

Central Indiana September 2022 Climate Summary

56th Warmest September on record at Indianapolis (Tied)

54th Driest September on record at Indianapolis

Temperatures

September 2022's temperatures were overall near to slightly above normal. Synoptic patterns over Indiana through the first three weeks of the month cycled between moderation under weak or cut-off upper troughs and the hot western-US ridge building in from the west. As if on cue with the autumnal equinox, September's last several days were consistently cool to unseasonably so. To end the month, Indianapolis recorded 5 consecutive days below normal for the first time since April 2022; while the **21st-30th** also featured 9 consecutive days with no above normal average temperatures – for the first time since May 2021. For the third consecutive month Muncie was the relative cool spot. Elsewhere, the numbers showed a warm to hot trend during the **15th-21st** that was offset by consistently cool readings through the **22nd-30th**. Therefore, the difference that led the month's slightly warm trend was the several milder days across the **1st-10th**, and especially their above normal morning lows that were often in the mid to upper 60s.

Decreasing humidity on the **1st** promoted a 25-30 degree climb for the hottest day of the month's first nine; a diurnal range of 30 degrees was observed at both Bloomington and the Spencer COOP station (Owen Co.), both sites also peaked at **87F**, as did several COOP sites, including the Davis Purdue AG Center at Farmland 5NNW (Randolph Co.), and Washington 1W (Daviess Co.), while Indianapolis reached **86F**. The **2nd** was another very warm day for several southern counties, with **89F** reported at the Southwest Purdue AG Center at Vincennes 5 NE (Knox Co.). The next week featured several generally seasonable days with daily temperatures ranging from the 60s to the 80s; slightly above normal conditions on the **4th-5th** were led by

warmer overnights, with low temperatures as high as **70F** at the Shoals 8 S COOP station (Martin Co.) and 69F at 1st-order airports in Marion County (on the **4th**) ... and 70F at Marion County airports, Shelbyville and Shoals 8 S (on the **5th**). Cooler mornings with lows in the 50s were found on the **8th** and **9th**, although more 25-30 degree rebounds kept these days overall near normal: on the **8th** the New Castle 3 SW COOP station (Henry Co.) dropped to **51F**, while the Farmland 5 NNW (Randolph Co.) COOP site climbed 35 degrees (from 54F to 89F); the **9th** brought lows of **50F** at the Crawfordsville 6 SE COOP station (Montgomery Co.) and **51F** at Farmland 5 NNW, while Crawfordsville 6 SE sported a 32 degree climb to 82F. Indianapolis dropped to 60F both mornings.

The **10th** was the hottest day of the month's second week, with highs reaching **88F** at several COOP stations, including Spencer, and Tipton 5 SW (Tipton Co.), while most 1st-order airports, including Indianapolis, peaked at 87F. The cold core of an upper-level low then crossed the region on the **12th-13th**, bringing below normal temperatures led by unseasonably low daytime maximums. Highs were in the 60s to low 70s, with readings as low as **61F** at the Kokomo 3 WSW COOP station (Howard Co.) and **62F** at Lafayette (on the **12th**), and **66F** at both Kokomo 3 WSW and Shelbyville (on the **13th**). Meanwhile minimums dropped as low as **48F** on both mornings at the Rockville COOP station (Parke Co.). Going into the **14th**, morning lows dropped to **51F** at Crawfordsville 6 SE and Tipton 5 SW, although the day was overall near normal after a strong rebound to a warm afternoon, with the greatest diurnal rise at Terre Haute, +30 degrees.

September **17th-19th** featured a moderating trend to well above normal levels, lead by very warm daytimes in the mid-80s on the **17th** and **18th**, and then unseasonably high minimums on the **19th**, as high as the upper 60s. The warmest locations were Vincennes 5 NE (**88F** on the **17th** and **90F** on the **18th**), and Perrysville 4 WNW (Vermillion Co.) which peaked one degree lower each day; on the **19th** Vincennes 5 NE reached **89F** for the region's warmest spot yet again, although more notable were Rockville, Farmersburg TV-2 (Sullivan Co.), and Washington 1 W all being held to a morning low of **69F**. Maximums at Indianapolis were 84F, 85F, 83F, with a low on the **19th** of 68F. The **20th**, despite a cooler start (especially north and east of Indianapolis), found moderate southerly breezes bringing very warm to hot conditions across the southwestern half of the region; the Wabash Valley yet again featured the greatest heat, with **96F** at Vincennes 5 NE and **94F** at Perrysville 4 WNW, while Indianapolis reached a modest 86F. The month's hottest day then occurred on the **21st**, when the anomalously high temperatures approached record levels, with both maximum and minimum readings at Indianapolis (93, 71) only 3 degrees shy of respective records; lows around 70F set up the widespread low to mid-90s, with the highest readings being Bloomington's low of **73F**; while Shoals 8 S rose to **97F**, with **96F** at both Bloomington and Elnora (Daviss Co.).

The year's strong end-of-summer cold frontal zone then crossed the region into early on the **22nd**, shocking the region back to slightly below normal levels as high pressure quickly built in from the north. Temperatures changed as much as -39 degrees at both Rockville and Crawfordsville 6 SE, with Crawfordsville's **52F** minimum on the **22nd** the lowest across the realm; equally impressive ~15-hour changes of -37 degrees were observed at both Muncie and Lafayette, while Indianapolis fell by 35 degrees to 58F. Also notable were ~24-hr temperature changes between daytime maximums on the **21st** and **22nd**, which were about -20 degrees at

most locations; Bloomington and Terre Haute led this trend at –23 degrees (Bloomington’s maximums trending from 96F to 73F, and Terre Haute 1 degree lower on both values). Not two days after near-record heat, the region was flirting with a first frost: the **23rd** brought the coldest morning for most sites since April 27, with widespread morning lows in the low to mid-40s, and readings as low as **38F** at both Crawfordsville 6 SE and New Castle 3 SW, while light frost was reported on rooftops in parts of Hamilton County. Increasing clouds on the **23rd** limited diurnal temperature spreads, with a late-October-like chill felt among highs in the low to mid 60s, while only **61F** was reached at Frankfort Disposal (Clinton Co.).

Overall near normal temperatures prevailed through the **24th-25th**. The next broad dome of Canadian high pressure began to slowly infiltrate Indiana on the **26th** before slowly crossing the southern Great Lakes on the **29th**. Conditions through this period were more reminiscent of October between dark blue skies and daily readings ranging from near 40F to the low 60s. A few reports of patchy frost reflected isolated minimums in the mid 30s on both the **28th** and **29th**: Terre Haute dropped to **34F** both mornings, while Farmland 5 NNW recorded **34F** and **33F**; meanwhile the **35F** mark was reached at Crawfordsville 6 SE on the **28th**, and at Tipton 5 SW on the **29th**.

Frequency of 90F+ maximums was slightly below normal at 1-2 days across 1st-order stations. Year-to-date totals of 90F+ days ranged from 21 at Muncie to 30 at Terre Haute, while Indianapolis had accrued 23; these totals ranged from 3 above normal at Indianapolis to 9 above at Eagle Creek Airpark. Indianapolis’ total was the greatest since 2019, and 4th most of the last ten years. Meanwhile frequency of minimums of 55F or lower was near to fewer than normal, with tallies ranging from 9 mornings at Shelbyville and Eagle Creek Airpark to 15 at both Lafayette and Terre Haute. Indianapolis’ +0.3 departure from normal matched August 2022’s value, but was much milder than September 2021’s noticeably warmer departure.

Site	September 2022 Average Temp	September 2022 Dep from Nml	Highest Temperature	Lowest Temperature
Indianapolis Int’l Airport	68.1	+0.3	93 on 21 st	42 on 27 th , 28 th
Lafayette	66.1	+0.6	91 on 20 th , 21 st	37 on 29 th
Muncie	67.2	0.0	94 on 21 st	35 on 30 th
Terre Haute	67.2	+0.6	95 on 21 st	34 on 28 th , 29 th
Bloomington	67.6	+1.1	96 on 21 st	37 on 28 th
Shelbyville	68.4	+0.9	95 on 21 st	41 on 29 th
Eagle Creek Airpark	67.9	+0.3	93 on 21 st	44 on 28 th , 29 th

At Indianapolis, September 2022’s daily average temperatures were above normal on 17 days and below normal on 12 days. It tied for the **56th warmest** September for the Indianapolis Area since weather records began in 1871, placing it in the 63rd percentile of all recorded Septembers.

Precipitation

Following the release of the new 30-year climatological normals (1991-2020), September has overall seen a very slight increase in normal precipitation than during the previous 30 years (1981-2010). Noticeable, yet modest increases occurred at Eagle Creek Airpark (+0.32"), Bloomington (+0.25"), and Muncie (+0.13"), while the only notable downward trend was at Terre Haute (-0.49); the remaining sites, including Indianapolis (+0.02") saw negligible changes. The new normals for September rainfall average near 3.00", and range from 2.57" at Eagle Creek and 2.59" in Lafayette, to 3.60" at Bloomington. Relative to other months, at most sites September is normally the 4th driest of the year behind the three winter months (December-January-February). September's relatively-meager normal precipitation is, at some sites, comparable to that of March, August, and/or October; as a result it is normally only the 5th-driest month at Bloomington and Terre Haute, and normally only the 6th-driest at Muncie.

The August 30th Drought Monitor update (released on September 1st) reflected an overall improvement in drought conditions, with **Abnormally Dry (D0)** reduced to only Howard and Tipton Counties and northern parts of Madison and Delaware Counties, although **D0** was introduced to much of southern central Indiana – from Greene County to points south and east.

On the 3rd, very heavy rainfall fell across portions of far-southern Indiana, however, such totals were only isolated over central Indiana's southern counties, with scattered 1-3" reports south of the I-70 corridor, and the greatest observations being **3.36"** southwest of Greensburg (Decatur Co.), **3.27"** in Howesville (Clay Co.), and **2.09"** as far north as Harrisville (Randolph Co.). On the 4th, isolated to moderate rainfall totals were led by **1.75"** southwest of Columbus, while the greatest reading outside of Bartholomew County was 0.80" in Meridian-Kessler (Marion Co.). The 5th found scattered light to moderate rainfall continuing, over mainly southern counties, with the greatest report **1.56"** north of Oolitic (Lawrence Co.). Generally light rainfall continued south of the I-70 corridor on the 6th, although locally heavy rains did occur over southwestern counties, including **2.18"** at the Elnora COOP station (Davies Co.). 4-day precipitation totals showed a maximum band across southern zones, with **3.80"** at Howesville, **3.97"** at the Columbus WWTP COOP station, and **4.05"** southwest of Greensburg; meanwhile less-impressive totals were recorded farther south: **2.92"** north of Oolitic (Lawrence Co.), and **2.57"** at Shoals 8 S.

The September 6th drought update saw further overall improvement from the previous week, as all **D0** was removed from southern counties, although **D0** over north-central zones was expanded northwestward to also include Carroll County and far-northern portions of Clinton and Tippecanoe Counties.

The next round of appreciable weekend rains began on the 10th when numerous afternoon and overnight showers included tropical downpours along northern portions of the Indianapolis Metro, and isolated heavy rainfall total elsewhere; 1-day totals included **4.10"** on the north side of Carmel, **3.75"** between Fishers and Noblesville (both observations in Hamilton Co.), **2.35"** east of Whitestown (Boone Co.), **1.92"** in Augusta (Marion Co.); as well as **2.33"** west of Lake Lemon (Monroe Co.). Numerous showers and a few embedded thunderstorms continued after dawn on the 11th, with additional 0.50-**2.00"** rains falling around the Indianapolis Metro

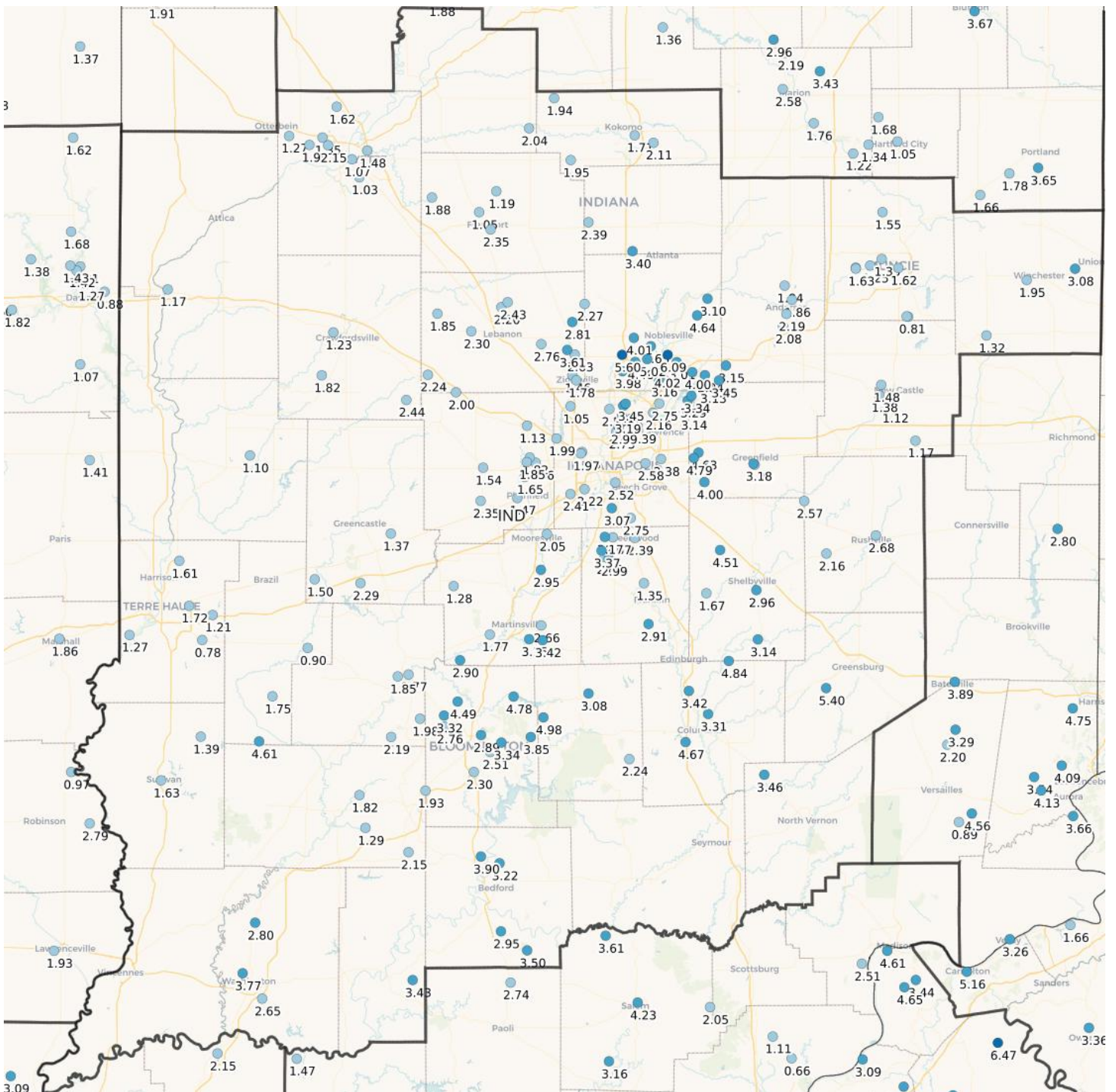
and points northeast, as well as southward along the I-69 corridor, before late day clearing; greatest 1-day reports through dawn on the 12th were 3.15" east of Fishers (Hamilton Co.), 2.40" at Tipton 5 SW, 2.36" northwest of Ingalls (Madison Co.), and 2.31" southeast of Albany (Randolph Co.). Scattered rain showers brought only light additional rainfall on the 12th. Three-day precipitation totals of 1-2" were found across many northern counties and southward along the I-69 corridor, while locally very heavy storm observations ranged from 5.44" between Fishers and Noblesville, at least 4.88" east of Elwood, 3.65" in Cumberland (Hancock Co.), 3.06" in Tipton, and 2.98" as far south as the west side of Lake Lemon (Monroe Co.). However, several counties between the Lafayette and Terre Haute areas had simultaneously accumulated less than 0.50", with only 0.25" at the Perrysville 4 WNW COOP station (Vermillion Co.).

The September 13th drought update then found **D0** retreat to north of the region, making the Indianapolis (central Indiana) County Warning Area free of any drought intensity for the first time since the 5/31/2022 update. The 13th-17th then featured mainly dry conditions under a passing dome of high pressure. On the 19th, pre-dawn showers and booming thunderstorms dropped a light to moderate rainfall across most counties, with a few observations approaching 1.00" in Hendricks County and Bartholomew County. The September 20th drought update was status quo as central Indiana remained free of any drought intensity, while **D0** continued north of the region.

Mainly dry conditions persisted through late September. The 23rd's late day into late night brought a widespread 0.10-0.45" to Indianapolis and surrounding counties, including a 0.48" observation near Fountain Square (Marion Co.). Otherwise the month ended on a dry note as northwest flow and continued Canadian high pressure suppressed rains to well south of the Ohio Valley. The September 27th drought update reintroduced **D0** conditions to extreme-northern portions of northern central Indiana, from northeastern Carroll County to northwestern Delaware County. As the page turned to October, the remnants of Hurricane Ian had progressed as far north and west as West Virginia and far southeastern Ohio. No river or stream flooding was observed across central Indiana during September.

Overall, September 2022's precipitation was near to below normal across central Indiana. Variations in rainfall distribution ranged from numerous 1.00-2.00" totals in an arcing pattern from the Wabash Valley, across Howard County, and into several northeastern counties...to nearly-contiguous areas of 3.00-5.00" observations both immediately east and south of Bloomington, and around the eastern and northern portions of the Indianapolis Metro to points as far north as southern Tipton County. Extremes ranged from 0.73" at Perrysville 4 WNW to a 6.09" total observed between Fishers and Noblesville, with the region's greatest monthly totals (across southern Hamilton Co.) led by the locally heavy rains of the 10th-12th. The 0.84" recorded at Lafayette 8 S (Tippecanoe Co.) made for the site's 5th-driest September on record, a 14-year return period. At most of 1st-order airports, the vast majority of the month's rain (81-89%) fell over the first 12 days, with only 0.16-0.56" recorded during the following 18 days at these sites. Indianapolis' (modest) precipitation was more evenly balanced throughout the month, with 1.13" through the 12th, and 0.99" thereafter. Nevertheless, the year-to-date total at Indianapolis rose to only 29.41", increasing the year's deficit to 4.63" below normal; making for the driest January-September total since 2010. (2012's very dry year rallied through 7.73" that September, for a January to September total of 30.22").

September 2022 Total Precipitation, Through the Morning of 10/1/2022 As Reported By Central Indiana CoCoRaHS Observers



For the period 700 AM EDT 9/1/2022 -to- 700 AM EDT 10/1/2022. Data is unofficial.

September was rather dry, with most locations collecting **1-3"** of rainfall. Near normal to locally well above normal totals of **2.50-6.00"** were common across northern and eastern portions of the Indianapolis Metro, as well as areas to the south and east of Bloomington.

Site	September 2022 Precipitation	September 2022 Dep from Nml	Wettest Day	Longest Dry Stretch
Indianapolis Intl AP	2.12	-1.02	0.72 on 11 th	6 days, 13 th -18 th
Lafayette (*)	1.11INC	M	0.74 on 11 th	6 days, 13 th -18 th
Muncie	1.42	-1.67	0.74 on 11 th	6 days, 13 th -18 th
Terre Haute	1.16	-1.77	0.27 on 11 th	6 days, 13 th -18 th
Bloomington	3.66	+0.06	1.40 on 5 th	6 days, 13 th -18 th
Shelbyville	3.48	+0.34	2.09 on 11 th	6 days, 13 th -18 th
Eagle Creek Airpark	2.11	-0.46	0.80 on 4 th	6 days, 13 th -18 th

(*) Lafayette's observed precipitation was incomplete

September 2022 was the **54th Driest** in the Indianapolis Area since weather records began in 1871, placing it in the 36th percentile for precipitation of all recorded Septembers. September 2022's below normal precipitation at Indianapolis contrasted above normal rainfall trends in both September 2021 and August 2022, although the below normal trend did more closely align with anomalously dry Septembers in 2020 and 2021. In fact, Septembers through the last decade were commonly well above or well below normal at Indianapolis, so September 2022's 2.12" total was the closest to a seasonable level since 2014's 2.53" sum.

Severe Weather

September 2022's severe weather was contained to the **21st** when a southward-advancing cold front combined with unseasonably hot and humid conditions to produce a broken line of strong thunderstorms across southern central Indiana. Embedded, isolated downbursts produced wind damage in portions of Decatur County and along the south side of Rushville (Rush Co.) where six homes were damaged. A third downburst in north-central Jennings County, containing winds estimated as high as **65 mph**, uprooted several large trees and leveled a commercial greenhouse.

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

Miscellaneous – Winds, Thunder, Fog & More

September 2022's strongest observed wind gusts at the seven 1st-order airports was led by a modest 41 mph at Muncie on the 19th, while Indianapolis' peak gust was 37 mph on the 26th. More notable were multi-day periods through the early and middle portions of the month when none of the seven sites had a peak gust exceeding 24 mph – during both the 4th-9th and 13th-17th. Several late-month days were breezy, with most sites recording peak gusts of 30-35 mph on the 22nd, 25th, 26th, and 27th.

Fog was prevalent through September, occurring at at least one of the 1st-order sites on all but 4 days (the 18th, 22nd, 25th, 26th). Frequency ranged from 9 days at both Marion County sites to 20 days at Bloomington and 21 days at Terre Haute, while fog was observed on 15-18 days at the four other sites. Fog occurred at all sites on the 11th, 14th, 15th, and 16th, and at most sites on the 3rd-10th, 13th, 19th, 20th, and 24th. Lafayette observed fog on 12 consecutive days (5th-16th), while Terre Haute reported fog on 15 of the month's first 16 days.

Dense fog was also rather common, although usually not widespread, being observed at least one of the seven sites on 14 days, and at most locations on the 14th, 15th, and 20th. Dense fog frequency ranged from 4-6 days at most sites, while ranging from no occurrences at Indianapolis to 7 days at Terre Haute, including 3 straight days over the 14th-16th.

Thunder frequency ranged from no occurrence at Bloomington to 6 days at Shelbyville, while 3-4 days was common across most 1st-order sites, including 4 days at Indianapolis (on the 3rd, 4th, 10th, and 19th). Thunder was reported at most sites on both the 11th and 19th.

October 2022 Outlook

The official outlook for October 2022 from the Climate Prediction Center indicates above normal temperatures are slightly more likely than near or below normal temperatures across central Indiana, except for near and east of Muncie where equal chances exists for above, near, or below normal temperatures. The normal October temperature at Indianapolis is 55.5 degrees.

The outlook also indicates below normal precipitation is slightly more likely across the region, especially west of Interstate 69. The normal October precipitation at Indianapolis is 3.22".

Data prepared by the Indianapolis Weather Forecast Office's State Climate Team

Questions should be referred to nws.indianapolis@noaa.gov