

# National Weather Service

## The Top 10 of 2010

The Year's Biggest Weather Events in  
Southern Indiana and Central Kentucky

LOUISVILLE

## 10. May 21 Severe Weather Outbreak

During the late afternoon and evening hours of Friday May 21 a cold front brought strong to severe thunderstorms to south-central Indiana and central Kentucky. A few supercell thunderstorms formed, and were able to produce large hail, damaging winds, heavy rainfall, and a few wall clouds or funnel clouds. One small EF-1 tornado managed to touch down near the Hardin/Breckinridge county line.



Hail in Anderson County. *Jerame Brown*

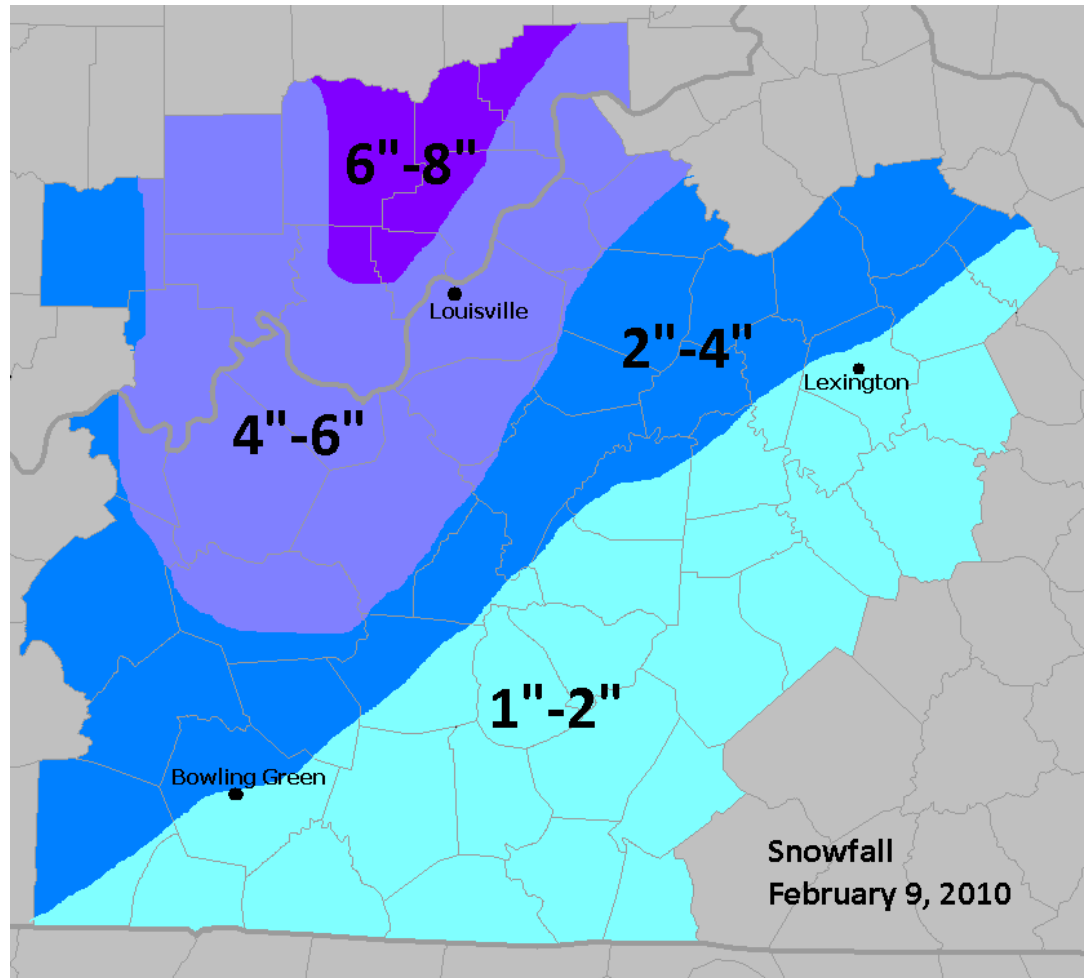


Wall cloud in Nelson County. *John Belski/WAVE*

## 9. February 9 Snowstorm

Low pressure developed over southwest Texas on the 8<sup>th</sup>, and headed northeast to southern Kentucky by the morning of the 9<sup>th</sup>, and on to Delaware by the morning of the 10<sup>th</sup>. As the low passed by it brought Gulf moisture northward into the Ohio and Tennessee valleys. With temperatures in the 20s, precipitation fell as snow. The heaviest snow fell during the morning hours, when half a foot or more fell on parts of northern Kentucky and southern Indiana.

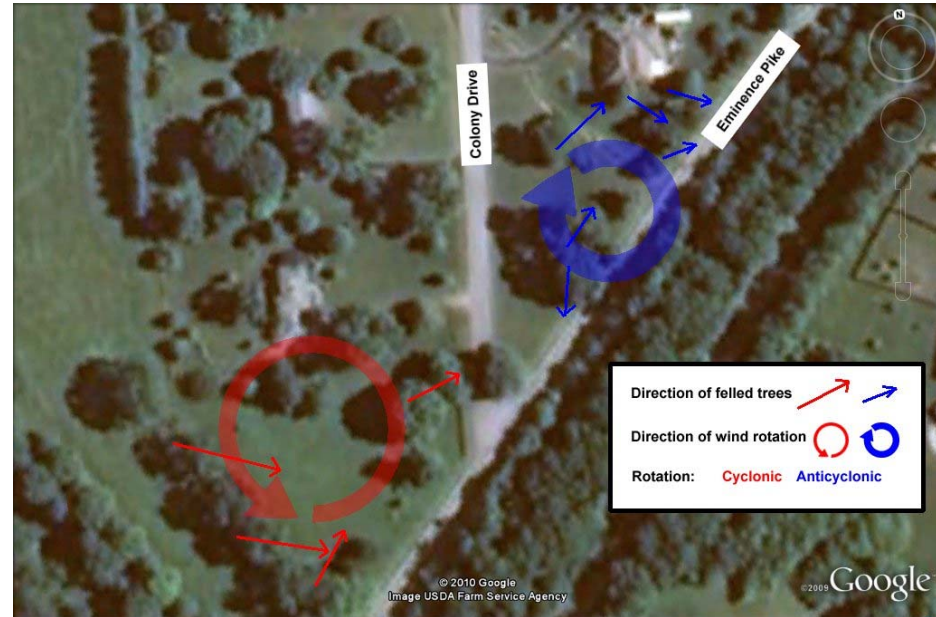
As the low moved off to the east, winds picked up and gusted to nearly 40 mph, causing significant blowing and drifting snow during the afternoon and evening hours.



## 8. July 17 Shelbyville Microburst

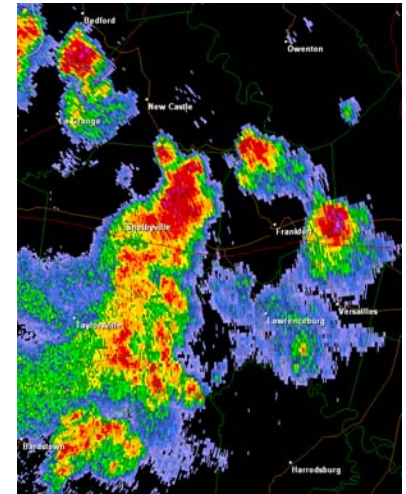
A powerful microburst occurred early on the morning of July 17 as a severe thunderstorm rolled across Shelby County. Most of the damage occurred between 2:30 AM and 3:00 AM EDT when numerous trees were blown down. This caused several power outages but fortunately there was no major damage to any homes or businesses. Some spots likely saw wind speeds as high as 90 mph.

In a microburst winds rush straight down out of the storm cloud and then spread out as they hit the surface, causing damage consistent with straight-line winds.



Some of the damage may have been caused by gustnadoes. The image above indicates the way the trees fell, showing both anticyclonic and cyclonic rotation. The way a tree falls is dependent on several factors, such as the health and shape of the tree and the presence or absence of nearby objects, in addition to wind speed and direction.

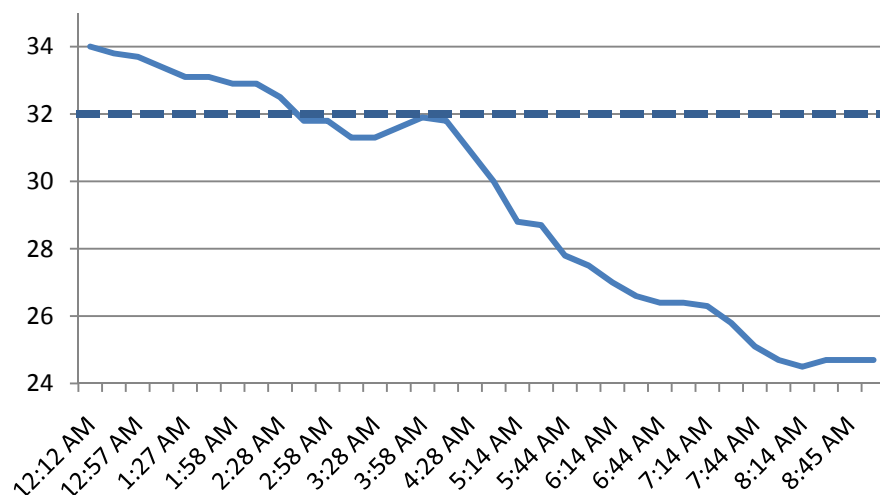
The image to the right shows how the radar looked as the storm struck just outside Shelbyville.



## 7. January 26 Rush Hour Flash Freeze in Louisville

Low pressure crossing the Great Lakes on the 25<sup>th</sup> brought light snow to Louisville during the afternoon. The snow fell while temperatures were above freezing, in the middle 30s, causing roads to become wet.

Overnight from the 25<sup>th</sup> into the very early morning hours of the 26<sup>th</sup> only a few flurries fell with cloudy skies and temperatures remaining above freezing. Then at 4:30am a band of heavy snow struck the metro, and temperatures began to plummet. By 5:30am visibility was down to less than a mile in the falling snow and the temperature was below freezing, on its way down into the middle 20s by rush hour.



Temperature at Louisville on the morning of January 26, 2010

Only half an inch of snow fell, but it fell quickly and at exactly the wrong time...just as the morning rush hour was getting underway and school buses were starting to roll out. The snow combined with temperatures crashing below freezing caused the wet roadways to quickly ice over. Hundreds of traffic accidents occurred, several involving school buses.

## 6. July 27 Flooding in Berea and Elizabethtown

Central Kentucky had been mired in a very humid, warm air mass for much of July, resulting in thunderstorms on many days of the month. On the 27<sup>th</sup> a weak warm front slid to the northeast across the region and sparked numerous thunderstorms. Because there was an extremely large amount of moisture available in the atmosphere the storms produced copious amounts of rainfall very quickly. At Elizabethtown 2.20" of rain fell in just 30 minutes, and 5.25" was recorded in three hours. Similar rainfall rates likely occurred at Berea, where there were two water rescues just northwest of town.



**Walnut Meadow Road under water near Berea on July 27. Note the partially submerged van near the center of the photograph. Never drive into floodwaters!**  
**WLEX**

## 5. April 24 Severe Weather Outbreak

On April 24 severe super cell thunderstorms developed over the middle and lower Mississippi Valley. As the storms moved to the northeast they congealed into a squall line that passed from west to east through central Kentucky. The middle part of the line "bowed out" and produced significant wind damage as well as a couple of small EF-1 tornadoes.

The surface map that day showed strong low pressure forming over Arkansas and deepening as it moved northeast to Illinois. A cold front pushed into an extremely unstable atmosphere over Louisiana and Mississippi, resulting in many deadly tornadoes of as much as EF4 strength. As the low moved northeast it brought some of those storms up into the Tennessee and Ohio Valleys.



**Left: The squall line surges into LaRue County near Magnolia.**

**Right: Tornado damage near Sunfish in Edmonson County. NWS**

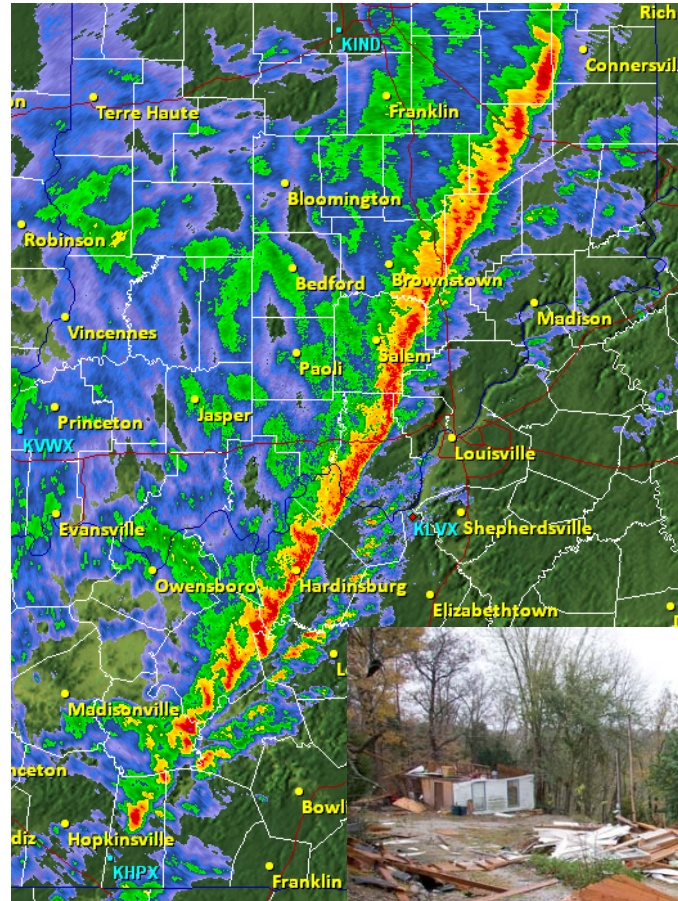


**Left: NWS storm surveyor records information about tornado damage in Edmonson County. NWS**



## 4. October 26 Squall Line

A solid line of severe and briefly tornadic thunderstorms raced through southern Indiana and central Kentucky during the late morning and early afternoon hours of October 26. Several ingredients came together for this late season severe weather outbreak as a powerful surface low over Minnesota dragged a cold front through our region. Combined with the strong cold front was a powerful jet of low level winds around 75 mph and a mid level jet of winds around 110 mph. This produced an incredible amount of shear, which is a key ingredient to sustained and strong thunderstorm development. The extreme wind speeds at the low and mid levels also worked to produce storm motions between 60 and 70 mph.



**Left: The squall line crossing southern Indiana and entering central Kentucky.**

**Right: EF-1 tornado damage east of Bowling Green. NWS**





### 3. January 29-30 Snowstorm

Low pressure moving across the Gulf states brought very heavy snow to Kentucky, with the heaviest amounts falling across the south where 6 to 8 inches of snow piled up.

The snow began during the mid-afternoon hours of the 29<sup>th</sup>, and continued into the night. By late evening visibility in southern Kentucky was down to half a mile in snow that was being propelled by 10 to 20 mph northeast winds. The snow tapered off by mid-morning on the 30<sup>th</sup> after a wide swath of at least half a foot had accumulated.

Temperatures fell to around zero the night after the storm.



**The Jefferson Memorial Forest Welcome Center in Louisville. *Tony Bright***

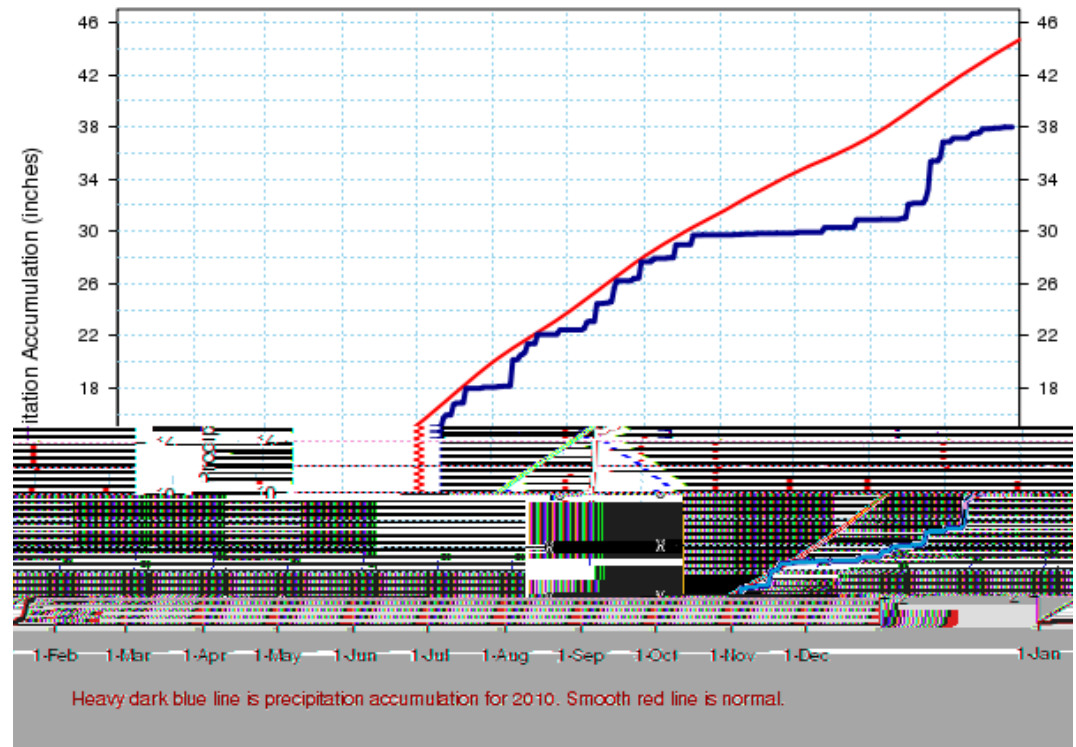
## 2. August-November Drought and Recovery

After a normal amount of rainfall from late spring through much of the summer, the faucet turned off in mid-August across northern Kentucky and southern Indiana. The dry conditions allowed temperatures to soar, resulting in one of the top ten hottest Junes and summers on record.

From August 22 to November 16 less than two inches of rain fell on the middle Ohio Valley. Louisville recorded their driest September on record, which also happened to be their 3<sup>rd</sup> driest overall month. Frankfort had their 2<sup>nd</sup> driest September on record.

Then, as suddenly as the rains stopped, they returned. From mid-November to late December nearly 7 inches of precipitation fell across the area. Louisville had their wettest Thanksgiving ever, and Lexington their 2<sup>nd</sup> wettest.

Precipitation Summary for Louisville Area  
Jan 1 - Dec 31



# 1. Derby Weekend Flood

A very slow moving cold front brought historic rains to the Ohio and Tennessee Valleys on May 1 and 2, 2010. Many locations in south central Kentucky received 8 to 10 inches of rain from early Saturday morning (May 1) to late Sunday evening (May 2) with occasional rainfall rates of 1 to 2 inches per hour. The copious rainfall caused widespread flash flooding, areal flooding, mudslides, dam failure, road closures, evacuations, and swift water rescues. Almost all streams and rivers in southern Indiana and central Kentucky experienced some degree of flooding. Dunham Lake Dam on the south fork of the Little Barren River in Metcalfe County was at a high risk of failing due to flood waters eroding the barrier. Bowling Green set their all-time record for calendar day precipitation in May on the 1<sup>st</sup> (4.75"), and then broke that record the very next day (4.92")! Damage totaled about \$30,000,000 and five people were killed in central Kentucky.



## Left, Top to Bottom:

Swift water rescue in Allen County.  
*Allen County Citizen-Times*

Flooded homes in Simpson County.  
*Alicia Bingham*

Bourbon County. *WKYT*

Clark County, KY. *Winchester Sun*

## Right, Top to Bottom:

Tates Creek Road at Valley View in Madison County.  
*Jason Rawlins*

Hardin County near Lebanon Junction.  
*Eric Armstrong*

Valley View Heights in Madison County.  
*Michael Bryant*

Paint Lick in Garrard County. *Chris Leftwich*