

Top 5 Weather Events of 2022

Here are the Top 5 Weather events of 2022 as voted on by the staff of the National Weather Service Office in Jackson. This year there was a tie for 4th place. That being the case, there is no Number 5 event.

1. Historic eastern Kentucky Flooding July 26th – 30th:



Floyd County, Kentucky
(Johnny Ray Feltner, Twitter)

Between July 25th and July 30th, 2022, several complexes of training thunderstorms developed south of I-64 and brought heavy rain, deadly flash flooding, and devastating river flooding to eastern Kentucky and central Appalachia. These thunderstorms, at times, caused rainfall rates in excess of 4 inches an hour across complex terrain that led to widespread devastating impacts. While it did not rain continuously during this 4-day stretch, the overwhelming amounts of rain and resultant flooding led to 39 deaths and widespread catastrophic damage. Entire

homes and parts of some communities were swept away by flood waters, leading to costly damage to infrastructure in the region. Over 600 helicopter rescues and countless swift water rescues by boat were needed to evacuate people who were trapped by the quickly-rising flood waters. In total, 24 Flash Flood Warnings were issued between July 26th and July 30th. Between the evening of July 27th and the mid-morning hours on July 28th (the peak of the event), 13 warnings were issued, 3 of which were upgraded to a Flash Flood Emergency.

Radar-based rainfall estimates suggest that upwards of 14-16 inches of rain fell during this 5-day period in a narrow swath, with many more locations receiving 6-10 inches of rain. Most of this rain fell during the night of July 27th into the morning of July 28th, which is when the most devastating impacts were felt. The highest totals occurred across an axis that stretches from northern Clay and southern Owsley counties, east through southern Breathitt and northern Leslie counties, into Perry, Knott and Letcher counties. The highest rainfall total report was from southern Knott County, where 14 inches fell between July 25th and July 29th. This site, a cooperative (COOP) observer at Carr Creek Lake, reported 6.71 inches from 7am July 28th to 7am July 29th, following a report of 6.50 inches at that site on the previous day. Another COOP site in Buckhorn reported 8.00 inches of rain for the 24-hour period ending 7am on July 28th. The rainfall total in Buckhorn from July 25th to July 29th



Hindman, Knott County, KY
(Tyler Wolfe, Facebook)

was 11.76 inches. These rainfall values occurring in such a short period of time are incredibly rare: there is less than a 1 in 1000 chance for this much rainfall over five days in a given year.

The incredible rainfall also led to significant rises and flooding on many rivers in eastern Kentucky including on the main stem of the Kentucky River; North, Middle and South forks of the Kentucky River; Red River and Licking River. At Whitesburg, the North Fork of the Kentucky River swelled well above major flood stage, reaching close to 21 feet before gauge failure (the previous flood of record was 14.7 feet in 1957). The North Fork of the Kentucky River at Jackson also reached major flood, setting a new record crest of 43.47 feet (the previous record was 43.1 feet set in 1939). The river flooding caused a second round of destruction for communities in the region, resulting in flooding at downstream areas that did not receive as much rainfall.

For more info.: [Flooding on July 26th - 30th](#)

2. Flooding and Tornado on New Year's Day:

The second warmest December on record for eastern Kentucky finished with a warm and moist air mass in place on New Year's Eve. A developing warm front slowly lifted northward out of the Tennessee Valley during the early morning hours on New Year's Day 2022 and stalled near the Hal Rogers/Highway 80 corridor. The combination of strong lifting and near record atmospheric moisture levels for this time of year led to a line of training showers and thunderstorms, some with frequent lightning and intense downpours. The heaviest rainfall occurred from about 4 to 8 AM and led to many instances of flash flooding from Rockcastle County east northeast through Jackson, Owsley, Breathitt, Floyd, and Pike counties.



Breathitt County
Courtesy of Florence Martin

By midday, locations affected by this activity had



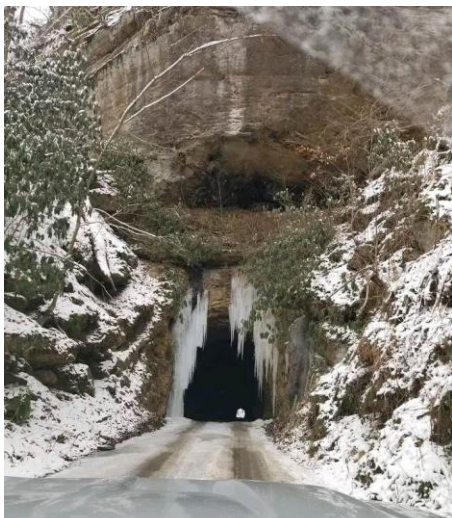
Destroyed barn in Estill County
Courtesy of National Weather Service, Jackson

received 2 to 4 inches of rainfall. A temporary lull in the showers followed as the front shifted further to the north during the late morning and early afternoon. This allowed temperatures to surge into the 60s across the northeast Kentucky and into the lower to middle 70s closer the Kentucky/Tennessee border. Strong to severe thunderstorms developed in a high shear, low instability environment during the afternoon as a cold front swept from northwest to southeast across the area. While these storms mainly produced

damaging wind gusts, one storm produced a brief spin-up tornado in far northwest Estill County. Impacts did not end with the passage of the cold front though; the excessive rainfall from earlier in the day quickly found its way into the main stem rivers, sending multiple locations along the Kentucky and Red Rivers into flood stage. The most significant river flooding of the event — Moderate flood — was attained along the Kentucky River at Ravenna, the Red River at Clay City, and the South Fork Kentucky River at Booneville. A few other locations surpassed Minor flood stage.

For more info.: [New Year's Day Flooding and Tornado](#)

3. Arctic Blast on December 23rd:



Ice-shrouded Entrance to Nada Tunnel
Courtesy of LEX 18

The coldest blast of arctic air in years and the most frigid Christmas weekend in decades enveloped eastern Kentucky from Friday, December 23rd through Christmas Day. On Thursday, December 22nd, eastern Kentucky was enjoying mild temperatures ranging from the mid-40s to lower 50s. Clouds were prevalent but peeks of sun shone through thin spots at some locations -- little indicated the arctic front and bitterly cold air mass rapidly encroaching on the Ohio Valley. The front reached the Lake Cumberland area between 10:30 and 11:00 PM and exited the far eastern tip of Pike County by around 2:00 AM Friday morning. Temperatures fell precipitously along the front, with rain changing to a heavy wet snow in a matter of minutes.

Just behind the front, wind gusts of 30 to 50 mph blew the snow, leading to brief whiteouts at some locations. Temperatures continued to plummet after the front passed while snowfall rates were so intense that roads became slush and snow covered within an hour. By the time steadier snow ended one to two hours after the frontal passage, temperatures had fallen into the teens and many locations had been transformed into a wind-scoured snowy landscape. Light flurries continued into the daylight hours on Friday but the massive temperature drop and brutally cold winds were by far the bigger concern. Most locations saw air temperatures dipping to between 0 and -5 degrees after sunrise on Friday. Friday morning's temperatures were 50 to 55 degrees colder than what was experienced a mere 18 to 24 hours prior. To add insult to injury, strong winds made it feel more like -10 to -30 degrees at lower elevations. Wind chills at some of the highest elevations approached -40 degrees.

The winds finally diminished by later Friday and Friday night but temperatures recovered only very slowly over Christmas weekend and would not rise back above freezing until Tuesday, December 27th. Though snowfall amounts with the cold front

were generally 2 inches or less, the bitterly cold temperatures preserved the snow which had fallen, yielding an elusive White Christmas for many.

The cold snap was the harshest in several years. Wind Chill Warnings were hoisted for dangerous cold across eastern Kentucky for the first time since February 2015. The extreme cold and strong winds led to numerous small to medium-sized power outages as electrical infrastructure struggled in the bitter temperatures. There were also many reports of frozen pipes leading to water damage in buildings and ruptured water mains. Some of the most severe water disruptions occurred in those counties which saw catastrophic flooding in July and were still repairing water distribution infrastructure. Some residents of Perry County remained without public water supply for more than 2 weeks.

For more info: [Arctic Outbreak on December 23rd](#)

4. Heavy Snow on January 6th: (Tie)



Heavy Snow in Hatfield
Courtesy of Mary Reed Runyon

Heavy snow moved across eastern Kentucky on Thursday, January 6th as a potent low-pressure system developed over the Deep South in the morning, rode up the spine of the southern Appalachians during the afternoon, and off to the northeast Thursday night - a climatologically favored track for heavy snow accumulations across eastern Kentucky. The first flakes reached the I-75 corridor by mid-morning and spread eastward across the remainder of the area by early afternoon. Snowfall rates of 1 inch per hour or more were observed during a majority of the event.

The nearly perfect combination of cold temperatures at the surface and aloft led to dry, fluffy snow-to-liquid ratios mostly 12-15:1 and storm total accumulations on the order of 4 to 9 inches by the time snow tapered off late Thursday evening. The dry nature of the snow prevented any significant issues with downed trees and power lines. However, the warm roads, due to mild weather in recent weeks, partially melted the snow as it fell, leading to a slippery, slushy mess on area roadways. The most notable incident was a 50 to 75 vehicle pileup on I-64 near the Montgomery/Clark County line. Martin County also closed all county highways during the event.



Multiple vehicle pileup in Mt. Sterling
Courtesy of Justin Logan

The hazardous travel contributed to many single vehicle incidents across eastern Kentucky.

For more info.: [Heavy Snow on January 6th](#)

Severe Weather, Flooding and Tornado on May 6th: (Tie)



Tornado Funnel near Burnside Island
Courtesy of Michael Baker

A potent late spring upper low drifted directly toward eastern Kentucky on May 6th. The system's warm front, cold front, and several surface troughs spread multiple episodes of showers and storms across the area from the early morning hours until late in the evening. Rainfall totals on the order of 1 to 5 inches were reported at many locations south of I-64 corridor with the heaviest swath falling from Martin, Johnson, and eastern Morgan counties southward to Bell, Whitley, and McCreary counties. Sporadic bullseyes of heavy rainfall also occurred west of I-75 and in Estill/Fleming counties. This led to areal flooding, in most cases minor and/or urban, and multiple mudslides. The excess runoff eventually flow into area rivers and caused minor river flooding in portions of the Kentucky River basin and atypically high water in the upper Licking.

Aside from the rainfall, several marginally strong to severe thunderstorms crossed eastern Kentucky during the afternoon producing mainly minor wind damage.

However, a better organized storm briefly dropped an EF-1 tornado in the Burnside area where it damaged multiple structures and downed trees. Two people were injured in a mobile home that was flipped off its foundation by the tornado.

For more info.: [Severe Weather, Flooding and Tornado on May 6th](#)

Although these events did not make the Top 5, we thought they deserved an honorable mention. They are in no particular order:

1. Snow Storm on January 16th and 17th:

A complex winter storm lifted across the Southeast US on January 16th bringing with it a sloppy mess of freezing rain, rain, snow, and sleet followed by a blanket of heavy wet snow. Low pressure initially tracked from the Mississippi Valley to the Upper Tennessee Valley, where it decayed late in the evening. Meanwhile, a much stronger low developed over the Southeast US and tracked up the Atlantic Seaboard as a Nor'easter.

This system initially caused a band of light snow, sleet, and freezing rain to lift northward across eastern Kentucky during the morning hours. Precipitation amounts were light but sufficient to cause slick travel in some locations. A nose of warm air aloft eventually transitioned the precipitation over to mainly rain or freezing rain for most locations by midday, as temperatures nudged to near or above the freezing mark. For much of the late morning through mid to late afternoon, strong shadowing from the Great Smoky Mountains/Southern Appalachians, kept the precipitation light and showery in nature. Eventually, cooler air filtered in aloft and eroded the remnant warm nose enough to allow the precipitation to transition back over to just snow. As this occurred, most of the precipitation became confined to a narrow but intense snow band that set up near I-75 and the Daniel Boone National Forest during the later afternoon and evening. Under this band, snowfall rates reached 1-2 inches per hour and piled up a quick 5 to 9 inches of heavy wet snow, leading to thousands of power outages from McCreary and Whitley counties northward to Menifee County.



Fogertown in Clay City
Courtesy of Cassidy Hensley

Meanwhile, counties to the east missed out with just some showery light precipitation. As the evening wore on, the band of heavy, wet snow slowly shifted eastward and split up into multiple weaker bands -- still heavy enough to leave a 2 to 5-inch blanket of bough-bending wet snow in most locations, transforming the gray winter landscape into a snowy wonderland. The deeper valley locations of Knott, and Floyd counties, including the cities of Prestonsburg and Hindman, missed out on most of this activity, only receiving 1 to 2 inches.

For more info.: [Snow Storm Jan. 16th and 17th](#)

2. Ice Storm on February 3rd and 4th:



Heavy Icing on East Fork Rd in Bath County
Courtesy of Jeff Setter

Periods of mostly light to moderate rain spread across eastern Kentucky on February 2nd and February 3rd as waves of low pressure rode along a slow-moving arctic cold front settling in from the northwest. The strongest and final wave of low pressure lifted across the Appalachians late February 3rd and into February 4th bringing with it a final round of rain changing over to a wintry mix and eventual snow flurries across eastern

Kentucky. While 2-day rainfall amounts ranged from 1.5 to 3.0 inches across much of the area, rainfall rates were too low to cause more than the typical nuisance flooding of small streams and low-lying areas. Rivers reached elevated stages, but only the Red River at Clay City exceeded minor flood stage, spilling across farm fields and low-lying roadways.

This system also produced heavy icing at many locations along and north of I-64. South of I-64, heavy icing became increasingly confined to the higher ridges with southeastward extent. The shallow cold layer with the cold front quickly moved into the Bluegrass on the morning of February 3rd, causing thermometers to fall to near freezing north of I-64 and along the southeast rim of the Bluegrass (down to around western Jackson and northern Rockcastle counties). Some limited daytime heating seemed to keep temperatures just warm enough for plain rain through much the day, but after sunset temperatures cooled just enough for icing to begin. The marginally sub-freezing temperatures and moderate rainfall rates led to runoff and inefficient ice accretion.

Further southeast, the shallow cold layer struggled to make much progress into the East Kentucky Coalfield during the day; instead, temperatures largely held in the 40s and 50s through the afternoon. During the evening, the cold layer became deep enough to surge southeastward, bringing with it sub-freezing temperatures to the ridgetops. By the time precipitation tapered off early February 4th, an icy glaze coated the Southeast Bluegrass and many of the higher East Kentucky Coalfield ridges. Very slippery road conditions were reported as far south as Jackson County and Fleming County issued a Level 2 Weather Emergency due to the hazardous road conditions. However, many of the Coalfield Valleys of Southeast Kentucky remained just above freezing until after the rain ended, thus preventing notable icing.

For more info.: [Ice Storm Feb. 3rd and 4th](#)

3. Wet Snow Storm on March 12th:

Deceptively mild temperatures in the lower to middle 60s, plentiful sunshine, and a southerly breeze on the afternoon of Friday the 11th gave little warning of the late-season heavy snowfall that would follow mere hours after sunset. A potent cold front reached locations west of the Cumberland/Pottsville Escarpment by 8 PM and pushed eastward through the remainder of the evening. Temperatures dropped sharply behind the boundary, quickly falling to near or below freezing at most locations by midnight to 2 AM. With this particular system, most of the precipitation followed the frontal passage, a rather unusual setup compared to most cold fronts experienced in this region, and thus quickly changed over to snow.



Near Hazard
Courtesy of Charmaine Blair

The snow continued to fall heavily through the early morning hours, reaching 1 to 2 inches per hour at times. Even with road temperatures starting at above 50F during the evening, the intense snowfall rates combined with temperatures falling into and through the 20s and northwest winds gusting up to 25 mph led to snow-covered roads and considerable drifting. The degraded road conditions led to the closure of I-75 in Rockcastle County for a time early on the morning of Saturday, the 12th. Webcams from both I-75 and I-64 showed snow/slush covered roads and significant visibility reductions.

The shield of heavy snow quickly exited to the east after sunrise, but a frigid northwest wind continued to force orographic snow bands into the afternoon hours across much of Southeast Kentucky. Once the steadier snow came to an end, most locations were measuring 4 to 8 inches of snow. Across and near the higher elevations of Southeast Kentucky, the orographic snow showers led to additional light to moderate accumulations during the daylight hours on Saturday. Elsewhere, the bitter breeze and temperatures in the 20s were no match for the warm ground temperatures and peeks of strong March sunshine which caused snow on area roadways to rapidly melt. This reduced the storm's overall impact on travel once the snowfall ended. Furthermore, the atypically dry, fluffy nature of the snow resulted in minimal impacts on power lines and trees. Once the lingering snow showers ended, high pressure brought a mostly clear and very cold Saturday night with temperatures tumbling to around 0F in the coldest sheltered valleys and into mid-teens on the ridges and near the larger lakes

For more info.: [Late Season Snow Storm March 12th](#)

4. Severe Weather on June 17th:

A dome of high-pressure ridging resided over the region from Monday, June 13th through Thursday, June 16th, bringing with it the first heat wave of the summer. Temperatures soared well into the 90s at the lower elevations each day. Both of the eastern Kentucky climate sites, London-Corbin Airport and the Jackson Weather Office, broke their daily record highs by 1 to 3 degrees each day. Dew points in the lower to mid-70s on most days made those temperatures feel even more oppressive as heat indices soared into the 100 to 110F range each afternoon.



Tree on Power Line in Elna
Courtesy of Big Sandy RECC

A complex of thunderstorms developed over the Missouri Valley ahead of a cold front during the predawn hours of Friday, June 17th. This system arrived in the Ohio Valley near dawn and caused damaging winds in portions of Illinois, Indiana, and western Kentucky. The system weakened briefly during the morning, but the remnants encountered a very moist, unstable airmass leading to intensifying showers and thunderstorms over the Bluegrass Region as the system approached eastern Kentucky at midday. As the thunderstorm complex continued east of I-75, it brought powerful wind gusts which downed trees, power poles, and power lines across many counties stretching from the Bluegrass Region all the way to the Virginia and West Virginia borders. The greatest concentrations of damage were near and north of the Mountain Parkway and near the Tug Fork River from Martin County to the Belfry and South Williamson vicinity. Several counties along and south of Highway 80 and the Hal Rogers Parkway down to the Tennessee border also experienced damaging severe thunderstorm winds, with many trees and power lines blown down. The severe thunderstorms crossed the region quickly, exiting the area by around 2:30 PM.

Widespread wind gusts in the 40 to 65 mph range occurred with several localized gusts of 65 to 80 mph likely occurring based on radar data and damage reports of leveled barns or outbuildings, loss of roofing material from structures, uprooted trees, and snapped utility poles. Based on radar velocity data, some counties may have experienced the strong to damaging winds for at least 15 to 25 minutes as the storms rolled through, which greatly contributed to the widespread damage reports received. In fact, it is likely that thousands of trees and limbs were downed, dozens of power

poles were broken, and many miles of powerlines were blown down during this event. Well over 100 local storm reports were received by the National Weather Service Office at Jackson. More than 800 severe wind reports were issued for the entire event with a majority of the reports coming from Kentucky, Indiana, Tennessee, West Virginia, Virginia, and the Carolinas. Eastern Kentucky appeared to have among the greatest concentrations of damaging wind reports for that date.

Immediately following the event on Friday afternoon, approximately 35,000 customers were without power in the 33 county NWS Jackson, Kentucky County Warning Area. Some of the most extensive power outages were in Elliott, Martin, Johnson, and Floyd counties. Power outages extended over 24 hours for some with about 10,000 still without power around sunset on Saturday the 18th. Crews continued to restore power to customers on Sunday the 19th and Monday the 20th, with power having been restored in most locations by sunset on the 20th.

For more info.: [Severe Thunderstorms June 17th](#)

5. Storm System Brings High Winds and Critical Fire Danger March 30th – 31st:



Wildfire in Lee County
Courtesy of Amanda Faught

During the second half of March, precipitation across the region was generally minimal to nil which allowed the forest litter and dead trees/branches to become very dry. This helped set the stage for a high fire danger situation as low pressure developed over the Southern Plains during the early morning hours of March 30th, before lifting northeast and rapidly deepening during the daylight hours. In response to this deepening low, a sharp pressure gradient and strong southerly jet

developed across eastern Kentucky during the morning hours of the 30th. This led to wind gusts of around 40 mph at many locations by early afternoon. In addition, a bubble of very warm and dry air over the Southeast US was pulled northward by the low-level jet and further dried by down sloping effects off of the Great Smoky and Cumberland mountains. As a result, relative humidity levels cratered to between 15 and 25 percent while air temperatures soared to near record high levels in the upper 70s to middle 80s. For some of the more sheltered valleys, this rapid warming and drying was manifested by a more than 50-degree diurnal

temperature range from morning lows to late day highs. The starkest example of this was the Kentucky Mesonet station near Paintsville which started the day at 30F but recorded temperatures heating up to a summer-like 84F by late in the afternoon. The combination of strong winds, very warm temperatures, very dry fuels, and low relative humidities were very favorable for rapid fire spread and a number of wildfires ended up breaking out across eastern Kentucky. Fortunately, the impacts, in most cases, appear to have been limited to forest and brushy areas.

After a brief lull in the gusts during the evening of the 30th, the most intense winds with this storm system roared across eastern Kentucky from midnight to 4 AM on the 31st along and just ahead of a line of decaying showers moving in from the west. While the showers themselves were rather weak, an intense 60-70 knot jet was howling just a few thousand feet off the ground and the shower activity aided in the mix down of the winds. Wind gusts peaked in the 40 to 60 mph range across much of the forecast area during this time frame. (Gusts were generally a bit weaker over the Big Sandy Valley and far eastern Kentucky.) Numerous power outages resulted, especially near/southwest of KY-15. However, some sizeable outages were also reported in Morgan and Floyd counties. Among the hardest hit was Owsley County, where over half the county lost power for a few hours overnight when the powerful winds blew a large tree down and damaged infrastructure near a substation. The winds also blew trees down onto power lines in multiple locations and snapped power poles, most notably in Bell, Knox, Clay, Owsley, Laurel, Rockcastle, and Whitley counties. Some structural damage was also reported, mostly to weakly constructed structures (e.g., carports). The winds however were strong enough to blow the roof off a church in Knox County and off of a home in Wolfe County. The rainfall with the shower line was relatively minimal and many of the wildland fires continued to burn at some locations during the daylight hours of the 31st, but the combination of cooling temperatures, lighter winds, and high humidity levels helped to combat the fire activity.

For more info.: [Fire Danger March 30th-31st](#)