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Indiana State Climate Office

Monthly Weather Report



<http://www.iclimat.org>

Apr 10, 2017

March 2017 Climate Summary

Month Summary

March was not record setting like February but was warmer than usual. The month was wetter than normal and generated more snow than February. March was stormy with 8 days of severe weather. The first severe weather event was already in progress as March arrived and produced 12 confirmed tornadoes in southern Indiana within the first 6 hours. Wind storms on 4 other dates caused vehicle wrecks, a plane crash, downed trees and power poles, and other minor damage. Hail was widespread on 2 days. Lake effect snows caused multi-vehicle wrecks in northwest and west central counties. No deaths were noted in any of these incidents.

The March state average temperature was 42.1°F which is 1.4°F above normal. This ties 2003 as the 37th warmest March on record. Some recent warmer Marches include last year at 47.3°F, ranking as 7th warmest since 1895. The March 2010 state temperature at 43.6°F came in at 24th place. The 44.2°F in 2009 was good for 20th warmest March. Earlier on in March 2007 the state average of 47.0°F claimed the 8th slot. The warmest March on record had a 55.0°F state average five years ago in March 2012. The day split in March 2017 was 13 days of below normal temperature, 16 days above normal, and 2 days at normal. There were 7 days when the state mean temperature was at least 10°F above normal and 5 days when at least 10°F below normal. The highest temperature of the month was 81°F on March 25th at the Indiana Dunes while the coolest was 2°F on March 15th at Wanatah 2 wnw.

March state precipitation averaged 4.15" which is 0.75" above normal and the 40th wettest March since 1895. The most recent wetter March was last year when the state average was 4.49". This ties 1982 as the 27th wettest March on record. March was wetter in 2006 when the state average of 5.14" fell into 15th place. Then there was March 2008 with its 6.48" that pegged the 8th wettest spot. Of course the wettest on record was the 8.74" average set during the famous March 1913 flood event. The heaviest single day precipitation among cooperative network stations in March 2017 was 3.75" recorded on March 1st in Vernon 1 ene. The highest in the CoCoRaHS network was 4.17" that same day at Moores Hill 5.7 sse. The largest month total precipitation in the cooperative network was 6.77" again at Vernon 1 ene. In the CoCoRaHS network the heaviest was 7.35" at Moores Hill 5.1e. Widespread precipitation fell on about 17 days this month.

The greatest daily snowfall reported in the cooperative network was 10.8" on March 15th at the Knox wastewater plant. In the CoCoRaHS network 7.3" was measured the same day at North Judson 0.7 ssw. Over the full month 12.3" was the highest total in the cooperative station network measured at the Knox plant while 10.8" was summed by the CoCoRaHS volunteer at Laporte 1.6 sw. Overall it snowed on about 1 day statewide in March.

Regionally March 2017 precipitation totaled to near 140% of normal across northern Indiana, 130% in central counties, and 110% of normal in the south. Normal March precipitation ranges from 2.7” in northeast Indiana to 4.2” in the southwest corner of the state.

March 1st – 7th

Severe weather was in progress across Indiana as the calendar flipped from February to March. During the first six hours of the new month 12 confirmed tornadoes touched down in southern Indiana. Wind and hail events were widespread in northern and southern parts of the state on March 1st. The severe weather signaled the advance of a strong cold front just to the west of Indiana. In response to the frontal passage Indiana temperatures crashed to below normal the next 3 days. Yet as has been characteristic of this winter state temperatures recovered quickly, rebounding to the same warm levels by the end of the week as where they began. This was a very wet week. Rain was observed every day while snow was reported on three days.

A series of low pressure systems converged over Chicago as March began, intensifying into a single system. Its strong cold front was bearing down on Indiana, still inside a sector of warm air with a state average temperature 14°F above normal. The passing of the cold front was violent with 1 tornado entering southwest Indiana at the very end of February and 12 others developing inside the state just before daylight on March 1st. There were no significant injuries with these tornadoes. Hail and wind damage was concentrated in northern and southern Indiana. Rain fell statewide.

Cold air poured into Indiana on March 2nd as the front raced east off the Atlantic coast. The state temperature sank to 1°F below normal. The next day high pressure from Canada rushed south to extend from Minnesota to Missouri. Cold air continued flooding into the Midwest, lowering the Indiana state temperature to 5°F below normal, the coldest day of the week.

The ridge drifted east to Ohio on March 4th, far enough east to set up a warm backflow of air from the Gulf states to Indiana. The state temperature would now rise to the end of the week, starting at 2°F below normal. The next day a stationary front evolved from Montana to southern Indiana, assisted by the ridge which left Ohio bound for Quebec. The stronger backflow helped lift the Indiana state temperature to 8°F above normal.

On March 6th the stationary front traveled north as a warm front into Michigan. This front extended west to South Dakota into a low center. From there a cold front stretched to Arizona, defining a very large warm sector that dominated the eastern two-thirds of the country. The Quebec ridge moved to the Atlantic coast and stretched to North Carolina, efficiently transporting warm Gulf air into Indiana. The state temperature continued upward to 11°F above normal.

Two Dakota low centers merged and intensified into a massive storm in Canada. Its cold front outran the storm center to the western Indiana border. The state once again was positioned barely inside a strong but collapsing warm sector. The Indiana state temperature continued to warm, finishing the week at 14°F above normal, the warmest day of the week.

Over the full week the state temperature averaged to 6°F above normal. Typically at the start of March the daily maximum temperature should range from 41°F to 52°F north to south across the state. The daily minimum normally varies from 25°F in far northern Indiana to 32°F in the

southwest corner of the state. The warmest temperature of the week among cooperative network stations was 70°F at Cannelton on March 1st. The coolest temperature among stations in this same network was 12°F at North Manchester on March 3rd.

Precipitation this week was much above normal. Regionally about 1.0” was collected in northern Indiana, 1.4” in central counties, and 2.4” across the south. These totals equate to about 160% of normal in the north, 200% in central, and 270% of normal in southern Indiana. Rain fell statewide on March 1st and 7th. Both rain and snow were measured on March 2nd, 3rd, and 4th. Snow did not fall statewide on any day this week.

On the weekly snowfall map snow was measurable generally north of a Fowler to Brookville line except in parts of Pulaski, Lake, and Newton counties. More than 1.5” was noted generally in Howard, Tipton, Hamilton, Madison, Rush, and Fayette counties in central Indiana and in St Joseph, Elkhart, and Noble counties in northern Indiana. Some of the heavier single day snowfall amounts were tallied on March 4th and included 2.5” near Connersville, 2.3” at Lewisville, and 2.0” near New Castle and Anderson. Not much additional snow fell on the other dates so these heavier amounts were similar to the largest weekly totals.

The weekly precipitation map showed more than an inch mostly north of a Terre Haute to Decatur line and in a narrow band on the Michigan border. At least 3” was summed in Gibson, Pike, Daviess, Lawrence, Jennings, Ripley, Dearborn, Ohio, and Switzerland counties. Less than an inch was common in much of the northern half of Indiana. Precipitation was the heaviest on March 1st during the severe weather outbreak. On that day two CoCoRaHS observers living in the vicinity of Moores Hill reported 4.17” and 3.84”. In south central Indiana a Bedford volunteer had 3.66” while 3.55” was dumped near Mitchell and 3.34” drenched Lawrenceburg. For the week the two Moores Hill observers had 4.82” and 4.50” while in Mitchell 4.68” was summed. The town of Oolitic collected 3.95” while in Petersburg 3.61” was totaled.

Severe weather on March 1st spawned 12 tornadoes in southern Indiana. There was 1 other tornado that occurred shortly before midnight that was described in the February weather summary. Here is an information table about the 12 Indiana tornadoes that were confirmed for March 1st. Amazingly there were no reported significant injuries or deaths in any of these tornadoes.

| County | Rating | Time began | Path Length | Wind Gust | Damage |
|-------------|--------|------------|-------------|-----------|--|
| Daviess #1 | EF-2 | 5:00 am | 0.15 mile | 113 mph | destroyed pole barn; walls of garage blown out |
| Daviess #2 | EF-1 | 5:04 am | 0.03 mile | 100 mph | snapped trees |
| Daviess #3 | EF-2 | 5:05 am | 0.24 mile | 125 mph | 2 large trees snapped; destroyed power line truss |
| Daviess #4 | EF-1 | 5:10 am | 0.04 mile | 110 mph | garage moved 10 ft off foundation; camper destroyed |
| Dubois | EF-2 | 12:03 am | 4.1 miles | 130 mph | pole barn destroyed; damaged 3 groups of homes |
| Lawrence #1 | EF-1 | 5:30 am | 0.20 mile | 110 mph | uprooted trees; barn roof lifted 100 yds; insulation spattered; lamp post broken |
| Lawrence #2 | EF-2 | 5:37 am | 0.58 mile | 130 mph | destroyed 3 chicken barns & outbuildings; --> to Orange |

| | | | | | |
|------------|------|---------|-----------|---------|--|
| Orange | EF-1 | 5:38 am | 0.10 mile | 105 mph | from Lawrence #2 → 1 injury; destroyed 2 mobile homes-- 1 rolled over a vehicle with 3 inside but no one hurt; vehicle then into living room -- other mobile roof off, walls blown out; resident inside blown into field with debris; furniture inside untouched; minor injuries |
| Jackson | EF-2 | 5:45 am | 0.25 mile | 115 mph | garage picked up & tossed into vehicle; house roof deposited behind house; insulation splattered; trailer flipped & rested against house; 3 transmission towers collapsed and carried 7 miles away |
| Scott | EF-1 | 6:05 am | 2.0 miles | 105 mph | 3 injured; touchdown I-65; collapsed wall; destroyed 2 outbuildings; flipped mobile home on farm; uprooted and snapped trees; destroyed mobile home & injured 3 inside; damaged outbuilding and trees; destroyed large garage; pushed home off foundation |
| Clark | EF-1 | 6:04 am | 0.25 mile | 90 mph | many trees uprooted or snapped; home roof damage; roof off old building & garage; roof thrown into a church, then church roof taken off |
| Washington | EF-1 | 5:41 am | 5.0 miles | 100 mph | may be from Orange --> 50 trees snapped; outbuilding lost roof; debris damaged other homes; more homes minor roof damage; trees uprooted; outbuilding nearly destroyed; destroyed 50 more trees; 100 more trees uprooted or snapped; 4x4 post thrown through home roof; 50 more trees uprooted or snapped; home porch damage; also straight line wind damage |

Straight line winds also caused heavy damage on March 1st in northern and southern Indiana. Central Indiana escaped with the fewest reports of severe weather impacts. Statewide nearly 30,000 customers were left without electrical power as the storms rolled across the state.

Damage in northern Indiana was concentrated north of a Laporte to Decatur line and appeared to be the worst in Allen county. Wind gusts ranged from 58 mph to 71 mph in this region. Trees fell and blocked roads in Marshall and Allen counties and knocked down power lines in Kosciusko, DeKalb, Whitley, and Allen counties. A tree fell on a house in both Kosciusko and Allen counties. In yet another Allen county incident a roof was ripped off and interior damage was done to a home. An isolated report of a snapped tree came out of Jasper county.

In central Indiana wind gusts pushed trees on to roads and buildings, tore down power and phone lines and removed roofs in Jay county. In Boone county 64 mph winds caused more tree damage while garden fences and tree limbs were hit by 58 mph wind gusts in Marion county.

In addition to 12 tornadoes southern Indiana damage due to straight line winds was extensive.

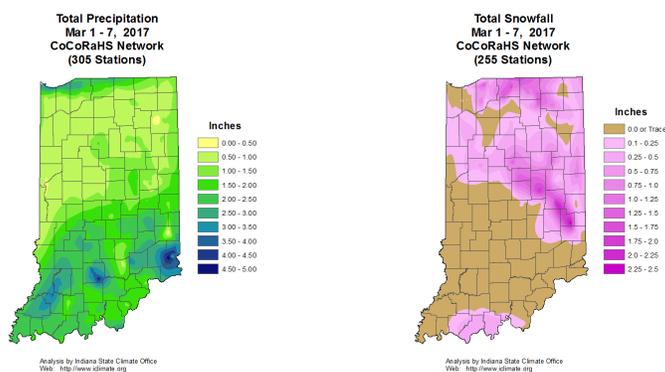
In southwestern Indiana in Gibson county several homes were either damaged or destroyed. A power transmission line tower was blown down, a portable school building moved off its foundation, and a trailer damaged in Daviess county. In Dubois county roof shingles were ripped off and a fence blown over. Hail up to 1.25 inch in diameter was reported there and in Gibson county to the west.

In south central Indiana a person was injured in Lawrence county and a barn and mobile homes destroyed. Trees were decimated. In Jackson county a power station caught fire and utility lines were downed.

The worst wind damage took place in southeast Indiana. A mobile home was flipped and burned in Washington county. A branch went through a roof and landed in a bathroom in Scott county. Two people were injured there, power lines came down, and 15 homes were damaged, littering I-65 with debris for a time. Officials in Ripley county reported a trailer had been damaged and a barn blown down. A car flipped in Switzerland county while other structural damage was noted in that area. In Clark county roof shingles and siding were torn off a home. A tree fell on to a house and debris from a building was scattered. A porch was picked up by the wind and moved from the back of a house.

Overall in a 13 mile stretch of Ohio and Dearborn counties there was heavy damage to barns and garages due to straight line winds estimated at 70 mph to 80 mph. In Ohio county outbuildings and garages suffered lots of damage while tree damage was scattered, essentially uprooted or snapped. Farm residences were damaged, homes lost their roofs, and trees and structures were toppled. In neighboring Dearborn county one inch hail was observed along with extensive tree damage. A few barns and outbuildings were destroyed. Elsewhere in the southeast the most common damage was trees that were snapped, uprooted, or split.

Much above normal precipitation this week has improved the soil moisture status of central and southern Indiana. Nearly all the abnormally dry D0 area added by the US Drought Monitor in late February was removed from Indiana in the March 7th edition. The only remaining D0 region contains all of Perry and Vanderburgh counties and parts of Warrick, Gibson, Vigo, and Sullivan counties. The net result is a vast decrease in state D0 coverage from 52% on February 28th to just 4% on March 7th. This corresponds to an increase from 48% coverage to 96% coverage by soils rated in normal status for this time of year.



March 8th – 14th

A cold front raced east through Indiana to the Atlantic coast to start this week. But it was a mild Pacific air mass which followed the front. Not until a second front passed and tapped into a Canadian air mass did the state temperature crash 26°F over the remainder of the week. These fronts brought little precipitation to the state. Light rain fell nearly statewide on March 8th and across the south on March 14th. Both rain and snow were observed on March 10th, 14th, and 15th. Only snow was recorded on March 13th. Wrecks occurred on I-65 on March 9th due to wind gusts and on March 12th and 13th during lake effect snowfall.

The state temperature on March 8th was 10°F above normal. An early morning front had galloped to the Atlantic coast within hours of passing through Indiana. Behind the front was a mild Pacific air mass. A second cold front had formed over Michigan and was slowing, a system derived from an intense mature low center over Hudson Bay. By the next day the second front had stalled over Indiana as a stationary front. The state temperature also halted at 9°F above normal.

Strong Canadian high pressure on March 10th re-energized the stalled front, forcing it to the deep south. The front moved across Florida. Much colder air gained access to Indiana. The state temperature fell to 3°F below normal. Cold air continued to pour into Indiana the next day, lowering the temperature still more to 9°F below normal.

Both fronts halted on March 12th, one along the Gulf of Mexico, and a second over the eastern Great Lakes. The Indiana state temperature continued to plummet to 11°F below normal. The ridge had now rotated and reached from Minnesota to Virginia, including over now sunny Indiana. The brutal ridge broke in halves the next day, a west portion over North Dakota, and an east portion all along the Atlantic coast. A new storm system tried to wedge itself between the ridge halves, setting up over Missouri. The state average temperature on March 13th continued its fall to 14°F below normal.

On March 14th the Missouri storm intensified and traveled to Delaware. Both fronts had now reached the south Atlantic coast and the Midwest ridge stretched from Minnesota to Texas behind the Delaware storm. Indiana just kept getting colder, ending the week at 16°F below normal.

Overall for the week the Indiana state temperature averaged to 5°F below normal. Usually by mid-March the daily maximum temperature should vary from 44°F in far northern counties to 55°F in the southwest corner of the state. Daily minimums should range between 27°F and 34°F north to south across the state. The warmest temperature of the week among cooperative network stations was 74°F on Evansville Airport on March 9th and at Shoals 8s on March 10th. The coolest temperature among stations in this same network was 2°F at Wanatah 2wnw on March 14th.

Precipitation this week was mostly light statewide but trended greater than a half inch mostly south of a Richmond to Vincennes line. It was almost dry from the middle of the state to the northeast. Heavier amounts over an inch were limited to Pike, Dubois, and Martin counties of southwest Indiana. The largest single day amounts included 1.09" at Petersburg, 0.97" in Huntingburg, 0.95" near Shoals, 0.73" at Corydon, and 0.71" in Hanover. Only a little more precipitation fell on the remaining days of the week, pushing the highest weekly totals to 1.18" at Petersburg, 1.08" in Huntingburg, 1.05" in Shoals, 0.80" at Hanover, and 0.67" in Bright. Regionally on average about 0.15" fell in northern and central Indiana, and about 0.30" across the south. These amounts equate

to about 25% of normal in northern and central parts of the state and 40% of normal in southern Indiana.

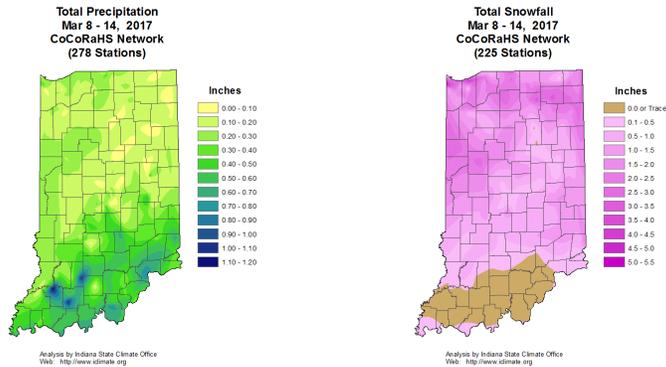
Snow fell in parts of Indiana on 3 days. On the weekly snow map little to no snow fell generally south of a line from Gibson to Jennings to Jefferson county. More than 2" was recorded generally north of a Covington to Wabash to Portland line. Heavier amounts reached nearly 5" in the northeast corner of the state and along the Illinois border north of Fountain county. Among CoCoRaHS stations the highest single day snow measurement was at Remington with 5.0". The most snow was observed on March 13th and 14th. On one of these dates Munster had 3.5", Porter 3.1", and Plymouth and South Bend each had 3.0". Just a little more snow fell the remaining days of the week. For the entire week the highest totals came to Porter with 4.5", Albion with 3.3", Laporte with 3.2", and areas near South Bend and Plymouth had 3.0".

Northern Indiana cities had to clean up and make repairs after a wind storm swept through this part of the state and damaged businesses, schools, and homes. Wind gusts from a Canadian storm were in the 50 mph to 65 mph range for 8 hours on March 9th. A store in northeast Indiana experienced roof damage and a natural gas leak. An elementary school in Fort Wayne suffered the same type of damage and had to be closed. In northwest Indiana wind gusts tore down power lines which fell on to the Toll Road and stopped traffic. The toll road operator banned high profile vehicles from the roadway until after the storm passed. Power lines toppled on to commuter rail lines forced trains to hold. Gusts were reported to 63 mph in Gary. Over 10,000 Indiana customers lost power this day.

Travel became interesting on days with snowfall. On the afternoon of March 12th a 7-vehicle crash occurred on southbound I-65 in Tippecanoe county. Another crash of 4 vehicles happened in the northbound lanes. The next day lake effect snows cranked up, especially in Lake, Porter, and Laporte counties. There were several calls for help in Lake and Power counties with vehicle crashes reported on I-94 early on March 13th. The lake effect snow reached south to Tippecanoe county where there were a few more wrecks on I-65.

With winter wrapping up Indiana cities are pleased with the thousands of dollars saved due to the mild winter. Many cities spent little on overtime, fuel, and maintenance of snowplows. Salt is bought on contract but can be stockpiled for later harsh winters. Overall saved costs can boost a city's rainy day fund and ultimately its bond rating report some Indiana mayors.

The mostly cold and drier than usual week didn't provide enough precipitation to further improve the Indiana soil moisture status. The March 14th edition of the US Drought Monitor stated again that only a handful of counties in southwest Indiana had abnormally dry soils, totaling 4% of total Indiana land area. The remaining 96% of the state continued in normal soil moisture status for this time of year.



March 15th – 21st

This week was the opposite of last with day to day warming and wetter conditions in the north than south. The warmest and wettest day of the week didn't occur until the very end. Snow was recorded mostly in northern Indiana on March 15th, 16th, and 18th. Rain fell in northwest and north central Indiana on March 15th and 17th and statewide on March 18th. Reports for March 19th, 20th, and 21st show rainfall mostly across northern Indiana. A line of moderate size hail fell between Warren and Rush counties on March 20th.

The week began quite cold with the state temperature at 15°F below normal on March 15th, the coldest day of the week. Indiana was positioned west of a huge Maine storm and in the grasp of strong cold high pressure over Missouri that was transporting frigid air out of the Hudson Bay region. The ridge sank south to Alabama by the next day, reversing Indiana winds to be out of the southwest where warmer temperatures were found. The state temperature was on the verge of a long climb, starting on March 16th at 11°F below normal.

On March 17th the ridge skipped east to North Carolina, allowing a low center to reach Iowa. Its warm front touched the Ohio River in the Evansville vicinity. Warm air overrunning the warm front helped boost Indiana temperature a bit more to 7°F below normal. The warm front quickly passed through Indiana and was followed immediately by its paired cold front on March 18th. The warm air sector had enough time to lift the Indiana state temperature to normal that day.

The cold front now through Indiana, another surge of cold Canadian air poured out of Hudson Bay. The center of the cold air was a ridge that settled overhead Indiana on March 19th. The 3 day warming trend was halted but not defeated. The state temperature on March 19th held steady at normal.

The cold ridge drifted into the Appalachian Mountains the next day, resetting a warm return flow to Indiana on the back side of the ridge. An approaching storm system over Missouri with two warm fronts, one over Illinois, helped reinforce the transport of warm air again to Indiana. The state temperature resumed its rise to 5°F above normal on March 20th.

Just when the new warmth was close by, a reinforcing high pressure center dove south from Manitoba and kicked the Missouri warm front south again to Arkansas and Tennessee. Cold air was poised to make a return to Indiana. With all fronts removed from the state the Indiana temperature did manage to climb a tad to 6°F above normal on March 21st, the warmest day of the week.

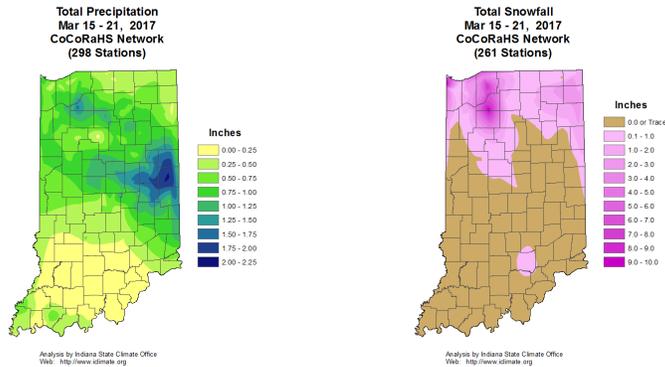
Overall for the week the state temperature averaged to 3°F below normal. Usually at this time in March the daily maximum temperature should range from 47°F to 58°F north to south across the state. Daily minimums normally vary from 29°F in far northern Indiana to 36°F in the southwest corner of the state. The warmest temperature of the week among stations in the cooperative network was 80°F at Evansville Airport on March 20th. The lowest temperature within that same network was 2°F at Wanatah 2wnw on March 15th.

On the weekly precipitation map generally under a half inch fell south of a Covington to Indianapolis to Madison line and in far northeastern counties. Heavy precipitation in excess of 2" was noted east of a Richmond to Anderson to Portland line. The most common totals were between 1" and 2". The heaviest single day amounts were recorded in the morning observations of March 21st. A CoCoRaHS observer near Winchester measured 1.97" and outside Muncie 1.83" was collected. An observer in the Portland vicinity had 1.78" while Springport and Modoc each noted 1.70" that day. Only slightly larger amounts were tallied for the 7 day week sum. A Muncie and Lynn volunteer each received 1.88" while Portland had 1.83". A rain gage in Lewisville summed to 1.71" while in New Castle 1.51" was accumulated. Regionally over the 7 days about 0.8" fell on average across northern and central counties while just 0.3" was seen across the south. These amounts equate to about 130% of normal in northern Indiana, 110% of normal in central areas, but just 30% of normal across southern Indiana.

Little to no snow fell south of a Kentland to Noblesville to Rochester to Portland line this week. Heavier amounts of 6" to 10" were found in Laporte, Starke, and Pulaski counties. The larger single day amounts were recorded early on March 15th and included Munster with 10.1", two observers near North Judson collecting 10.0" and 7.3", Kingsbury with 7.0", and a Laporte gage tally of 6.5". Some of the heaviest totals for the week were 7.0" in Laporte, 5.6" at Dyer, 5.5" in Hanna, 3.7" at Porter, and 3.5" outside Burnettsville.

On March 20th thunderstorms laid down a strip of hail across central Indiana between Warren and Rush counties. Hail sizes of 1.75" were the largest in the tails of this region. Hail to 1.25" in diameter was noted in Boone county. There were several counties which noted 1.00" diameter hail including Warren, Fountain, Tippecanoe, Montgomery, Boone, Marion, and Hancock counties.

There was no change in Indiana drought status according to the March 21st edition of the US Drought Monitor. Abnormally dry soils persist in 4% of total Indiana land, mostly in the southwest corner of the state. The remainder of the state remains in normal soil moisture status for this time of year.



March 22nd – 31st

In the final 10 days of March temperatures ramped up 25°F over 4 days before sliding back to normal to close out the month. It was a wet sendoff as it rained on 9 of the 10 days with the heaviest amounts arriving during the cool down. Rainfall was observed statewide on March 26th, 27th, 28th, and 31st according to morning CoCoRaHS reports. It was warm enough that no snow fell throughout the 10 days. A small plane crashed at the Fort Wayne airport late on the evening of March 29th due to sudden gusty cross winds on the runway. Both pilots were injured and hospitalized.

The state average temperature stood at a chilly 6°F below normal on March 22nd. High pressure was in control over the eastern two-thirds of the country and helped clear Indiana skies. This Minnesota high drifted east towards New York the next day, starting a backflow of warmer southerly winds into Indiana. The state temperature bounced a few degrees to 2°F below normal.

The New York high center moved offshore on March 24th. A group of low pressure centers merged and greatly intensified over western Oklahoma. A warm front extended northeast from this system into Michigan while a cold front stretched south from Kansas to Texas. This positioned Indiana inside a large warm sector which dominated the southeast quarter of the country. The Indiana state temperature continued its climb to 10°F above normal.

A surge of cold air was headed south from Hudson Bay on March 25th. Its leading cold front slammed into the Michigan warm front, bringing both fronts to a sudden halt. The result was a stationary front suspended from Missouri to northern Indiana to Pennsylvania. The Indiana state temperature peaked at 19°F above normal, the warmest of the 10 day interval. The northward progress of the warm air mass had shut down. A long slow cool down would take over.

The stationary front in northern Indiana remained stymied on March 26th. But a Missouri cold front carried on, sliding east to the Illinois-Indiana state line. Indiana barely hung on to the warm sector as warm air was squeezed eastward. The Indiana state temperature began a slow slide at 15°F above normal. On March 27th the low center advanced to Lake Huron, dragging its cold front across Indiana and closing the warm sector. The state temperature fell to 9°F above normal.

Indiana was now located between two fronts, a warm front in Kentucky, and a cold front along the Canada border.

Cold air was flushed from Canada on March 28th, driving the Indiana state temperature downward to 4°F above normal. The Kentucky and Canadian fronts merged south of the Ohio River. A wedge of cold air dove south from central Canada into Oklahoma. The next day a ridge from Hudson Bay relocated over the Great Lakes, reinforcing the cold air over Indiana. The state temperature continued to dip to 3°F above normal. On March 30th a Texas storm system became better organized over Kansas. A new warm sector formed just south of Evansville and the Ohio River. Overrunning of warmer air into southern Indiana nudged the state temperature upward to 8°F above normal.

The storm center moved over central Indiana on March 31st. Its paired warm and cold front shuttled quickly east of the state. The state temperature dropped back to 1°F above normal to end the month.

Over the 10 day interval the state temperature averaged to 6°F above normal. Usually at the close of March the daily maximum temperature should vary from 51°F in far northern Indiana to 61°F in the southwest corner of the state. Daily minimums should range between 32°F and 38°F north to south across the state. The warmest temperature of the interval among stations in the cooperative station network was 81°F at the Indiana Dunes on March 25th. The coolest temperature among stations in this same network was 11°F at Perrysville 4wnw on March 22nd.

Rainfall over the 10 day interval was heaviest in northern Indiana and trended lighter to the southwest. On the rainfall map generally more than 2" fell north of a Lowell to Indianapolis to Decatur line. The counties of Daviess, Knox, Gibson, Vanderburgh, and Posey generally saw less than an inch, the lowest totals in the state. Elsewhere 1" to 2" of precipitation was common.

Regionally on average about 2.0" of rain covered northern Indiana, 1.7" spilled across central counties, and 1.4" dropped into the southern third of the state. These amounts equate to about 220% of normal in the north, 160% of normal in the central third of Indiana, and 110% of normal in the southern portion of the state.

The heaviest single day rainfall in the Indiana CoCoRaHS network was measured by two Hartford City observers who had 1.85" and 1.80" in their gages in the March 31st morning report. Near Andrews 1.60" was collected. A day earlier 1.75" was noted outside West Terre Haute. On March 26th the Bourbon observer had 1.67". Over the full 10 days the Highland volunteer tallied 3.31" while 3.09" was summed at Andrews and 3.06" had accumulated near Trail Creek. The Mooresville rain gage had caught 3.01" and outside Indianapolis the total was 2.98".

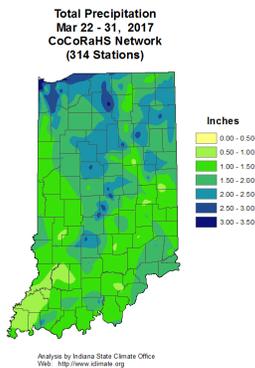
On March 27th wind gusts caused damage in Harrison county. High winds toppled 6 power poles onto a nearby road and south of the interstate several trees were ripped down.

Two days later strong crosswinds near a runway at the Fort Wayne airport caused a Purdue student plane to crash while practicing take offs and landings. A student pilot and an instructor were both injured but survived the accident.

High winds persisted on March 30th. Gusts between 60 mph and 70 mph impacted the central Indiana counties of Putnam, Hendricks, Marion, and Hancock. In Hendricks county pear tree trunks snapped. Trees were knocked down and fence blown over in Marion county. In neighboring Hancock county lawn equipment was tossed around and tree limbs were broken off. Wind speeds in these incidents were clocked at near 65 mph.

Large hail was found in counties just north of the wind damage. Hail to 1.75” in diameter fell in Madison county while 1.25” hail was observed in Blackford and Montgomery counties. Counties reporting hail at least 1” in diameter included Montgomery, Clinton, Boone, Marion, Jay, Vigo, and Clark.

Light rainfall in southwest Indiana was not enough to improve soil moisture in that area. According to the March 28th edition of the US Drought Monitor, 4% of total Indiana land area remains classified as abnormally dry. This rating has continued since it was first introduced on March 7th.



March 2017

| Region | Temperature | Temperature | |
|---------------|--------------------|--------------------|------------------|
| | | Normal | Deviation |
| Northwest | 38.9 | 38.6 | 0.3 |
| North Central | 38.3 | 37.9 | 0.4 |
| Northeast | 37.7 | 37.3 | 0.4 |
| West Central | 42.5 | 40.6 | 1.9 |
| Central | 42.0 | 40.1 | 2.0 |
| East Central | 40.9 | 39.1 | 1.8 |
| Southwest | 46.6 | 44.8 | 1.8 |
| South Central | 46.3 | 44.2 | 2.1 |
| Southeast | 44.5 | 43.1 | 1.3 |
| State | 42.1 | 40.7 | 1.4 |

| Region | Precipitation | Precipitation | | |
|---------------|----------------------|----------------------|------------------|--------------------------|
| | | Normal | Deviation | Percent of Normal |
| Northwest | 4.16 | 2.92 | 1.24 | 143 |
| North Central | 4.02 | 2.78 | 1.23 | 144 |
| Northeast | 3.65 | 2.71 | 0.94 | 135 |
| West Central | 3.53 | 3.36 | 0.17 | 105 |
| Central | 4.42 | 3.28 | 1.13 | 135 |
| East Central | 4.57 | 3.08 | 1.50 | 149 |
| Southwest | 3.88 | 4.23 | -0.34 | 92 |
| South Central | 4.48 | 4.17 | 0.31 | 107 |
| Southeast | 4.97 | 3.95 | 1.02 | 126 |
| State | 4.15 | 3.40 | 0.75 | 122 |

Spring so far (same as March)

| Region | Temperature | Temperature | |
|---------------|-------------|-------------|-----------|
| | | Normal | Deviation |
| Northwest | 38.9 | 38.6 | 0.3 |
| North Central | 38.3 | 37.9 | 0.4 |
| Northeast | 37.7 | 37.3 | 0.4 |
| West Central | 42.5 | 40.6 | 1.9 |
| Central | 42.0 | 40.1 | 2.0 |
| East Central | 40.9 | 39.1 | 1.8 |
| Southwest | 46.6 | 44.8 | 1.8 |
| South Central | 46.3 | 44.2 | 2.1 |
| Southeast | 44.5 | 43.1 | 1.3 |
| State | 42.1 | 40.7 | 1.4 |

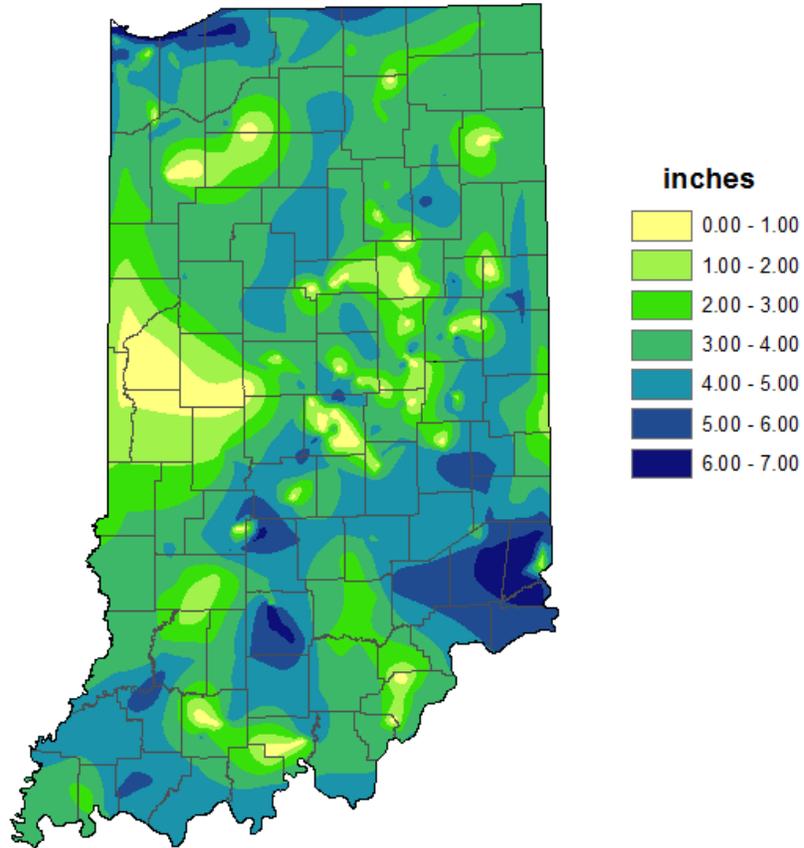
| Region | Precipitation | Precipitation | | |
|---------------|---------------|---------------|-----------|-------------------|
| | | Normal | Deviation | Percent of Normal |
| Northwest | 4.16 | 2.92 | 1.24 | 143 |
| North Central | 4.02 | 2.78 | 1.23 | 144 |
| Northeast | 3.65 | 2.71 | 0.94 | 135 |
| West Central | 3.53 | 3.36 | 0.17 | 105 |
| Central | 4.42 | 3.28 | 1.13 | 135 |
| East Central | 4.57 | 3.08 | 1.50 | 149 |
| Southwest | 3.88 | 4.23 | -0.34 | 92 |
| South Central | 4.48 | 4.17 | 0.31 | 107 |
| Southeast | 4.97 | 3.95 | 1.02 | 126 |
| State | 4.15 | 3.40 | 0.75 | 122 |

2017 Annual so far (Jan - Mar)

| Region | Temperature | Temperature | |
|---------------|-------------|-------------|------------|
| | | Normal | Deviation |
| Northwest | 35.7 | 29.8 | 5.8 |
| North Central | 35.6 | 29.5 | 6.0 |
| Northeast | 35.3 | 29.2 | 6.2 |
| West Central | 38.8 | 32.0 | 6.8 |
| Central | 38.7 | 31.8 | 7.0 |
| East Central | 38.2 | 30.9 | 7.2 |
| Southwest | 42.8 | 36.5 | 6.3 |
| South Central | 42.7 | 36.3 | 6.5 |
| Southeast | 41.4 | 35.3 | 6.1 |
| State | 38.9 | 32.4 | 6.4 |

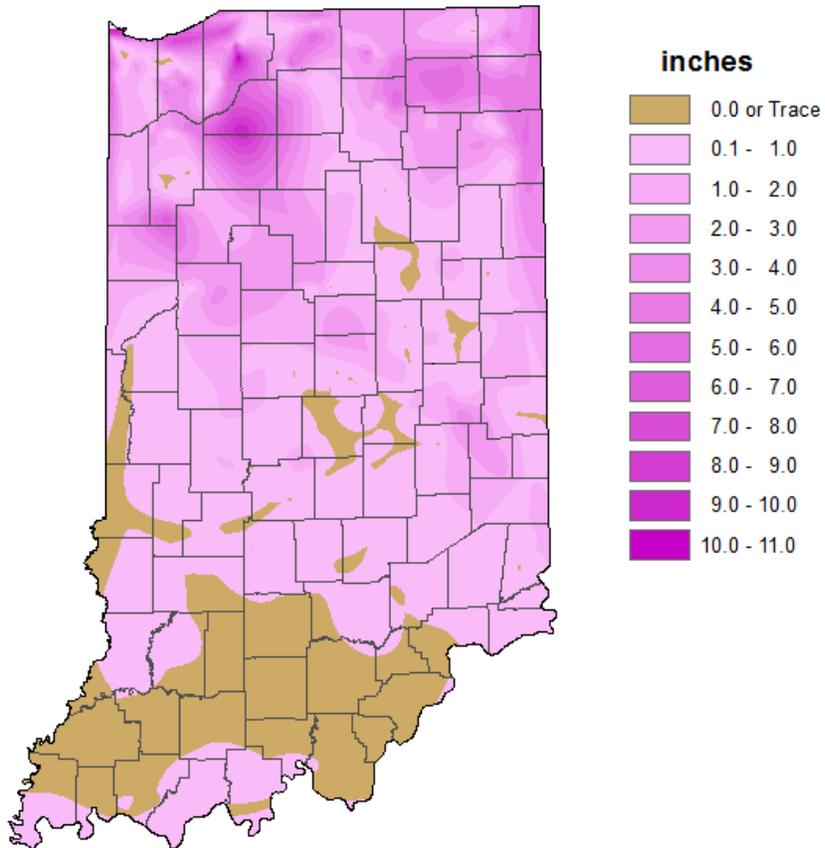
| Region | Precipitation | Precipitation | | |
|---------------|---------------|---------------|-------------|-------------------|
| | | Normal | Deviation | Percent of Normal |
| Northwest | 9.19 | 6.47 | 2.71 | 142 |
| North Central | 9.54 | 6.63 | 2.92 | 144 |
| Northeast | 9.47 | 6.47 | 2.99 | 146 |
| West Central | 7.92 | 7.80 | 0.12 | 102 |
| Central | 9.55 | 7.89 | 1.65 | 121 |
| East Central | 10.02 | 7.52 | 2.50 | 133 |
| Southwest | 7.95 | 10.10 | -2.16 | 79 |
| South Central | 9.31 | 10.19 | -0.88 | 91 |
| Southeast | 10.53 | 9.75 | 0.78 | 108 |
| State | 9.17 | 8.12 | 1.06 | 113 |

**Total Precipitation
March 2017
CoCoRaHS network
(307 stations)**



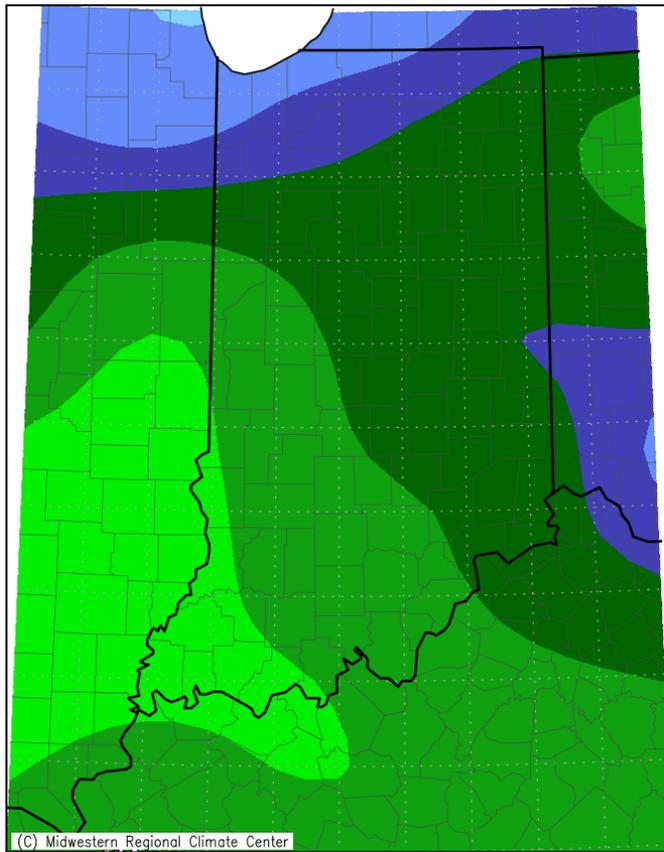
Analysis by Indiana State Climate Office
Web: <http://www.iclimat.org>

**Total Snowfall
March 2017
CoCoRaHS network
(342 stations)**

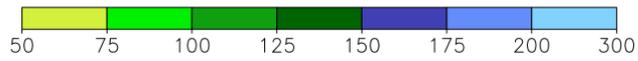


Analysis by Indiana State Climate Office
Web: <http://www.iclimate.org>

Accumulated Precipitation: Percent of Mean
March 1, 2017 to March 31, 2017

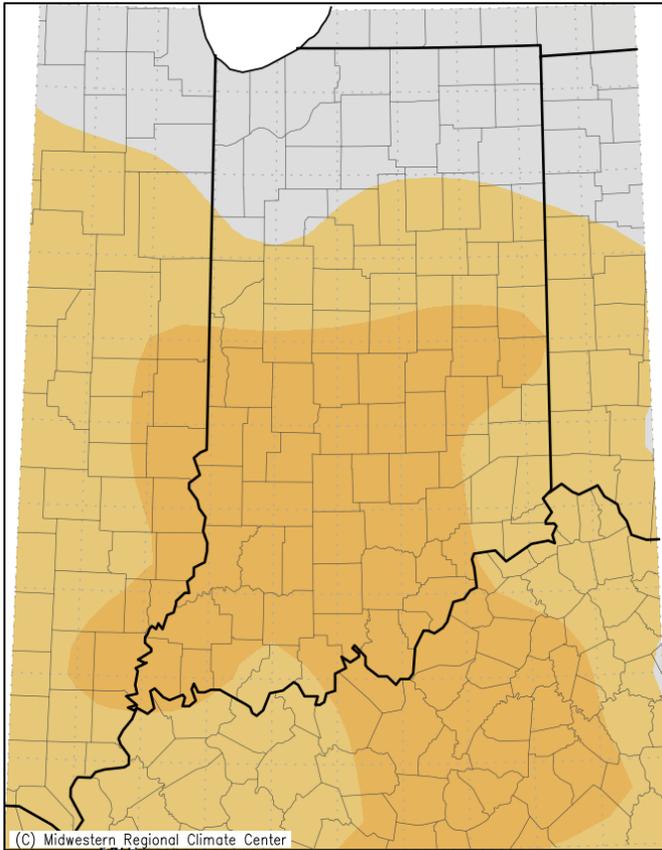


Mean period is 1981-2010.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 4/7/2017 2:17:18 PM CDT

Average Temperature (°F): Departure from Mean
March 1, 2017 to March 31, 2017



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 4/7/2017 2:18:23 PM CDT

Drought Summary from the U.S. Drought Monitor

Below is a drought summary for the state of Indiana from the U.S. Drought Monitor. Areas in white are not experiencing any drought. Yellow areas are abnormally dry, but not considered a drought. Drought begins when the moisture levels become more severe, with beige, orange, red, and brown indicating increasing levels of drought (moderate, severe, extreme, and exceptional, respectively). The table below indicates what percentage of the state is drought free, and how much of the state is in drought by degree of severity (D1 - D4 category).

▼
Indiana ▼
Statistics type: Categorical Percent Area ▼

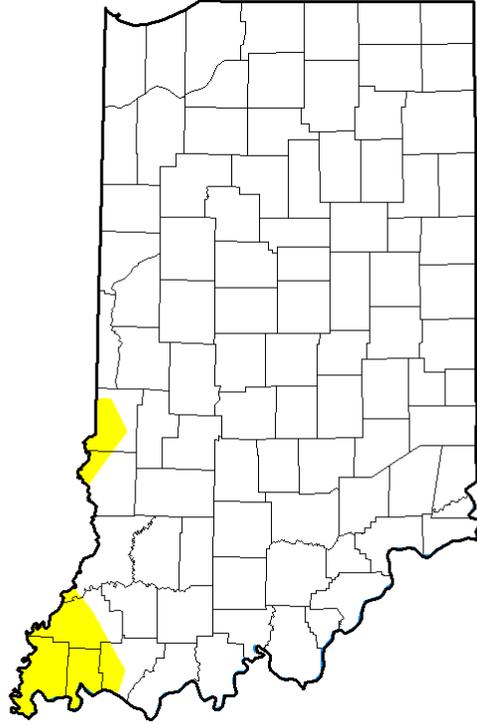
Percent Area in U.S. Drought Monitor Categories

Show entries

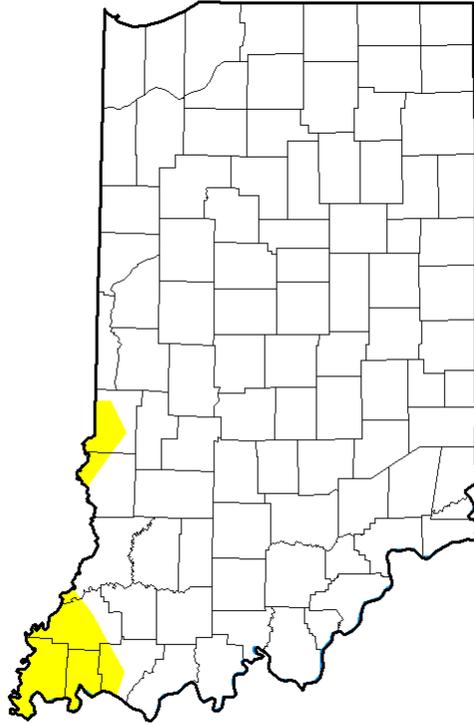
Search:

| Week ▼ | None ◆ | D0 ◆ | D1 ◆ | D2 ◆ | D3 ◆ | D4 ◆ |
|------------|--------|------|------|------|------|------|
| 2017-04-04 | 96.03 | 3.97 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2017-03-28 | 96.03 | 3.97 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2017-03-21 | 96.03 | 3.97 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2017-03-14 | 96.03 | 3.97 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2017-03-07 | 96.05 | 3.95 | 0.00 | 0.00 | 0.00 | 0.00 |

Mar 7th Drought Summary



Mar 14th Drought Summary



Mar 21st Drought Summary



Mar 28th Drought Summary

