

Winter 2022-2023 Review

of Weather Conditions Experienced in Central Indiana

7th Warmest on record at Indianapolis (Tied)

55th Wettest on record at Indianapolis

9th Least Snowiest on record at Indianapolis (Tied)

Temperatures

DECEMBER 2022

December 2022 continued the pattern of frequent unseasonable temperatures that had been seen since mid-September across central Indiana. And as was the case in November 2022, December's overall near-normal average temperatures did not tell the story of these often-anomalous days, including Indianapolis' coldest daytime since 1996. Following zonal see-saw temperatures through the first several days, longer-duration pattern regimes set up through the rest of the month, which was also akin to November. The month's temperatures became progressively more extreme, as 5 of the last 9 days were 21 to 35 degrees off of normal.

December started with a couple cold mornings on the 1st and 4th as a progressive zonal pattern brought two rounds of Canadian high pressure whose centers tracked through the Ohio Valley. Lowest temperatures on the 1st were **11F** at both Perrysville 4 WNW (Vermillion Co.) and Rockville (Parke Co.) while Crawfordsville 6 SE (Montgomery Co.) dropped to **14F**. The 4th saw **11F** at Farmland 5 NNW (Randolph Co.) and **12F** at Rockville. Indianapolis dropped to 18F on both mornings.

The 6th-15th found an upper level pattern with a pronounced ridge over the Gulf of Mexico which occasionally built northward into the Midwest, as well as troughs often found over the western United States. This pattern combined to favor southwesterly flow and prolonged above normal temperatures over central Indiana. This warmth featured very small diurnal spreads, led by morning lows in the upper 30s to around 40F. Highs in the 50s (on the 6th, 14th, 15th) made for the mildest days with respect to normal, with the end of this early to mid-month period including the region's greatest rainfall since late summer over much of the region (see Precipitation section below). Highest marks ranged from maximums of **53F** on the 6th at both Muncie and Shoals 8 S (Martin Co.), **57F** on the 14th at Shoals 8 S, and **57F** on the 15th at Shelbyville ... to minimums on the 6th of **48F** at Shoals 8 S and **47F** at North Vernon 2 ESE (Jennings Co.), and on the 14th of **46F** at Washington 1 W (Davie's Co.). Indianapolis' highs and lows were 50F, 52F, 53F and 40F, 40F, respectively.

DECEMBER 2022 TEMPERATURES (con't...)

The middle of December then turned colder, with mainly subfreezing temperatures prevailing through the **18th-19th**. Indianapolis' high of 30F on the **18th** marked the season's first day held below 32F, 15 days later than normal; although the day was coldest at the Shelbyville Sewage Plant (**23F**) and the Beck Purdue Ag Center at West Lafayette 6 NW (**24F**). Minimums in the teens both mornings were lower on the **19th**, with Kokomo 3 WSW (Howard Co.) and Rockville both dropping to **10F**, while Indianapolis measured 16F. Seasonably chilly weather then set in on the **20th** ahead of approaching extreme cold.

A strong cold front crossed Indiana from west to east during the early afternoon to early evening of the **22nd**, ahead of very cold temperatures surrounding a very broad, amplified area of arctic high pressure that was plunging southward through the central United States. Readings around 40F midday on the **22nd** plummeted through PM hours, as the frontal zone's already very narrow temperature gradient tightened while crossing the state. The middle of this zone held the fastest drop, as most locations went from 32F to 20F in about an hour, with Lafayette and Fishers (Hamilton Co.) accomplishing it in 40-45 minutes. Frigid air continued to advance into the region through the evening of the **22nd**, with 5F readings arriving in the Upper Wabash valley around 700pm, and by midnight in the far eastern zones; Lafayette was the fastest of any 1st- or 2nd-order airport from the time of the frontal passage to 5F: a 31-degree drop in 4.4 hours. The NWS Indianapolis office plummeted from 33F at 509pm to 25F at 530pm: a rate of **-23 degrees/hour**. Wet roads courtesy of afternoon light rain to snow quickly "flash froze" causing significant travel impacts across the state.

Temperatures then held near or below zero for ~30-36 hours from around midnight on the **23rd** through dawn on the **24th**. Lowest readings occurred around dawn on the **23rd**, with strong winds facilitating a smooth distribution of observations near -10F, with minimums ranging from **-14F** at Rockville to -3 at Shoals 8 S; while **-11F** was observed at several other COOP sites: Jamestown 2 E (Boone Co.), New Castle 3 SW (Henry Co.), Kokomo 3 WSW, Castleton 2 S (Marion Co.), and Crawfordsville 6 SE. Indianapolis' low of -9F made for the area's coldest *December* morning since Christmas Eve 1989, with an observation this low last seen (in any month) on 1/30/2019. Readings continued their subtle climb through the evening of the **23rd** over much of the region, with daily highs ranging from **-2F** at Kokomo 3 WSW to 4F at the Daviess County Airport. Indianapolis rebounded to 1F during the evening, which tied the **record low maximum** from 1989, yet also tied for the 5th lowest December maximum in the 152-year record (a ~30-year return); and equally impressive: it was the first day held to 1F or lower **since 2/3/1996!**

The frigid cold was accompanied by strong westerly wind gusts following an area of low pressure that deepened on the **23rd** along the departing cold front, while rapidly intensifying into southeastern Canada (see Miscellaneous section below). Extremely low wind chills bottomed-out on the morning of the **23rd**, with -35F to -40F the rule across central Indiana, **-46F** measured in Westfield (Hamilton Co.), and -40F occasionally reached at Indianapolis from 445 to 515am.

Temperatures then slowly moderated during the **24th-27th**. Another very cold morning on

Christmas Eve found most locations near or just below zero, with Shakamak State Park's **-5F** the lowest report. Indianapolis' zero mark brought the first 3-consecutive-day string of 0F or lower minimums (in December) since a record 10-day subzero period in 1989; such a three-peat has only occurred historically in 13 Decembers – a 12-year return; and last occurred (in any month) on January 4-6th, 2018. Christmas Eve and Christmas Day both peaked in the mid-teens at most locations, a mere ~20 degrees below normal. Decreasing clouds on Christmas Eve promoted another frigid overnight, with single digits Christmas morning. The sunniest day of the month (Christmas) allowed readings to rebound into the mid to upper teens, and even 20F at Terre Haute by afternoon. More typical mid-winter chill was felt through the **26th-27th**, with lows in the teens to around 20F and highs trending upwards through the 20s. The freezing mark was finally surpassed on the **28th** and in a big way, with robust south-southwesterly winds boosting temperatures into the mid- to upper 40s, and even the 50F mark at several southern sites. At Indianapolis, this ended 5.7 sub-freezing days, including 71 hours with subzero wind chills, and about 36 hours with wind chills below -20F.

More extremes were in order for December's final days as an anomalously mild and rainy pattern held temperatures generally in the 40s at night while warm winds under cloudy skies promoted highs in the 50s. Warmest days were the **29th** and **30th**, with most locations even surpassing maximums observed on the **2nd-3rd** and **14th-15th**. Extremes across the region included isolated **61F** marks both days: at Shoals 8 S and Spencer (Owen Co.) on the **29th**, and at Shoals 8 S and Bloomington on the **30th**; Indianapolis meanwhile peaked at 58F and 57F, respectively. Daily high minimums were equally impressive, with warmest spots being Perrysville 4 WNW (**54F**) on the **29th** and North Vernon 2 ESE and Washington 1 W (Davies Co.) (both **53F**) on the **30th**; Indianapolis dropped to 45F and 50F, respectively.

At Indianapolis, December 2022's daily average temperatures were above normal on 16 days, and below normal on 13 days. It was tied for the **66th mildest** December for the Indianapolis Area since weather records began in 1871, placing it in the 57th percentile.

JANUARY 2023 TEMPERATURES

January 2023 was very mild, continuing a prolonged "January thaw" that had begun during the final days of December 2022. The new year began as an amplified pattern slowly brought a deepening storm system from the southern Plains to the Great Lakes – placing central Indiana within the system's warm sector as is more common in the late autumn or early spring. Anomalously high temperatures followed, led by very mild morning lows generally in the upper 40s (**2nd**) to mid-50s (**3rd**), with daily minimums as high as **60F** at Bloomington on the **3rd**; Indianapolis' minimum of **56F** on the **3rd** tied a daily record (only 11 days after the city recorded its lowest maximum temperature in nearly 27 years). The **2nd-4th** also brought three consecutive days with highs in the upper 50s to mid-60s; maximums on the **3rd** were as high as **65F** at Bloomington, and COOP stations Shoals 8 S (Martin Co.) and West Lafayette 6 NW (Tippecanoe Co.). January **3rd** was **31 degrees above normal** at Indianapolis, the city's greatest single day deviation above seasonable levels since 2/20/2018, and only the second such anomaly so far above normal since 12/27/2008.

JANUARY 2023 TEMPERATURES (con't...)

The 5th-9th found cut-off upper troughs traversing the southern Great Lakes while associated areas of weak surface high pressure crossed the central United States. This regime dropped temperatures much closer to normal with highs generally in the mid-30s to around 40F. Lows were mainly in the mid-20s to low 30s, although a colder morning on the 7th brought a minimum of **19F** to several sites: Lafayette, West Lafayette 6 NW, and the Rockville (Parke Co.) and Farmland 5 NNW (Randolph Co.) COOP stations. Indianapolis' low of 24F would end up being the airport's only daily minimum under 25F during an 18-day period (12/28/22 to 1/14/23).

The 10th-12th brought another period of unseasonable, yet more reasonably, mild conditions. An upper zonal ridge pattern and a storm system that deepened across the southern Plains boosted readings to ~15 degrees above normal on all three days. Highs were around 50F while morning lows were held in the 30s. Highest maximums were **58F** on the 12th at Shoals 8 S, **59F** on the 13th at both Shoals 8 S and Washington 1 W (Davies Co.), and **58F** on the 13th at Washington 1 W; while notable 1-day minimums included **47F** at both Shakamak State Park (Sullivan Co.) and Shoals 8 S through dawn on the 12th. The 13th-15th marked another return to only slightly above normal temperatures, with highs in the low to mid-30s on the 14th and several sites dropping to 21F on the morning of the 15th. Indianapolis' range on the 14th (32-24) made a daily average that was at normal – the first non-above normal day since December 27th.

January 2023's third and final 3-4 day period of unseasonably mild conditions occurred on the 16th-19th when deepening storm systems tracked northeastward, yet again to the west of central Indiana, promoting warm-advective southerly winds. Highs were mainly in the 50s while lows were generally held above freezing; highest daily maximums were **59F** on the 16th at Vincennes 5 NE (Knox Co.), **63F** on both the 17th and 18th at Shoals 8 S, and **62F** on the 19th at Columbus (Bartholomew Co.); notable highest minimums included **45F** on the 16th at Shakamak State Park and **48F** on the 17th at Elnora (Davies Co.).

The winter storm that strengthened while pushing northeastward through the Great Lakes into the 20th facilitated the month's main pattern change from persistent early-spring conditions to more mid-winter type chill. Despite daily highs in the seasonable mid-30s, the 20th-23rd's small diurnal spreads guided slightly above normal temperatures, with morning lows in the upper 20s to near 30F. A much more modest resurgence of above normal temperatures occurred on the 24th-25th with highs closer to 40F and moderating morning lows; no 1st-order site fell below 32F on the 25th while Shoals 8 S recorded the region's highest minimum for the day at **36F**. Cooler conditions on the 26th-27th were near to slightly above normal, despite highs moderating from the 30s to the 40s through the two days.

The final days of January 2023 were marked by stronger transition as moderation continued into one final gasp of unseasonable warmth on the 28th when low to mid 50s returned to central and southern counties, with **58F** at Shoals 8 S while Indianapolis peaked at 53F; lows only dropped to the low to mid 30s on the 28th-29th at both Bloomington and Shelbyville. Arctic high pressure then advanced southward through the central US through the 30th-31st, holding high temperatures across central Indiana to near freezing on the 30th, and only in the 20s on

the 31st. Both corresponding daily minimums came from the night of the 30th, with the region having dropped into mainly the teens by midnight (19F at Indianapolis), before many spots bottomed out in the lower teens by early on the 31st, while 3F at Rockville, and 5F at West Lafayette 6 NW were the lowest in the region, while 13F at Indianapolis was the city's lowest reading since Christmas Day.

January 2023's temperatures were anomalous both in overall departure from normal, as well as the **persistent above-normal trend** which lasted a whopping **33 days** (from 12/27/22 to 1/29/23). This was the 9th-mildest January in Indianapolis' record (a 17-year return), and the warmest January since 2006. The last time Indianapolis observed a month with temperatures so far above normal was December 2021 (+8.8°). Only 2 days finished with a daily average temperature below normal (the 30th and 31st); this tally was the lowest for any month since May 2018's 0 days below normal (which allowed a shattering of the all-time warmest May record); and tied 1923 for the fewest of any January since 0 below normal days were recorded in January 1880 (Indianapolis' warmest January on record). Honorable mentions to other consistently mild Januarys go to 1932, 1933, and 1990, which each tallied only 3 days below normal (January 1990 also followed extreme, record cold in the preceding December). Indianapolis failed to drop to 32F on 12 days, which tied for the 7th most on record of all Januarys, and was only the 3rd such occasion since 1939.

At Indianapolis, January 2023's daily average temperatures were above normal on 28 days, at normal on 1 day and below normal on 2 days. It was the **9th mildest** January for the Indianapolis Area since weather records began in 1872, placing it in the **94th percentile**.

FEBRUARY 2023 TEMPERATURES

February 2023 was well above normal, continuing the anomalously mild trend of the preceding five weeks. Surface low pressure centers continually took a rather slow track northwest of the region, basking central Indiana in a prolonged passing of their warm sectors. Any colder air following these departing storm systems was brief before warm advective winds returned. The latter half of the month also featured a very stable upper level pattern across North America which persistently held much colder arctic air to near or north of the Canadian border. After a colder start to the month, only above normal daily averages were recorded at all of the region's seven first-order airports from the 5th to the 16th, the 18th-23rd, and the 25th-28th. Anomalously mild conditions were most consistent on the 13th-16th and 19th-23rd, with the overall warmest days being the 9th, 15th, 22nd, and 27th. The only record high at Indianapolis was the 22nd's maximum of **71F**.

February's first few days continued the (rather brief) generally colder trend that began on January 30th, and which would end up being the only organized near to below normal period within the first two months of 2023. Most locations observed their only sub-freezing days of the month on the 1st and 3rd, while lows were mainly in the teens during the 1st-4th. The 1st brought February's coldest morning for northern and central counties, as lows ranged from **1F** at Rockville (Parke Co.) to several 14F observations across southeastern counties, including

FEBRUARY 2023 TEMPERATURES (con't...)

Shelbyville. 1st daytime highs ranged from **18F** at Farmland 5 NNW (Randolph Co.) to 33F at Bloomington, with 29F at Indianapolis. The 3rd's morning lows were generally in the upper single digits to the lower teens, ranging from **3F** at Rockville to 19F at Shoals 8 S (Martin Co.), while Indianapolis dropped to 12F; the region's southern tier recorded their lowest marks of the month, including **9F** at Washington 1 W (Daviess Co.) and **11F** at Farmersburg TV-2 (Sullivan Co.), while 12F was a common minimum reading over these counties. The 3rd had the month's coldest daytime for most locations with highs generally in the 20s, ranging from **18F** at both Kokomo 3 WSW (Howard Co.) and West Lafayette 6 NW (Tippecanoe Co.) to the low 30s across the far southern tier, while Indianapolis reached 25F.

The 4th was a day of transition with diurnal ranges as great as +35 degrees at Shelbyville (from 14F to 49F) bringing a return to the 40s by afternoon. The remainder of the month, with two brief exceptions was consistently, and at times, exceedingly mild. The 9th was exceptionally mild with daily lows in the upper 30s, closer to normal highs, while the observed maximums reached as high as **63F** at both the Oolitic Purdue Ex Farm (Lawrence Co.) and Spencer (Owen Co.), while low 60s reached as far north as Farmland 5 NNW, and Indianapolis also peaked at 60F. The 12th started at least a 4-day streak of highs in the mid-50s to low 60s, while embedded anomalous warmth occurred on the 15th: Shoals 8 S hit **75F** and Columbus (Bartholomew Co.) was boosted to **72F**, Vincennes 5 NE (Knox Co.) reached **70F**, Bloomington managed 67F, while Indianapolis only reached a comparatively mild 64F.

Rather cold mornings returned on the 17th-18th as very amplified surface high pressure tracked from Texas to the Carolinas. Low to mid-20s were widespread both mornings, with lowest readings closest to the high pressure's center – across our region's southern tier: **19F** was observed from Vincennes 5 NE and Shakamak State Park (Sullivan Co.) to North Vernon 2 ESE (Jennings Co.). However the only day with widespread *overall* below normal temperatures was the 17th, courtesy of daytime highs held in the 30s under overcast skies: lowest observed maximums were **27F** at Jamestown 2 E (Boone Co.) and **28F** at both Crawfordsville 6 SE (Montgomery Co.) and Lafayette 8 S (Tippecanoe Co.).

Another unseasonably mild period over the 19th-23rd brought five consecutive days of temperatures 10-20 degrees above normal at Indianapolis. The 19th and 20th saw lows across the region mainly in the mid-30s to around 40F and highs in the 50s to around 60F, with Shoals leading the way again with daily maximums and minimums as high as **69F** and **47F**. The 22nd was the month's warmest day following a high morning low (around midnight) near 40F, with 45F observed at Bloomington; southwesterly afternoon gusts as high as ~40 mph boosted readings into the low to mid-70s over most central/southern county locales, with **77F** at Shoals 8 S, **75F** at Washington 1 W, and several reports of 74F. A strong warm front stretched across the region failed to pass northern zones, leaving noticeably chillier air over these counties; Kokomo 3 WSW and Tipton 5 SW (Tipton Co.) only managed highs of 44F and 47F, respectively. Several central/northern stations reported their monthly maximum on the 23rd after the boundary passed northward, with these readings ranging from 57F at Lafayette 8S to **69F** at Greenfield (Hancock Co.).

The only other (brief) cool down after February's initial cold period was the **24th** where temperatures ranged from generally the 20s to around 40F; Rockville was the coldest at **16F**, and Perrysville 4 WNW (Vermillion Co.) and Whitestown (Boone Co.) were two of several sites to drop to **21F**, while the lowest max - **34F** was measured at West Lafayette 6 NW. Not to be outdone, February 2023 brought one final breath of very mild air on the **27th**, led by what was the month's warmest morning for the majority of the region – **52F** at Washington 1 W, and **49F** at all three southern 1st-order airports, Shoals 8S and Elnora (Davies Co.), while Indianapolis was held to 46F. The **27th**'s afternoon highs found widespread 60s across the region, led by **72F** at Shoals 8 S, and **70F** at Washington 1 W, Vincennes 5 NE, and Columbus, with Indianapolis peaking at a more modest 63F.

February 2023 continued the anomalously mild pattern established in January 2023, both in overall departure from normal and the nearly persistent above normal trend. Despite overall departures from normal about one degree lower than January, February's warmth was technically rarer as the month finished the **5th warmest on record** at Indianapolis (a 30-year return). This was only the third February so mild **since 1930**, following the near-record readings of February 1998 and February 2017. Greater anomalies were found at southern tier sites: Washington 1 W recorded their third warmest February (behind 2017 and 1976) in 124 years, or a 41-year return period; while Shoals 8 S was only warmer in 1938 – making a **~50-year return!** Central Indiana's far northern tier saw the opposite effect – with the highest temperatures not always reaching these locations: Farmland 5 NNW only saw the station's 10th mildest February (a ~11-year return), while Kokomo 3 WSW recorded their 19th mildest February (a 6-year return). A distinct feature of the month's anomalously mild pattern was a consistently broad diurnal spread, that was led by daily maximums. While much of the above normal warmth seen over recent years has been driven by minimum temperatures – the opposite was true throughout February 2023 with highs ~10 degrees above normal and lows ~5 degrees above seasonable levels. Driving this notable spread was the storm track from the central Plains through the upper Midwest, whose corresponding southwesterly winds often brought dry air off of the Mexican Highlands which was easier to heat and cool than the northwestern Canadian flow more typically seen through the late winter.

At Indianapolis, February 2023's daily average temperatures were above normal on 23 days, at normal on 1 day and below normal on 4 days. It was the **5th mildest** February for the Indianapolis Area since weather records began in 1872, placing it in the **97th percentile**.

Winter 2022-23 Temperature Data for Central Indiana Sites

Site	Winter 2022-23 Av Temperature	Winter Season Normal Temp	Difference From Normal
Indianapolis Int'l Airport	36.9	31.5	+5.4
Lafayette	34.5	28.8	+5.7
Bloomington	38.0	32.8	+5.2
Muncie	36.8	31.5	+5.3
Terre Haute	37.5	31.7	+5.8
Shelbyville	38.7	32.6	+5.8
Eagle Creek Airpark	36.8	31.6	+5.2

Winter 2022-23 Temperature Extremes Across Central Indiana

Site	Highest Temperature	Lowest Temperature
Indianapolis Int'l Airport	71 on 2/22	-9 on 12/23
Lafayette	65 on 2/27	-9 on 12/23
Bloomington	74 on 2/22	-9 on 12/23
Muncie	67 on 2/22	-8 on 12/23
Terre Haute	71 on 2/22	-7 on 12/23
Shelbyville	73 on 2/22	-7 on 12/23
Indianapolis Eagle Creek AP	71 on 2/22	-9 on 12/23

Precipitation

DECEMBER 2022

December 2022 brought the fourth consecutive month with below normal precipitation for most of central Indiana, although nearly all counties finished December with a noticeable improvement from the unseasonably dry October-November 2022 period – especially in frequency of light precipitation, and for many locations also total rainfall. Moderate to heavy rain events on the **14th-15th** and **30th-31st** accounted for generally 75-90% of December's rainfall, and therefore drove the month's precipitation distribution. Outside of these greater events, scattered light rain occurred on several days through the early month, snow showers were common through several mid-month days, and two additional light rain/snow events bookended the late month record cold. Nevertheless the damage done through the very dry autumn led weekly U.S. Drought Monitor updates where **Moderate Drought (D1)** conditions both prevailed and expanded across most of central Indiana throughout December.

The December **6th** Drought Monitor update (released on December 8th) was essentially status quo from the end of November: roughly 75% of central Indiana was in **Moderate Drought (D1)** while the milder **Abnormally Dry (D0)** conditions held on over roughly the northwestern quarter of the region, with a solid majority of Marion County and most of Vermillion County in **D1**, while **D0** protruded as far south as the Putnam-Morgan County line and also the northeast corner of Howard County. The **6th-9th** featured several weak waves crossing the Ohio Valley, each bringing periods of light rain to most of the region. Rain coverage and intensity was greatest during PM hours of the **6th**, all hours of the **8th**, and during the daytime on the **9th**. Greatest 1-day rainfall totals were the **6th's** general 0.50-0.80" that fell across southern counties, which led the 0.50-1.05" 4-day totals across these zones, and an embedded **~1.10"** along Interstate 69 from northern Daviess County to southern Monroe County. Central and northern counties totaled a modest 0.10-0.40" through this generally damp period.

The December **13th** drought update showed no changes from the previous week. A rainy period during the **14th-15th** brought the greatest rainfall in 3 to 4 months for much of the region. Pre-dawn rain on the **14th** totaled as much as 0.82" southeast of Washington (Daviess Co.) while 0.15-0.50" was measured for most locations amid a north-south gradient. Light rains ended in the morning before a soaking evening rain tapered to additional light amounts overnight. Additional 1-day totals through dawn on the **15th** were 0.40-0.90" for most locales, while reports approaching **1.15"** were received from Clear Creek (Monroe Co.), as well as east of Shoals and southwest of Williams (both in Martin Co.). Storm total observations of **0.70-1.40"** were common; an overall maximum south and west of Bloomington was focused between Washington and Bedford, with **2.08"** at Shoals 8 S, and **1.72"** as far north as Owensburg (Greene Co.). First-order airport totals ranged from 0.48" at Muncie to **1.25"** at Bloomington while Indianapolis recorded **1.11"**; this was the greatest 2-day rainfall at Bloomington since September 5-6th, 2022's 1.40", and for Marion County airports since the solid **~2.00"** that graced the Metro area during August 29-30th, 2022.

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DECEMBER 2022 (con't...)

during the **14th-15th** brought the greatest rainfall in 3 to 4 months for much of the region. Pre-dawn rain on the **14th** totaled as much as 0.82" southeast of Washington (Davieess Co.) while 0.15-0.50" was measured for most locations amid a north-south gradient. Light rains ended in the morning before a soaking evening rain tapered to additional light amounts overnight. Additional 1-day totals through dawn on the **15th** were 0.40-0.90" for most locales, while reports approaching **1.15"** were received from Clear Creek (Monroe Co.), as well as east of Shoals and southwest of Williams (both in Martin Co.). Storm total observations of 0.70-**1.40"** were common; an overall maximum south and west of Bloomington was focused between Washington and Bedford, with **2.08"** at Shoals 8 S, and **1.72"** as far north as Owensburg (Greene Co.). First-order airport totals ranged from 0.48" at Muncie to **1.25"** at Bloomington while Indianapolis recorded **1.11"**; this was the greatest 2-day rainfall at Bloomington since September 5-6th, 2022's 1.40", and for Marion County airports since the solid ~2.00" that graced the Metro area during August 29-30th, 2022.

Immediately following the soaking rain, a broad upper trough slowly crossed the Great Lakes, dragging waves along its southern periphery and across the Midwest. From late on the **15th** through the **17th**, several rounds of (mainly snow) showers graced the north-central and northeastern counties, while occasional flurries fell over the rest of the region. 3-day snowfall totals were led by **1.3"** at Kokomo 3 WSW and **1.0"** at the Muncie WWTP (Delaware Co.) COOP site; elsewhere north and east of I-70 and I-65 were a score of 0.3-0.6" observations, with 0.6" reported from Burlington (Carroll Co.) to as far south as the east side of Fishers (Hamilton Co.). The December **20th** drought update displayed two small changes along the region's perimeter: deterioration to **Severe Drought (D2)** had occurred along extreme eastern Henry County, while an improvement to **DO** occurred for the southwestern tip of Knox County and extreme southern Martin County. The remainder of the region stayed status quo: mainly **D1**, with **DO** around the northwestern counties.

The late-month arctic outbreak included light precipitation surrounding its arrival on the **22nd** – rain and drizzle prior to the late-day changeover to light snow, which tapered off quickly during the overnight hours. Totals through dawn on the frigid **23rd** included generally 0.10-0.35" total liquid, with observations approaching 0.45" at both in Anderson (Madison Co.) and southwest of Greensburg (Decatur Co.); a **1-3"** blanket of snowfall had graced most of the region, with greatest reports around the region's edge, including **3.5"** at North Vernon 2 ESE, and **3.0"** at both Modoc (Randolph Co.) and Elnora (Davieess Co.). More notable were the several days of blowing snow that greatly reduced visibility (see Miscellaneous section, below). The **26th**'s light morning snowfall across mainly southern counties tapered off to PM flurries and freezing drizzle, with the latter most noticeable across the far northern zones. Measurable snow was mainly contained south of the I-70 corridor, with **2.0"** north of Mitchell (Lawrence Co.) and several readings around **1.0"** along the US-50 corridor; meanwhile 0.5" was measured as far north as Rushville, and a 0.3" report came in from northeast of Mooresville (Morgan Co.). Icy roadways impacted travel on I-65 just north of Tippecanoe County, yet the freezing drizzle caused little or no impacts across the local region. The December **27th** drought update saw the month's only substantive change as **D1** finally expanded northward, enveloping the entire

northwest quadrant of counties. The very subtle areas of **D2** and **D0** that were introduced in the preceding update remained.

The **29th-31st** found another 48-hour rainfall of equal magnitude to the mid-month event. Light rain began on the night of the **29th** and past a narrow band of 0.60-0.70" from near Rockville to Crawfordsville, only light totals were reported through dawn on the **30th**. Periods of rain followed, with the morning and evening of the **30th** yielding the most precipitation. Additional 1-day totals into dawn on the **31st** showed a compliment to the system from two weeks prior: the greatest observations within the general 0.60-**1.20"** range were found around Marion County and points north and east, including **1.35"** in Augusta (Marion Co.), **1.23"** northwest of Fortville (Hamilton Co.), and **1.15"** in Yorktown (Delaware Co.). Following additional light rainfall through the morning of the **31st** along and east of the I-69 corridor, storm totals ranged from 0.60-**1.00"** along and south of the I-70 corridor (outside of the Indianapolis Metro) to **1.00-1.25"** from Crawfordsville to Greenwood and points north and east. Greatest 48-hour totals included **1.47"** in Williams Creek (Marion Co.), **1.41"** northwest of Carmel (Hamilton Co.), and **1.32"** west of Crawfordsville. No flooding was observed during December 2022.

Overall, December 2022's precipitation was generally near to slightly below normal, with monthly totals of 1.75-3.00" common across central Indiana, although above normal values of 3.00-3.70" were the rule south and west of Bloomington. The typical north-south gradient was therefore exemplified, with several sub-2.00" readings across Tippecanoe County as well as east of Muncie. Extremes ranged from **1.46"** at Farmland 5 NNW to **3.86"** at Shoals 8 S and **3.87"** at the Williams 3 SW COOP site on the Martin-Lawrence County line. Locations that received lesser amounts generally saw their driest December since 2017. Across 1st-order airports with complete data, monthly totals (see below) ranged from **72%** of normal at Shelbyville to 103% of normal at Eagle Creek Airpark. At Indianapolis, this was only the driest December since 2020. The year-to-date total at Indianapolis rose to a meager **34.88"**, with the year's deficit finishing at **8.75"** below normal. Indianapolis finished with the driest year since 2010 (33.85") and the 2nd-driest since 1999 (32.37"). Yearly rainfall under 35" has occurred 23 times in the 152-year record – an overall 7-year return.

December 2022 was the **72nd driest** December in the Indianapolis Area since weather records began in 1871, placing it near the median amount at the **47th percentile**. This continued the dry trend seen so far through autumn 2022, yet countered the wetter than normal December 2021.

JANUARY 2023 PRECIPITATION

January 2023 featured the first month with above normal precipitation for most of central Indiana since August 2022, continuing the increasing trend established in December 2022 when most sites finished the month slightly below normal. Precipitation frequency and intensity included four moderate to locally heavy precipitation events, on the **3rd**, **12th**, **18th**, and **25th**, whose combined sum was generally ~85% of the month's overall total at 1st-order sites.

Otherwise light rainfall was common, occurring on 11 other days at Indianapolis (with 0.01 to 0.14"), while only 10 days were rain-free. The typical north-south precipitation gradient was

JANUARY 2023 PRECIPITATION (con't...)

greater than normal with total precipitation ranging from near normal over several northern and northwestern counties to as much as ~150% of normal in far south-central counties. Anomalously mild temperatures promoted below normal snowfall, with snowfall also having a greater than normal north-south gradient. Weekly U.S. Drought Monitor updates showed continual improvement from early month widespread Moderate Drought (**D1**) to a late month combination of merely “Abnormally Dry” (**D0**) conditions or no drought status whatsoever. No flooding occurred within central Indiana during January 2023.

The January 3rd Drought Monitor update (released on January 5th) showed modest improvement from late December as a very small area of **Severe Drought (D2)** was maintained over portions of both extreme southeastern Henry County and far southern Randolph County, **Moderate Drought (D1)** continued to prevail across the vast majority of central Indiana, while improvement to **Abnormally Dry** conditions (**D0**) occurred through the middle Wabash Valley and as far east as central Montgomery County. A soaking rain fell across central Indiana from the evening of the 2nd through the morning of the 3rd, with most locations receiving 0.50-**1.00**”, while at least double these amounts fell just to the southeast over portions of the Ohio Valley. Greatest local totals ranged from **1.40**” at Covington (Fountain Co.) to **1.17**” north of Mitchell (Lawrence Co.) and **1.16**” both east of Noblesville (Madison Co.) and at the Lafayette 8 S COOP station (Tippecanoe Co.). Marion County airports led totals at 1st-order sites, with 0.95” collected at Eagle Creek Airport.

The January 10th Drought Monitor update’s significant improvement found most counties changing from **D1** to **D0**. **D1** held on south and east of Muncie to as far south as northeastern Rush County, while drought intensity was removed entirely from most of Fountain and Warren Counties, as well as northern portions of Montgomery and Vermillion Counties. Another substantive rain fell quickly on the 12th from pre-dawn to early evening hours, bringing a maximum band of **1.00-1.70**” along the I-70 corridor, and near-zero amounts to the Upper Wabash Valley. The greatest 15-hour rainfall reports were **1.69**” in Bowling Green (Clay Co.) and **1.40**” in Greenfield (Hancock Co.). Isolated rain showers transitioned to scattered snow showers during the night of the 12th, before numerous snow showers fell during the day on the 13th; resulting in a thin coating along the lower Wabash Valley and along/west of Interstate 65 from Tippecanoe County to Johnson County, with as much as 0.5” reported at both the Graysville 5 WNW (Sullivan Co.) and Lebanon 6 W (Boone Co.) COOP sites.

The January 17th Drought Monitor update brought the third week of improving conditions, albeit subtle: **D1** remained unchanged over far east-central zones while **D0** continued across the majority of the region, yet drought conditions were removed in a broad swath along I-70 from far northeastern Vigo County, through most of the Indianapolis Metro to nearly all of Hancock County. Light rain, generally 0.25” or less, graced the region on the 16th. The 18th then brought the third plentiful rainfall in just over 2 weeks, and for some southern counties the heaviest storm total since late July. A mainly afternoon and evening event, readings were mostly 0.75-**1.60**” through dawn on the 19th, while lesser amounts were recorded through Boone, Clinton and Tipton Counties; greatest totals included **1.57**” east of Mitchell (Lawrence

Co.) and **1.54"** in Bicknell (Knox Co.), while up to **1.34"** was observed in Monroe County and **1.13"** was recorded as far north as Brownsburg (Hendricks Co.), & Indianapolis picked up **1.00"**.

At least brief snow flurries/showers fell across much of the region between early on the **19th** and the morning of the **20th**, with no accumulation reported.

The late month did turn snowier, if only in frequency, as ground and air temperatures both at/above freezing limited snowfall amounts, despite it being the climatologically coldest period of the year. A light wet snow through the AM hours of the **22nd** brought highly-variable measurements, generally between 0.5" and 2.0", due to warm ground and varying observation times. Yet as much as **2.5"** was reported in New Palestine (Hancock Co.), and **2.2"** at three COOP stations: Kokomo 3 WSW (Howard Co.), Tipton 5 SW (Tipton Co.), and North Vernon 2 ESE (Jennings Co.), while Indianapolis officially recorded 0.7". The January **24th** Drought Monitor update saw the fourth consecutive week of improving drought conditions as the east-central **D1** shrunk to only the eastern half of Randolph County, elsewhere being replaced with **D0**. **D0** that had been widespread earlier in month continued its downsize trend, with drought conditions also removed from the Lafayette area and Boone and Clinton Counties, as well as much of Hamilton and Carroll Counties. **D0** continued over southern and northeastern zones.

The month's greatest snowfall occurred on the **25th** when a deepening, yet underperforming winter storm crossed the region, bringing a period of rain before at least briefly intense snow rates during the morning. The wetter nature of the snowflakes and air temperatures generally just above freezing resulted in significant amounts of the snow melting as it fell; which brought only light to moderate snowfall totals despite it being another episode with ample liquid precipitation. Melted totals ranged from around 0.50" across several northwestern and north-central counties, to at least **~1.00"** around Bloomington and points south and east, with greatest observations including **1.68"** north of Mitchell and 0.91" as far north as Avon (Hendricks Co.). The system's axis of maximum snowfall developed across the region's northern tier before curling northeastward toward Fort Wayne, with **6.0"** reported at Young America (on the Howard-Cass County line), and several other **5.2"-5.5"** measurements from the northwest side of West Lafayette eastward to Kokomo 3 WSW. **3-6"** was common across most northern counties, with mainly **1-3"** over the south, although isolated greater totals in colder pockets included **5.0"** north of Mitchell and **4.4"** in Ellettsville (Monroe Co.). Snowfall across the Indianapolis Metro varied widely due to local heat island effects, from **1.8"** southwest of Fountain Square to **4.0"** in New Palestine and as much as **4.4"** in Carmel (Hamilton Co.), while the official Indianapolis total at the NWS office was **2.9"**. Snowfall was overall less near the Illinois border where **0.5-2.2"** was common.

The remainder of January featured very cold arctic high pressure trending southward through the central United States, which promoted weak overrunning precipitation scenarios along its southern periphery, which occasionally reached central Indiana. Organized snow showers following the **25th** event lingered into the afternoon of the **26th**, with further, rather brief snow showers falling on the afternoon of the **27th**. Measurable snow was limited to the Indianapolis Metro and points north and east, with **0.6"** at Tipton 5 SW, and 0.5" reports from south of Lafayette, Anderson (Madison Co.), and east of Muncie; Indianapolis officially picked up another 0.2". Scattered rain showers then crossed the region from late evening on the **28th** through the morning of the **29th**. A period of light wintry precipitation fell on most of central

JANUARY 2023 PRECIPITATION (con't...)

Indiana during the morning of the 30th, with concurrent sub-freezing air temperatures having finally reached most counties; snow and snow pellets were the primary precipitation type, with freezing drizzle or mixed precipitation found across southern zones. Snowfall of 0.2-0.6" was common across central and northern counties, while 0.5" was measured as far south as the Franklin 1 W (Johnson Co.) COOP site, with 0.3" the official Indianapolis observation. Corresponding liquid precipitation of 0.05-0.25" was the rule across the realm. The January 31st Drought Monitor update saw very small improvements from the previous week, as D0 was removed from the rest of Parke County and small portions of Vermillion and Vigo Counties.

Overall, January 2023's precipitation was near to slightly above normal, with monthly totals of 2.50-4.50" common across central Indiana, with slightly less in far northwestern counties in and near Lafayette, and locally over 5.00" in far south-central zones. Extremes ranged from 5.40" north of Mitchell to 1.81" at the Pence 1 SW (Warren Co.) COOP site. Across 1st-order airports with complete data, monthly totals (see below) ranged from 103% of normal at Muncie to 146% of normal at Eagle Creek Airpark. At all 1st-order sites, total precipitation was greater than December 2022, and significantly greater than January 2022's precipitation. The rolling 12-month precipitation total (now February 2022-January 2023)'s deficit relative to normal dropped by about 33% at Indianapolis following January 2023's replacement of January 2022. This was the 3rd-wettest January of the last 10 years at Indianapolis, although historically Januarys with 3.97" or greater are a 5-year return. Snowfall across the region was generally 50-70% of normal, although near-normal totals were found along the region's northern and southern limits: 9.0" at Kokomo 3 WSW, 7.5" at Young America, and 4.3" at North Vernon 2 ESE. Lowest sums were around 1.0" in southern Daviess County; while Indianapolis officially recorded 4.1", which boosted the seasonal total (since November) to 8.5". This season-to-date sum is well below the 16.2" normally seen through January 31st, yet still made for the 5th-snowiest October-January of the last ten years (...although 9 of those 10 snow seasons were below normal as of the end of January).

January 2023 was the 32nd Wettest January in the Indianapolis Area since weather records began in 1872, placing it in the 79th percentile for precipitation of all recorded Januarys. This was in contrast to both the continued dry trend that had been observed since September 2022, as well as the dry Januarys of 2021 and 2022.

FEBRUARY 2023 PRECIPITATION

February 2023 continued the winter's overall trend of near to slightly above normal precipitation, while having a downward trend from the wetter pattern seen in January. Almost all of the month's liquid fell on only a few days – the 8th-9th which was a soaking rain for all but northwestern counties, the 16th which produced moderate rainfall over several south-central zones, and the 22nd when appreciable rains contained to the region's northern tier more than made up for any early-month dryness here, with upwards of three inches over the Upper

Wabash Valley. An active weather day on the 27th (see severe section below) brought another light to moderate rainfall, with embedded, locally heavy rains north of Interstate 70. Drought conditions continued the steady improving trend that began in January, with early month. "Abnormally Dry" (D0) conditions finally ending across nearly the entire region in the 7th's update. The 22nd's northern deluge quickly led to minor river and stream flooding, with much of the Wabash River still in flood at month's end. February 2023's most noteworthy feature was the almost complete lack of frozen precipitation – with only scattered flurries on the 16th-17th and a brief pre-dawn mix over a few central counties on the 25th; Indianapolis recorded the first February without measurable snow since 1949.

The January 31st U.S. Drought Monitor update (released February 2nd) showed D0 conditions remaining across the region's southern tier and points north/east of the Indy Metro, while a lone patch of Moderate Drought (D1) included roughly the eastern half of Randolph County. The February 7th drought update brought the vast majority of central Indiana out of any drought intensity for the first time since late September 2022; although isolated D0 did remain over Carroll County, the eastern half of Randolph County, and portions of Jackson and Jennings Counties.

After a mainly dry first week, a soaking rain fell on most locations during the night of the 8th. Rainfall reports through dawn on the 9th were generally 0.60-1.60", with upwards of 2.00" southwest of Bloomington, including 2.94" at the Vincennes 4 E (Knox Co.) COOP site and 2.54" at Washington 1 W; and lesser amounts across northwest counties. Additional light rains through the 9th yielded storm totals of 1.00-1.80" over most central/southern counties, and several 2.00"+ reports in Knox and Daviess Counties; 1.80" was recorded as far north as southeastern Owen County. Sixteen of the region's ~130 river gages reached action stage within the 9th-13th, including sites on each of the three main stem rivers. Durations in action stage were mainly under 24 hours, although a few sites crested close to bankfull. Most notable was Youngs Creek at Amity (Johnson Co.) which remained within a half foot of flood stage for 8 hours on the 10th.

The February 14th drought update maintained status quo from the previous week with isolated D0 continuing in pockets around the region's periphery. Light rainfall returned through PM hours on the 14th, with most locations recording less than 0.10". Another, better-organized batch of rain again focused on the southeastern two-thirds of the region on the 16th, bringing mainly 0.75-1.25" across the southern tier, with greater observations near and east of Lawrence County, including 1.48" south of Harrodsburg (Lawrence Co.) and 1.33" in Owensburg (Greene Co.). Harrodsburg also reported a grand total of 1.59" from both the 14th and 16th rains. The East Fork of the White River at Seymour then reached Action Stage through most of the 17th. Scattered flurries of snow/graupel and a few embedded snow showers fell over mainly central and northern counties from the evening on the 16th through the 17th, with a lone report of measurable snow – 0.1" east of Stone Head (Brown Co.).

The February 21st drought update showed isolated D0 persisting over the region's farthest northern, eastern and southeastern corners. The 22nd brought very heavy rainfall fell across the region's northern tier: greatest reports of 2.00-2.60" were focused along a rather narrow corridor from far northern Warren County, through the Lafayette area and into Howard County, with highest observations coming from Kokomo 3 WSW (2.87") and West Lafayette 6 NW

FEBRUARY 2023 PRECIPITATION (con't...)

(**2.64"**). Isolated **1.00"** reports occurred as far south as Carmel and Fishers (Hamilton Co.), with otherwise more moderate rainfall southward towards the I-70 corridor, while less than 0.50" fell across the region's southern half.

These heavy rains quickly led to river flooding on the **23rd** in and near Lafayette. Both Wildcat Creek at Lafayette and the Tippecanoe River near Delphi (Carroll Co.) held near bankfull or briefly into minor flood for ~6-12 hours during the **23rd** daytime. More notable was Big Pine Creek at Pine Village (Warren Co.) which was in flood from the afternoon on the **23rd** through the evening of the **24th**. More prolonged flooding occurred along the Wabash River, with several of its gage sites flooding for the first time since at least 5/14/2022. Lafayette entered minor flood midday on the **23rd**, before Covington (Fountain Co.) and Montezuma (Parke Co.) followed suit pre-dawn on the **24th**. Lafayette's 15.8' crest early afternoon on the **24th** was almost 4 feet above flood stage. The Wabash's flood waters then reached Terre Haute on the late evening of the **25th**, and Riverton (Sullivan Co.) on the afternoon of the **26th** ... as the crest slowly crossed Covington on the morning of the **26th**.

Isolated frozen precipitation (a rarity for central Indiana in February 2023...) fell within a patch of scattered precipitation that crossed several counties along the I-70 corridor, pre-dawn on the **25th** as light rain mixed with and/or changed to brief wet snow. The lone measurable snowfall reading was **0.1"** in northern Vigo County. Temperatures near 32F would have promoted isolated freezing rain if not for antecedent ground warmth. Weather then turned active on the **27th**: after light early morning warm frontal rain, fast-paced showers/thunderstorms, including rotating supercells, brought narrow streaks of briefly heavy rain between 1100A and 300P. Greatest observations included **1.40"** on the west side of McCordsville (Marion Co.), **1.15"** in Kempton (Tipton Co.), **1.07"** near downtown Muncie, and a couple **1.00-1.03"** reports across central/northern Tippecanoe County. Most rainfall totals were closer to 0.50" across the region's northern zones, with only half again as much for most spots south of Interstate 70.

The February **28th** drought monitor update showed further improvement as **D0** was removed the northern most and eastern most counties, while the only drought intensity remaining across the Midwest/Ohio Valley was the small patch that included most of Jennings County and southeastern portions of Jackson County. As February ended, northern portions of the Wabash were rising slowly in minor flood.

Overall, February 2023's precipitation was near to slightly above normal, with monthly totals of 2.00-3.50" prevailing over most counties. Heavier rains totaled around 4.00" along a west-east band that included the Lafayette and Kokomo areas, as well as southwestern Randolph County, and isolated areas south and west of Bloomington. While drought conditions had improved since late 2022, Indianapolis' precipitation over the last 12 months was still only 35.69" (7.94" below normal, and ~15" below the preceding March-February); while Indianapolis' water year to date (October 2022–February 2023) precipitation, 11.99", was 79% of normal. The 2023 year-to-date total at Indianapolis rose to **6.52"**, **0.54"** above normal. Frozen precipitation totaled a mere trace for most locations, with isolated **0.1"** reports in both Brown and Vigo counties; yet no snow fell over many southern counties, south/east of Indianapolis, nor even Carroll County. Several sites recorded their least snowiest February since 1998, while the trace

FEBRUARY 2023 PRECIPITATION (con't...)

of snow was the least at Farmersburg TV-2 since 1992, and at the Oolitic Purdue Ex Farm since 1990. Shoals 8 S' 0.0" made for the first February without snow since 1959, while Indianapolis' trace was the least of any February since 1949.

February 2023 was the **66th Wettest** February in the Indianapolis Area since weather records began in 1872, placing it in the **57th percentile** for precipitation of all recorded Februarys. This essentially followed the near to above normal trend seen since December 2022, although with noticeably less precipitation than January 2023. Three of the preceding five Februarys recorded about 2.00 inches more precipitation at Indianapolis than this year's total.

Winter 2022-22 Precipitation Data for Central Indiana Sites

Site	Winter 21-22 Precipitation	Winter Season Normal Precip	Diff. From Normal	Greatest Daily Precipitation
Indianapolis Int'l Airport	9.15	8.47	+0.68	1.00 on 1/18
Lafayette (*)	6.38INC	6.26	M	2.10 on 2/22
Bloomington	9.25	9.34	-0.09	1.15 on 12/14
Muncie	7.26	7.36	-0.10	1.01 on 2/9
Terre Haute	7.33	7.11	+0.22	0.93 on 12/14
Shelbyville	7.59	8.36	-0.77	0.87 on 1/12
Eagle Creek Airpark	9.07	7.33	+1.74	1.12 on 12/30

* – Precip data was incomplete at **Lafayette** on 12/30/22, 1/5/23, 1/29/23, and 2/8/23

Miscellaneous Weather

DECEMBER 2022's strongest observed wind gusts occurred on several days: the **2nd, 3rd, 15th**, and **23rd**, although (as highlighted in the severe section below) the only severe-magnitude gust at any 1st-order airport was at Lafayette on the **15th**. On the **2nd**, Terre Haute gusted to **52 mph** while Muncie and Indianapolis followed with 51 mph and 49 mph, respectively. All 1st-order sites peaked at 45 mph or stronger on the **3rd**, with Indianapolis gusting to **54 mph**, and 52 mph recorded at both Lafayette and Shelbyville. The **15th** also brought 47 mph to Marion County sites; while the **23rd** included the majority of the winter storm's strongest gusts, with **56 mph** at Muncie, 52 mph at Lafayette, and 50 mph at Indianapolis. Strong winds on the **23rd** were coupled with sub-zero temperatures, with most areas recording peak gusts at 40-50 mph, with several **50+ mph** observed across the northern tier and down through the western side of the Indianapolis Metro.

Most 1st-order sites also gusted to 25 mph or greater on the **1st, 9th, 13th-18th, 22nd-25th, 27th-30th**, or ultimately more than half the month. Frequency of days with gusts to 30 mph or stronger was greatest at Lafayette, Muncie and Shelbyville (12), while Indianapolis observed 30+ mph on 11 days. Among the frequently-breezy conditions were several periods of quiescence: no 1st-order site reported a wind gust in excess of 22 mph during the **4th-7th, 10th-12th**, nor **19th-21st**.

Days with fog were persistent at times – through mainly the month’s first full week and again from the **21st** onward. Overall frequency across the month ranged from 15 days at Indianapolis and Shelbyville to 18 days at Eagle Creek Airpark, with all other sites observing fog on 16 days. All 1st-order airports reported fog on the **6th-11th, 14th, 15th, 21st, 22nd, 26th, 27th, and 31st**; while fog occurred at most sites on the **30th**. Shelbyville reported fog on 9 of 10 days during the **2nd-11th**. Dense fog frequency ranged from no occurrence at both Lafayette and Shelbyville to 4 days at Muncie and 5 days at Bloomington. Dense fog was reported at 3 of the 7 1st-order airports on both the **10th** and **31st**; while Bloomington observed dense fog 4 out of the 5 days during the **6th-10th**.

Thunder was essentially non-existent, only being observed on the **6th** at Bloomington...and around midnight spanning the **29th-30th** along western portions of the Indianapolis Metro.

Relative humidity (RH) across the 1st-order sites was rarely low, although drier conditions were occasionally observed through the first week: minimum daily values were as low as 28% at both Marion County airports on the **1st**, and on the **4th** as low as 24% at Muncie and 26% at Bloomington.

The somewhat rare phenomena of blowing snow did occur throughout the late December storm. Stronger winds promoted blowing snow intense enough to lower visibility late on the **22nd** at Indianapolis, Lafayette and Terre Haute; and at all 1st-order sites on the **23rd-24th**. Lowest reported visibility at both 1st and 2nd-order airports dropped, at least briefly, to generally ½ to ¾ miles. One-quarter mile visibility was observed briefly at both Bloomington and Terre Haute, and occasionally through the AM and midday hours of the **23rd** at the Kokomo Municipal Airport (Howard Co.).

JANUARY 2023’s strongest observed wind gusts at 1st-order sites occurred on the **19th** when all seven airports gusted to 41 mph or greater, with **51** and **50 mph** recorded at Muncie and Shelbyville, respectively, and a peak gust of 48 mph at Indianapolis. Rather blustery conditions prevailed through the rest of the month, with all sites gusting to at least 25 mph on 10 of the other 30 days: the **3rd-5th, 12th, 13th, 17th, 20th, and 26th-28th**. The windiest of these days were the **12th, 20th, 27th** when all sites gusted to at least 31 mph. Most notable were Terre Haute gusting to 40 mph on the **12th**, Shelbyville gusting to 41 mph on the **27th**, and both Shelbyville and Indianapolis gusting to 43 mph on the **28th**. Quiescent conditions also prevailed on the **1st, 7th-11th, 21st-22nd, 24th, and 31st** when no 1st-order site gusted to greater than 22 mph.

Fog was prevalent through January, with frequency ranging from 16 days at Bloomington to 21 days at Lafayette and 22 at Muncie, while Indianapolis observed fog on 18 days. All 1st-order airports reported fog on the **1st, 2nd, 3rd, 7th, 11th, 12th, 16th, 18th, 19th, 22nd, 23rd, 25th, 29th**, and

30th; while fog occurred at most sites on the **5th, 8th, 9th, 13th, 17th, 24th, and 26th**. Muncie reported fog on 10 of the month's first 12 days; while at Eagle Creek Airpark fog was reported on nine consecutive days (**11th-19th**) and on 8 of the month's final 10 days. Dense fog frequency ranged from 3 days at Muncie to 6 days at Bloomington, with 4 days at Indianapolis; dense fog occurred at all 1st-order sites on the **2nd and 25th**, and at most on the **11th and 12th**.

Scattered thunder accompanied several of the stronger precipitation events, occurring at Indianapolis and Eagle Creek Airpark on the **2nd, 3rd, 12th, and 19th**; Bloomington on the **2nd, 3rd, 12th, and 15th**; Terre Haute on the **2nd and 12th**; and Muncie on the **3rd and 19th**.

Relative humidity (RH) across the 1st-order sites was free of extremes throughout the month, as no daily minimum values fell below 40% at any 1st-order site past Bloomington's 33% reading on the **9th**. Unseasonably high dewpoints briefly occurred on the **19th** with all but northern-tier sites reporting 50°F+ levels during pre-dawn hours, and for over 2 hours at Shelbyville, while Bloomington's dewpoint peaked at 54°F.

FEBRUARY 2023's strongest observed wind gusts at 1st-order sites occurred on the **9th, 15th, 22nd, and 27th**. On the **9th**, all sites gusted to at least 48 mph, with Bloomington's 55 mph leading the pack, while Indianapolis recorded 54 mph. The **15th** brought peak gusts of 40+ mph to essentially all sites, with Indianapolis' 48 mph the greatest observation. Five of the seven sites gusted to 40 mph or higher on the **22nd**, with 47 mph at Bloomington and 46 mph at both Indianapolis and Shelbyville. The **27th**'s system brought peak gusts of 55+ mph to most 1st-order sites; Terre Haute's **58 mph** was the greatest report, followed by 57 mph at Shelbyville and 56 mph at Indianapolis. The remainder of the month was consistently breezy/windy, with the majority of sites peaking at 30+ mph on also the **2nd, 4th, 5th, 14th, 16th, 17th, 19th, 21st, 23rd, and 28th**; Muncie and Indianapolis had the greatest frequency of 30+ mph gusts – 18 and 17 days, respectively. The only days with all 1st-order sites' peak gusts under 20 mph were the **1st, 11th, 12th, and 26th**.

Fog frequency ranged from 7 days at Muncie to 10 days at Lafayette, with all other 1st-order sites observing fog on 9 days. All airports reported fog on the **8th, 9th, 16th, 22nd, and 27th**; while fog occurred at most sites on the **6th, 10th, 17th, and 26th**. Dense fog was limited to Muncie on the **8th, 22nd, and 23rd**; Shelbyville on the **8th and 23rd**; and Lafayette on the **23rd**.

Thunder was uncommon, with frequency ranging from 1 day at Bloomington and Shelbyville to 3 days at Indianapolis. Thunder occurred at five of the seven 1st-order sites on the **22nd**, and at four sites on both the **16th and 27th**.

Relative humidity (RH) and dewpoint extremes across the 1st-order sites were uncommon, yet very dry conditions did occur on both the **12th and 21st**. Excepting Muncie, on the **12th** every site recorded a minimum daily relative humidity under 20%, with 11% at Bloomington and 12% at Indianapolis the lowest readings. Minimums on the **21st** under 25% were confined to Bloomington (19%), Indianapolis (20%) and Shelbyville (22%). Anomalously high dewpoints of 60°F or greater were only observed at Terre Haute for a few midday hours on the **22nd**.

Severe Weather

DECEMBER 2022's only severe wind observation occurred at the Lafayette airport (**61 mph** from the west) very early on the **15th** when a passing front allowed stronger winds aloft to reach the surface.

See the Temperature section (above) for details regarding the extremely low wind chill values on the **23rd**. A more thorough summary of the December 22nd-24th winter storm can be found at <https://www.weather.gov/ind/December23WinterStorm>.

JANUARY 2023's severe weather was contained to the **19th**'s strong to marginally-severe showers and thunderstorms: this brief mid-afternoon event mainly featured pea-sized hail, yet penny (0.75") and nickel (0.88") sized hail were reported over portions of Delaware, Henry and Randolph Counties. The only severe event was found in Decatur County where thunderstorm wind gusts downed multiple trees and power lines, leaving about 50 without power across the county.

FEBRUARY 2023's severe weather included a gradient wind event on the **9th** and an outbreak of mini supercell thunderstorms on the **27th**. The **9th**'s widespread strong winds contained several damaging gusts across the Indianapolis Metro; Hendricks County reports included a large tree snapped off above the base while a smaller tree was downed into a business in Avon causing significant roof damage; meanwhile downed trees and power lines in Marion County caused power outages to 5,000 homes; additional reports of downed trees and power poles were received from both Hamilton and Madison Counties.

The **27th**'s early afternoon, tiny, yet potent supercell thunderstorms spawned two **EF-1 tornadoes** in Hancock County and caused widely scattered straight line wind damage across mainly southern counties. The first tornado tracked parallel to, yet ~2 miles southeast of, US-36 for over 5 miles, from near McCordsville to near Fortville; estimated peak winds were **110 mph**, with the tornado knocking a historic barn off its foundation and downing many trees. The same thunderstorm spawned a second, brief tornado a few minutes later near the small community of Eden; estimated peak winds were **100 mph**, with the tornado damaging a barn and downing several trees. Straight line wind damage also downed trees and/or power lines in Hancock, Jennings, and Monroe Counties. Terre Haute recorded a peak wind gust of **58 mph**.

For info on severe weather in other areas during the winter season, visit the Storm Prediction Center "Severe Weather Event Summaries" website at spc.noaa.gov/climo/online

Indianapolis Winter 2022-2023 Monthly Data

INDIANAPOLIS DECEMBER 2022 SUMMARY

	Average Temp	Precipitation	Highs $\leq 32^{\circ}$	Lows $< 20^{\circ}$
December 2022	33.4	2.63	6	9
Normal December	33.3	2.92	7	8
Diff from Normal	+0.1	-0.29	-1	+1

December 2022 All-Time Ranks...

Precipitation: 72th Driest

Temperature: 66th Mildest (Tied)

Snowfall: 40th Least Snowiest (Tied)

INDIANAPOLIS JANUARY 2023 SUMMARY

	Average Temp	Precipitation	Highs $\leq 32^{\circ}$	Lows $< 20^{\circ}$
January 2023	37.1	3.97	3	3
Normal January	28.5	3.12	12	13
Diff from Normal	+8.6	+0.85	-9	-10

January 2023 All-Time Ranks...

Precipitation: 32nd Wettest

Temperature: 9th Mildest

Snowfall: 57th Least Snowiest (Tied)

INDIANAPOLIS FEBRUARY 2023 SUMMARY

	Average Temp	Precipitation	Highs $\leq 32^{\circ}$	Lows $< 20^{\circ}$
February 2023	40.2	2.55	2	4
Normal February	32.5	2.43	7	8
Diff from Normal	+7.7	+0.12	-5	-4

February 2023 All-Time Ranks...

Precipitation: 66th Wettest

Temperature: 5th Mildest

Snowfall: 2nd Least Snowiest (Tied)

INDIANAPOLIS WINTER 2022-2023 SUMMARY

	Average Temp	Precipitation	Highs $\leq 32^{\circ}$	Lows $< 20^{\circ}$
WINTER 2022-2023	36.9	9.15	11	16
Normal Winter	31.5	8.47	26	29
Diff from Normal	+5.4	+0.68	-15	-13

Winter 2022-2023 All-Time Ranks...

Precipitation: 55th Wettest

Temperature: 7th Warmest (Tied)

Snowfall: 9th Least Snowiest (Tied)

Spring 2023 Outlook for Central Indiana

The official outlook for the 2023 spring season (March–May) from the Climate Prediction Center, indicates slightly greater chances for both above normal temperatures and above normal precipitation across all of central Indiana; except far northwestern counties where equal chances of above, below, or near normal temperatures exist.

At Indianapolis, the normal spring temperature is **53.2°F** and the normal spring precipitation is **12.78"**.

*Data prepared by the NWS Indianapolis Weather Forecast Office's Indiana State Climate Team
Questions should be referred to w-ind.webmaster@noaa.gov*