed only one weak tornado; an EF-0 on May 14<sup>th</sup> in eastern Bullitt County. The storm that produced it was quite shallow, with no lightning associated with the storm at all. The two images below capture the tornadic circulation in both reflectivity and storm relative velocity, courtesy of a local FAA radar in Bullitt County.



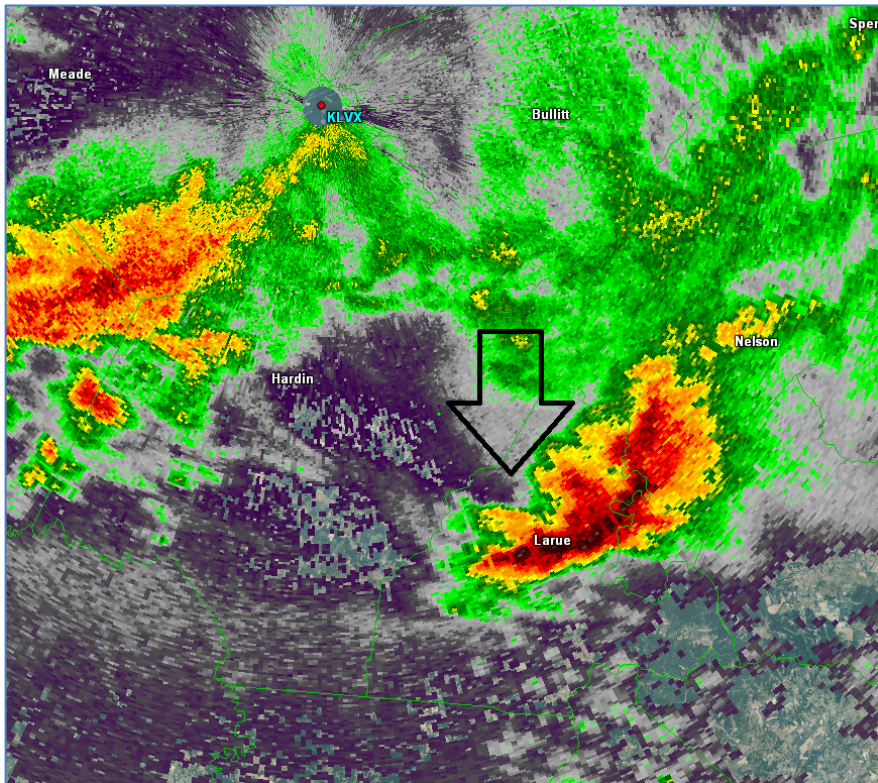
The weak circulation is highlighted within the white circle. The track of the tornado moved over a rural area just east of the community of Brownington.



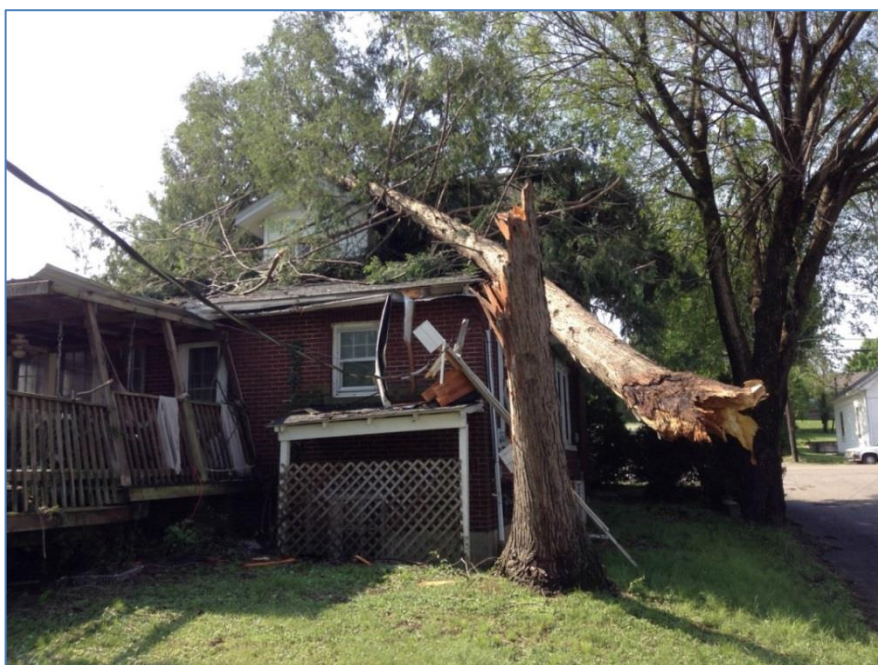
The circulation is a bit easier to find, using storm relative velocity. It too is highlighted in the white circle. The storm itself was little more than a heavy shower, but atmospheric winds were conducive for rotation.

## Bow echo on May 22<sup>nd</sup> ...

Perhaps our worst organized wind event came from a bow echo that developed during the early morning hours on May 22<sup>nd</sup>. Severe weather buffeted the Bluegrass earlier in the evening. An outflow boundary served as a focus for a short line of storms that developed around 4 am around Fort Knox. Over the next 2 hours this bowing segment raced southeast at around 40 mph, bringing 65 to 75 mph winds and widespread damage to Hodgenville and eventually Campbellsville in LaRue and Taylor Counties respectively.



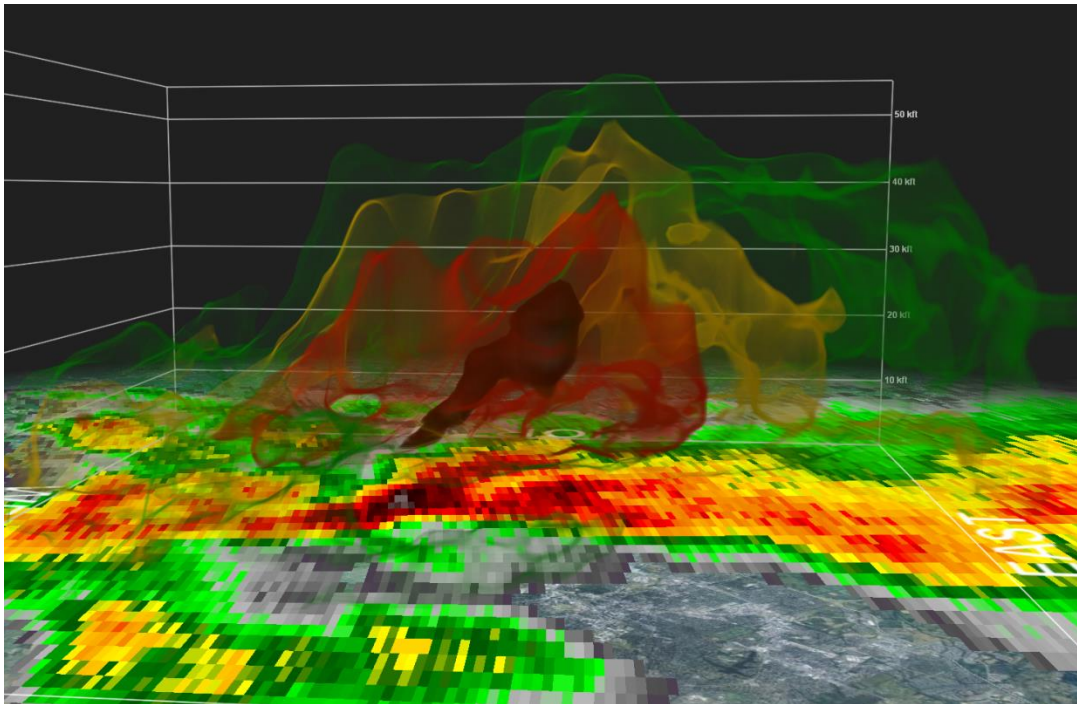
The image to the left shows the bow echo right as it was moving over Hodgenville. A rear inflow notch is indicated right at the tip of the black arrow. A rear inflow notch is an area of low radar reflectivity punching in towards the leading edge of strong reflectivity. It is an indicator of strong and damaging winds descending towards the ground.



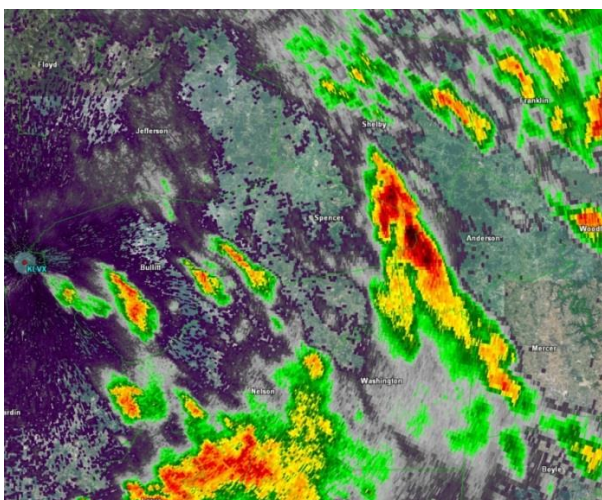
The picture to the left shows a tree that fell across a home in Hodgenville. A storm survey by the National Weather Service found widespread damage across the town.

## Severe weather in July....

In some ways, perhaps our most widespread period of severe weather this season developed late on July 26<sup>th</sup>. Severe storms were almost continuous from late on the 26<sup>th</sup>, through the evening of the 27<sup>th</sup>. During the evening of the 26<sup>th</sup>, a bow echo brought damaging winds along and south of the Ohio River. Several supercells developed during the late morning hours on the 27<sup>th</sup>. One of these developed just north of Lexington, dumping 2 inch hail and significantly damaging some plants at the Kentucky University Agricultural Research Center. Below is a three-dimensional look at that storm at its peak intensity. The hail core is indicated by the very dark red in the storm's center.



The image below shows another supercell that dumped 2 inch hail across Spencer County just one half hour earlier.





## *Two consecutive tornadic days in October...*

Prior to October, our forecast area only recorded one tornado, a weak EF-0 in Bullitt County. However, on consecutive days in October, central Kentucky recorded 8 tornadoes! A supercell produced a tornado in Clinton County on October 6. This twister carved a 2 mile path very near Wolf Creek Dam at Lake Cumberland. A picture of this tornado is shown below courtesy of Ronnie Dooley. It was the most photogenic tornado in our area this year. The edge of the mesocyclone is quite apparent right above the tree top on the left. The storm that produced this tornado earlier brought 2 inch hail and a brief tornado touchdown near Burkesville, located in Cumberland County.



A family of 6 tornadoes struck the northern Bluegrass the very next day as a complex of storms moved across Harrison, Scott, and Bourbon Counties. One EF-1 tornado hit Paris, in Bourbon County. It damaged quite a number of homes and businesses. The image below on the left shows a snapshot of a longer video taken of the Paris tornado, courtesy of Nick Pope. Later that evening, several supercells moved right along a boundary draped across northern Kentucky. Cynthania was right in the cross-hairs, with two back-to-back storms bringing large hail. The image to the right, courtesy of Jessica Jones, shows tennis ball sized hail.



The image below shows a ragged wall cloud associated with a supercell north of Crestwood, which is in Oldham County. This photo is courtesy of John Detherage.



## Our very Cold November...

November was quite cold this year. Kentucky received two accumulating snowfalls through Thanksgiving, which is uncommon.

Mid-November was especially cold. A highly amplified pattern that contributed to heavy lake effect snows over New York brought a near record setting cold snap to the Lower Ohio Valley. The 10 day period from the 12<sup>th</sup> to the 21<sup>st</sup> was the coldest on record for Lexington, and the second coldest on record for Bowling Green and Louisville. The chart below shows a period of high and low temperatures for Lexington from October 15<sup>th</sup> through November 27<sup>th</sup>. Note the very cold stretch of days starting on the 12<sup>th</sup>, when our highs had trouble exceeding what should be our average lows for the period.

