

As 2023 ends, the employees of the National Weather Service in Jackson picked what they consider to be the top 5 weather events of this year. Here are the events, ranked in matter of severity:

## 1. March 3<sup>rd</sup>, 2023 Windstorm:



Roof blown off a farmhouse in Fleming County  
Picture courtesy of: Fleming-Mason Energy

A strong upper-level storm system and intense surface low pressure moved from the Southern Plains to the Mississippi Valley during the wee morning hours of Friday, March 3<sup>rd</sup>. The surface low pressure system rapidly deepened during the day on Friday as it passed just north of the Ohio River and broke long-standing minimum pressure records at multiple locations. At Paducah, which has records dating back to 1937, the sea level pressure bottomed out at 977.7 mb, well below the previous minimum pressure record of 981 mb set in 1960.

At Evansville, which has records dating back to 1897, the sea level pressure bottomed out at 976.0 mb, once again well below the 979.7 mb record observed in 1926.

As this system approached, this system's warm front spread a band of showers northward across the area overnight of the 2<sup>nd</sup> into the morning of the 3<sup>rd</sup>. Winds increased across the higher elevations above 2,500 feet and in portions of Middle Tennessee and Central Kentucky toward dawn on Friday. In the system's warm sector, winds were breezy but still relatively tame, generally gusting 25 to 50 mph, strongest on southeastern ridges and near Lake Cumberland. Many locations saw sunshine buoying temperatures to near or above 70 degrees ahead of the system's cold front which approached from the west around midday, but dew points struggled to rise above 60 even in the Lake Cumberland area. Very minimal instability and intense shear proved prohibitive to sustained shower and thunderstorm organization with the cold front.

While the shallow showers and storms that formed failed to mix down most of the momentum within the storm system's extremely intense wind field, strong cold air advection in the low levels resulted in an unstable low-level atmosphere behind the cold front. This allowed momentum from the intense winds just a few thousand feet above the ground to mix down and surface leading to a period of strong to damaging wind gusts, most concentrated between 5 PM and 10 PM over eastern Kentucky. Across the ridges and flatter terrain, wind gusts generally peaked between 50 and 70 mph. Winds were weaker in the more sheltered valleys and narrow hollows, peaking at 30 to 50 mph, still sufficient to bring down weaker limbs and trees. During the evening, the NWS Office at the Julian Carroll airport (KJKL) recorded multiple gusts to 58 mph or stronger, with a peak gust of 65 mph. This gust is the strongest measured gust at KJKL

since records began in 1981. The strongest gust in the NWS Jackson County Warning area (CWA) recorded on Friday evening was 70 mph at the London-Corbin Airport (KLOZ). While these winds were sufficient to cause structural damage, down many trees, and cause scattered to widespread power outages, eastern Kentucky was spared from the destructive hurricane force wind gusts that occurred just to the west over portions of Central Kentucky and Bluegrass.

Across the Commonwealth, power outages exceeded a half million customers Friday evening, with tens of thousands of those occurring in eastern Kentucky. Significant power outages occurred in many counties including Menifee, Lee, McCreary, Wayne, Pulaski, Estill, Rockcastle, and Jackson counties. Just north and west of the region, the Lexington metro area was particularly hard hit. Power restoration crews from many nearby states including Virginia, North Carolina, South Carolina, Georgia, Tennessee, Louisiana, and Arkansas joined local utility companies in what turned into a several day power restoration effort. Many instances of loss of siding and/or roofing material were also observed. More significant structural damage reports were received from Estill and Fleming counties. Just north and west of the region, the Lexington metro area experienced stronger winds and with more widespread structural damage.

**For more information on this event:** [March 3, 2023: Powerful Storm System Brings Damaging Winds \(weather.gov\)](#)

## **2. April 1<sup>st</sup>, 2023 Wind Storm:**

After an intense windstorm in early March, strong to damaging winds once again struck eastern Kentucky on April 1<sup>st</sup>. Another unseasonably intense low pressure system tracked from the Upper Midwest to across the Great Lakes, pulling a cold front across the area during the wee morning hours of April 1<sup>st</sup>. Storms along the front put down torrential downpours with pockets of strong gusty winds. This led to a few instances of poor drainage/small stream flooding as well as downed trees before sunrise. However, the more significant weather arrived mid to late morning as skies cleared and southwesterly winds increased sharply ahead of the storm system's secondary cold front. During the midday to midafternoon hours, southwesterly wind gusts peaked between 30 and 50 mph in many of the valley locations with gusts of 55 to 60 mph commonly being observed in the more open countryside and atop ridges. The strongest reported gust, 70 mph, was observed at a Kentucky Mesonet station atop Flatwoods (elevation 2,774 feet ASL) in Pike County.



**Power Pole snapped on Spurlock Creek- Floyd Co.**  
Picture Courtesy of: Big Sandy RECC

The strong to damaging winds resulted in many trees being blown down onto power lines and snapped power poles. Power outages exceeded more than 50,000 customers across the Commonwealth. A vast majority of those outages were reported in eastern Kentucky and were

mostly concentrated in the eastern Kentucky Coalfield. Kentucky Power, which covers much of southeast Kentucky, took 3+ days to restore power in their service area. Repairs included replacing at least 79 power poles, 30 miles of power lines, 70 cross arms, and 44 transformers. The Big Sandy RECC also took at least two days to restore power to 3,171 of its approximately 12,500 customers. Aside from damage to power infrastructure, two individuals reportedly sustained injuries during the high wind event -- a branch struck a hiker near Natural Bridge and another tree fell on a fire truck in Letcher County. There were also numerous reports of downed trees and multiple instances of structural damage. The most notable building damage was reported in Floyd County where the Triple A Market in Martin lost its roof and an apartment building in Prestonsburg partially collapsed.

**For more information on this event:** [April 1, 2023: Anomalously Deep Storm System Brings Strong to Damaging Winds \(weather.gov\)](#)

### 3. May 16<sup>th</sup>, 2023 Hail and Tornadoes:



Rotating Supercell near Powell/Estill County Line  
Picture Courtesy of: Johnny Feltner

The most widespread severe thunderstorm activity in many months broke out across eastern Kentucky on Tuesday, May 16th. A warm front lifted near the Mountain Parkway during the morning hours, ushering in a muggy airmass for those locations to the south of the Parkway. Sun shining on this juicy air mass helped build up moderate amounts of instability south of the warm front as temperatures warmed into the upper 70s to mid-80s there. Meanwhile, persistent cloud cover and a weak northeasterly breeze kept temperatures cooler and conditions much more stable north of the front.

Scattered showers and storms were observed near and north of the warm front earlier in the day, but a majority of the activity did not arrive until afternoon when a wave of low pressure rode directly along the stalled boundary. This low acted as a trigger for lift while also increasing the wind shear sufficiently to favor rotating supercell thunderstorms across most of eastern Kentucky.

Several of the thunderstorms, especially near the Mountain Parkway southward to US-421, exhibited classic supercell structure and strong rotation. Within this corridor, multiple swaths of hail greater than 1 inch in diameter were observed. Additionally, the greatest turning of the winds in the low levels (typically needed for the formation of tornadoes) occurred right along and south of the warm front (which was situated near the Mountain Parkway). It was within this zone that a storm moving along/near the warm front dropped a brief EF-1 tornado in the vicinity of the Hendricks and Foraker communities of Magoffin County moments past 4:45 PM. In the hour and

45 minutes preceding the tornado, several residents upstream of the tornado reportedly observed a funnel cloud along the Estill/Powell County line. However, an all-day search from a NWS Jackson Storm Survey Team turned up no tornado damage (though much of that area is remote forest land inaccessible from roadways). Further east in Pike County, another supercell moving along this same boundary pummeled the Kimper area with hail up to the size of tennis balls. A few dozen miles south of the boundary, another storm which organized over Leslie County dropped hail up to golf-ball size near Hazard. Further south from the warm front, storms tended to be less super cellular and instead generated strong outflows leading to bowing storm lines which produced damaging wind gusts.

**For more information on this event:** [May 16, 2023: Potent Low Pressure System Brings Large Hail, Damaging Winds and a Tornado to Eastern Kentucky \(weather.gov\)](https://www.weather.gov/may16-2023-potent-low-pressure-system-brings-large-hail-damaging-winds-and-a-tornado-to-eastern-kentucky)

#### **4. February 16<sup>th</sup>, 2023 East Kentucky Flooding:**

An unusually mild and moist air mass set up across eastern Kentucky in the days prior to February 16<sup>th</sup> as a wavering frontal boundary laid out along the Ohio Valley. The boundary separated a chilly winter air mass to the north from a mild and very moist air mass to the south. A persistent feed of warm, moist, and unstable air over the boundary, along with potent disturbances passing aloft, sparked rounds of training showers and thunderstorms for much of the day on the 16<sup>th</sup>. This was followed by a final round of showers and thunderstorms with the passage of a cold front during the evening of the 16<sup>th</sup> and early on the 17<sup>th</sup>. Rainfall amounts of 2.5 to 4.5 inches were common. Generally speaking, the heaviest and most persistent rain fell between the I-64 and Hal Rogers/Highway 80 corridors although some locations further southeast also picked up on the heavier rainfall amounts.

Scattered instances of flash flooding were observed along with many instances of urban and small stream flooding. Eventually, all of this rain led to significant rises on the main stem rivers, pushing river gauge points into action or flood stage on all of the primary rivers -- the Big Sandy, Licking, Red, Kentucky and Cumberland. The worst river flooding was observed along the Kentucky River at Ravenna where Major Flood stage was almost eclipsed and along the Red



**Flooding along Squabble Creek**  
Picture Courtesy of: Trinity Sizemore



River in Clay City where the river reached well into Moderate Flood stage. The flood waters appeared to remain just low enough to spare significant damage to homes, but there were many instances of inundated roads, road damage, and stranded vehicles. A large rockslide also occurred along KY-52 between Jackson and Beattyville.

**For more information on this event:** [February 16, 2023: Persistent Showers and Thunderstorms Cause Flooding Across Eastern Kentucky \(weather.gov\)](#)

## 5. July 2<sup>nd</sup>, 2023 Thunderstorms:



Severe thunderstorm moving through Jackson County  
Picture Courtesy of: Jessica Thorpe

A slow-moving upper-level shortwave trough advancing out of the Mississippi Valley and subtle waves of low-pressure riding along an attendant surface cold front led to multiple rounds of stormy weather on July 2nd, 2023. Though shear was only marginally sufficient, plenty of strong early July sunshine over Kentucky (on the warm side of the front) led to a highly unstable environment which fueled rounds of intense and particularly photogenic thunderstorms.

The first severe thunderstorms reached the Southeastern Bluegrass and Red River Gorge areas by around 5 PM with locally intense winds. The most substantial wind damage was reported in the Levee area of Montgomery County where multiple structures sustained wind damage and many trees were snapped. An official NWS Storm Survey determined that the

winds were straight-line and not tornadic. Sizable power outages were also reported in Montgomery and Menifee counties with these storms. The first cluster of storms generally weakened as they crossed the Licking River basin and departed through the Big Sandy River basin. A second line of storm organized over Central Kentucky and moved into Eastern Kentucky around and after 8 PM. The strongest portions of the second line generally impacted locations to the south of the Mountain Parkway. Overall intensity of the thunderstorms diminished during the mid and late evening with the loss of heating and increasing low-level stability. By the time storms came to an end, the National Weather Service in Jackson had received more than 60 reports of severe weather, primarily in the form of wind damage.

**For more information on this event:** [July 2, 2023: Potent Severe Thunderstorms Produce Numerous Instances of Wind Damage and Isolated Hail \(weather.gov\)](#)