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Indiana State Climate Office

Monthly Weather Report

May 8, 2015



<http://www.inclimate.org>

April 2015 Climate Summary

Month Summary

April was a month of extremes. Severe weather erupted on 4 days of the first week with multiple tornadoes, large hail, wind damage, and flooding. Four EF-1 tornadoes struck far southwest Indiana on April 7th. Dryness north to heavy precipitation south has persisted in Indiana since mid-February. A field fire in Newton county on April 12th spread to a mile in length. An inch of snow was observed in Noble county on April 23rd. Long alternating warm and cold spells continued in April. Cold soils were delaying the start of the 2015 planting season.

The state average temperature for April was 53.0°F which is 1.6°F above normal. This places April 2015 in a tie with 1976 and 2011 as the 29th warmest April on record. Some warmer Aprils in the last 10 years include 2005 with a 54.0°F state average temperature tied in 18th place. The following year a 55.7°F number placed April 2006 as 10th warmest. April 2010 was very warm with its 57.3°F reading, good for 2nd warmest April on record. The warmest April in the Indiana record book was in 1896 with a 57.8°F state average temperature. The day split in April 2015 was 12 days of below normal temperature, 18 days above normal, and no days at normal. There were 4 days with the daily state temperature 10°F or more above normal and 1 day when the daily state temperature was 10°F or more below normal. The highest temperature of the month in the cooperative observer network was 82°F on April 10th in Brookville. The coldest minimum was 23°F on April 4th at Francesville and South Bend Michiana Airport.

The April state precipitation average of 4.85" was 0.91" above normal. This ties 1912 as the 29th wettest April on record since 1895. Some recent wetter Aprils include 2002 with its 5.59" average in 20th place, 2009 with 5.74" good for 13th, and 2013 at 6.38" pegged in 6th place. Last year April 2014 came in at 5.73" which fits in the 14th slot. The wettest April on record was 4 years ago with a whopping 9.61" state April precipitation. The highest single day precipitation among cooperative stations in April 2015 was 6.20" recorded on April 3rd at Leavenworth 2nw. The highest daily total in the CoCoRaHS network was 5.94" measured by the volunteer at English 7.9ssw that same day.

Regionally April 2015 precipitation was near 80% of normal in northern Indiana, 125% of normal in central, and 150% of normal in the south. Normal April precipitation ranges from 3.5" in northeast Indiana to 4.5" in the southwest. Widespread precipitation fell on about 14 days this month.

Accumulating snow fell in and around Noble county on 1 day this month. Widespread snowfall did not occur in Indiana during April.

April 1st – 10th

The 2015 severe weather season erupted on scene with the arrival of April. The number of interest is four: 4 Indiana tornadoes on April 7th which was one of 4 severe weather days so far in these early days of the new month. April was off to a very warm start as 9 of its first 10 days had above normal state average temperature. The generally dry north to wet south precipitation trend across the state has persisted since mid-February. Many northern counties were placed into the abnormally dry D0 category by the US Drought Monitor in its April 7th edition.

High pressure over West Virginia fed warm southerly winds to Indiana on April 1st. The state temperature stood at 5°F above normal. With a warm front over the Great Lakes and a cold front approaching Illinois, Indiana found itself inside a warm air mass sector, lifting the state temperature slightly to 7°F above normal. The cold front slowed as it reached southern Indiana on April 3rd. High pressure moved into the Midwest the next day, kicking the Indiana front east to the Atlantic coast. Much colder air flowed into the state behind the front, lowering the state temperature to 4°F below normal on April 4th, the coldest day of the 10 day interval.

A 5 day warming trend commenced on April 5th. High pressure moved to North Carolina and its southerly return wind flow rewarmed Indiana over the next two days to 6°F above normal. A stationary front on the northern Indiana border would drift slightly south over the next 4 days and greatly impact state weather in the form of severe weather events. The state average temperature trended upward a few more degrees each day, soaring to 19°F above normal by April 9th as a strong Kansas storm pumped warm air into Indiana. The drifting stationary front finally converted into a warm front, placing all but far northern Indiana into an unstable warm air mass sector. The Kansas storm raced to the Great Lakes by April 10th, dragging its cold front across Indiana and into Ohio, ending the warming cycle. The temperature dropped to 10°F above normal to close the interval.

Over the 10 days the state temperature averaged to 7°F above normal. Typically in early April the daily maximum temperature should range between 55°F and 64°F north to south across Indiana. The daily minimum normally varies from 35°F in far northern Indiana counties to 41°F in the far southwest. The warmest daily maximum temperature in the cooperative station network over the 10 days was 81°F at several locations on April 9th and 10th. The coolest minimum in this network was 23°F at South Bend Michiana Airport and in Francesville on April 4th.

It was a wet interval with precipitation recorded on 9 of the 10 days somewhere in Indiana. Rainfall was heavy in southern Indiana but trended much lighter moving north across the state. The heaviest amounts were wrung out of the atmosphere during the passage of the April 3rd cold front. The second surge of rainfall came as the stationary front lingered across Indiana for 3 days before the final cold front carried the moisture south and out of the state. For the 10 days up to 2" fell across the northern half of Indiana increasing to a band of 6" to 10" across south central counties.

Regionally about 1" fell across the northern third of Indiana, 2.5" across the middle of the state, and 4.6" in the south. These amounts equate to near normal in the north, twice normal in central areas, and 340% of normal across the south. The heaviest single day amounts were recorded the morning of April 3rd in south central Indiana. The CoCoRaHS observer in Corydon measured 6.24" that day while English had 5.94". Two Milltown volunteers had 5.29" and 5.04" and a Pekin observer noted 5.02". Over the entire 10 days the New Pekin station reported a total of 10.97" with 8.13" at

Milltown. The rainfall at Fredericksburg summed to 7.61" while Holland tallied 7.47" and Huntingburg had 7.34".

The Indiana severe weather season began on April 2nd. Large hail was reported in 4 southern Indiana counties, increasing in size towards the Ohio River. One inch diameter hail was reported in Monroe county with 1.50" hail in Knox and Clark counties. In Crawford and Harrison county hail reached 1.75" in diameter, severely damaging trees. A tree in Brown county fell and blocked a road when high winds hit that area. There were no injuries noted in these storms.

Heavy rains flooded I-64 in southern Indiana the next morning. Some drivers of semi-trucks had to be rescued from their stranded rigs near Jasper. The interstate closed there.

There was a short break before a second more intense round of severe weather hit the state on April 7th, 8th, and 9th. Four EF-1 tornadoes touched down near the Ohio River on April 7th. A tornado in Vanderburgh county was on the ground for 8.5 miles between Darmstadt and Chandler. There was damage to farm machinery sheds and other buildings. A few garages and 3 grain bins were destroyed.

Two tornadoes occurred in Warrick county. The path of the first tornado was 1.5 mile long, destroyed a barn and damaged several others in 95 mph winds. The second tornado ran for 3.75 miles and uprooted or snapped large trees with winds also to 95 mph.

The fourth tornado touched down for 2.6 miles in a rural area of Perry county. The only damage reported was a destroyed carport.

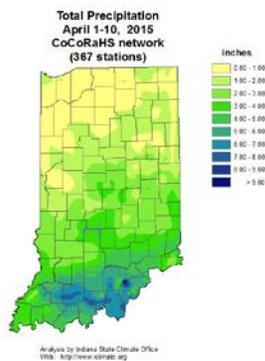
Large hail was not widespread on April 7th as only Vermillion and Dubois counties reported stones of at least 1.0" in diameter. But damage due to high winds was far more extensive. In Vanderburgh county many power lines were torn down causing outages. Semi-trucks were overturned by strong winds on I-64 and I-69. Winds to 57 mph in Warrick county toppled several trees including a few which fell on power lines. High winds flipped a boat trailer in Crawford county and pushed a tree across a road in Perry county. Winds to 70 mph dropped a tree on to a house in Spencer county. Still more trees were downed in Orange county. The flooding of a few days ago returned to counties near Louisville when a few drivers became stranded in deep water. Some homes were flooded in that area as well.

Heavy rainfall with frequent lightning and large hail were observed over a large section of central Indiana on April 8th. Roads flooded and roofing companies received dozens of emergency calls to repair leaky roofs and flooded basements. Officials in Hamilton county distributed sandbags to residents to counter the flooding. High water signs were posted in Montgomery county. In southwest Indiana in Dubois county a road was closed due to high water.

One inch hail was common across Boone, Hendricks, Marion, Morgan, and Rush counties. An isolated report of 1" hail was noted in far northern Indiana in Laporte county. Even larger hail to 1.75" diameter was reported in Tippecanoe and Johnson counties. Windshields were broken and vehicles heavily dented while water covered home yards. High winds in some storms brought down trees in Wayne county and blocked a road in Martin county. Buildings were damaged in Rush county by high winds that also brought down power lines.

Wind damage was prevalent on April 9th in central and southern Indiana. Trees fell across roads in Boone and Jefferson counties. High winds brought trees down on to power lines in Morgan and Johnson counties. A chimney was blown over and shingles torn off a building in Jackson county. Winds exceeded 60 mph in Dearborn, Clark, Dubois, Harrison, Warrick, and Vanderburgh counties where many more trees were brought down. There was porch roof damage in Crawford county.

Low rainfall amounts in northern Indiana since mid-February are drying soils there. According to the April 7th edition of the US Drought Monitor, parts of 22 counties generally north of a Fort Wayne to Lafayette line but excluding Lake and Newton counties are abnormally dry and rated in the D0 category. A week earlier only Steuben and half of DeKalb county were listed as abnormally dry. The new D0 area covers 22% of total Indiana land area while the remaining 78% is still considered in normal soil moisture status for this time of year.



April 11th – 17th

A very active weather pattern in early April turned much quieter by mid-month. Gone this week are the tornadoes, large hail, damaging wind gusts, and locally heavy downpours. In its place were above normal temperatures and below normal rainfall. Soils had dried enough in northern Indiana to allow a field fire to ignite and spread in Newton county this week.

The state average temperature began at 1°F above normal on April 11th and remained above normal all week. High pressure had spread southward over Indiana allowing sunny skies and light winds. The high center moved to Maryland by the next day, warming Indiana to 4°F above normal. The state temperature rose a few more degrees to 7°F above normal on April 13th as warm air rushed into Indiana ahead of an approaching cold front. The cold front passed through Indiana the next day. The air mass behind the front originated from the Pacific Ocean and was milder than cold air typically coming out of Canada. The state temperature dipped slightly to 5°F above normal. The cold front stalled in Kentucky. The ridge of Pacific air moved overhead Indiana on April 15th with no change in temperature.

The high center over Indiana pushed east to Connecticut on April 16th. The east half of the country was now part of a massive warm air sector. The Indiana state temperature climbed slightly to about 6°F above normal. Finally on April 17th the Connecticut high retracted south into South Carolina,

setting up a stronger backside warm air flow into Indiana. The week ended with the state temperature pegged at 11°F above normal, the warmest day of the week. Over the full week the state temperature averaged 5°F above normal. Typically in mid-April daily maximum temperatures should vary between 59°F in far northern Indiana to 67°F in the extreme southwest corner of the state. Daily minimums should range between 38°F and 44°F north to south across the state. The warmest temperature recorded in the daily cooperative station network this week was 79°F at Elnora and Farmersburg on April 17th. The coolest daily minimum in this same network was 29°F at Rensselaer on April 11th.

After April 12th rain fell every day in Indiana. Northwest and north central Indiana recorded rain on April 13th while up to 0.90” fell statewide the next day. The southern third of the state received rain on April 15th. It was wet nearly statewide the next two days with the highest rainfall amounts exceeding an inch each day. Over the entire week generally the southwest quarter of Indiana tallied more than a half inch of rain with lighter amounts elsewhere. Regionally these totals equate to about 20% of normal in the northern third of Indiana, 40% of normal in central counties, and near 60% of normal across the south. The heavier totals were seen in west central Indiana along the Illinois border. The largest single day amounts this week in the CoCoRaHS network included 1.45” at West Terre Haute, 1.28” in Stilesville, 1.10” outside Cloverdale, and 1.06” near Lizton. The greatest weekly totals included 1.20” at Cloverdale, 1.16” in Huntingburg, 1.04” outside Shoals and Attica, and 0.96” near Jasonville.

There was no change this week in the overall status of Indiana soil moisture according to the US Drought Monitor. Nearly a quarter (22%) of total state area remains classified in the D0 category, abnormally dry. This D0 region consists of nearly all counties north of a Fort Wayne to Lafayette line except for Lake and Newton. This dry north to wet south pattern has persisted across the state since mid-February. Most of Indiana had begun the spring planting season but it was already behind schedule due to the generally wet soil conditions.

The local dryness in northern Indiana may have played a role in a Newton county field fire this week. About noon on April 12th a field fire raced at 20 mph for nearly a mile after ignition in corn stubble. Windy conditions were blamed for the fire’s rapid spread. Fire crews extinguished the blaze in about 2 hours.



April 18th – 24th

Cold fronts on 4 consecutive days sent Indiana temperatures tumbling nearly all week long. It got cold enough for snow to accumulate in far northern Indiana, long after winter was supposed to be over. Despite heavy rain which fell early in the week dryness continued across more than 20 counties in northern Indiana.

The state average temperature was 9°F above normal to start the week on April 18th. The first cold front passed through the state the next day, lowering the state temperature to 3°F above normal. Warm air from a storm in Arkansas overran cold surface air in southern Indiana and wrung out up to 2" of rainfall. On April 20th this storm moved to Michigan, dragging first its warm front, then its cold front through Indiana that day. The state temperature continued its downward slide to 1°F below normal.

The third cold front of the week crossed Indiana on April 21st. Temperatures fell a bit more to 4°F below normal. A reinforcement of cold Canadian air plunged south behind the fourth cold front the next day. The state temperature was still falling, this day to 9°F below normal. The daily cold fronts were finally ended.

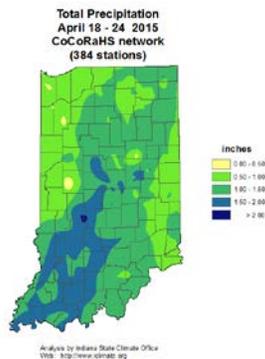
A dome of cold air sprawled across most of the country east of the Rocky Mountains by April 23rd. The Indiana temperature had finally bottomed out at 10°F below normal. The high pressure center drifted east overhead Indiana the next day. The state temperature actually rose for the first time in nearly a week to 8°F below normal. Overall for the week the state temperature averaged to 3°F below normal. Typically in late April daily maximum temperatures should vary between 62°F and 70°F north to south across the state. Normal daily minimums range between 41°F in far northern Indiana to 46°F in the far southwest corner. The warmest local maximum temperature this week in the cooperative station network was 82°F at Brookville on April 19th. The coolest local minimum in the same network was 24°F at Wanatah 2wnw on April 24th.

Rainfall was reported in southwest and south central Indiana on April 19th before spreading statewide and becoming heavy the next day. Rainfall amounts observed the morning of April 21st were much lighter yet still covered the entire state. The April 22nd reports indicated moderate rainfall over just the central third of Indiana. Both rain and snow occurred the next day, mostly in the lake effect region of northern Indiana and in the southeast. Regionally for the week precipitation averaged about 1.0" across northern Indiana, and 1.1" elsewhere in the state. These amounts equate to about 120% of normal statewide. The heaviest single day precipitation fell mostly in western Indiana, including 2.10" near Cloverdale, 2.00" in Oolitic, 1.98" at Washington, 1.90" in Greencastle, and 1.89" at Gosport. Total precipitation for the full week was only slightly higher than these amounts.

Snowfall was measured on just one day, the morning of April 23rd. While 1.0" covered the ground in Albion, most places received only a dusting. South Bend noted 0.3" while outside Goshen and Milford 0.2" was recorded. Syracuse tallied just 0.1". Snow totals for the week were the same since snow only fell on a single day.

According to the April 21st edition of the US Drought Monitor there was no change in Indiana soil moisture status from the previous week. The monitor rates parts of 28 counties as abnormally dry, which is in the D0 category. The area impacted is 22% of total Indiana land area, generally north of

a Fort Wayne to Lafayette line. The remaining 78% of all Indiana land continues in normal soil moisture status for this time of year.



April 25th – 30th

Quick repeated bursts of cold air last week put Indiana into a chill that persisted to the end of the month. The state average temperature remained below normal these final days of April with little day to day variation. A deep low pressure system in the upper atmosphere off the east Canada coast retreated westward into Indiana during this time, helping sustain a cold air pattern with some showers in the state. Moderate rain fell the first few days. The recent cold and wet weather has sidetracked Indiana farmers who await warmer and drier soil conditions before planting the new 2015 crop.

The long temperature slide last week settled to a 9°F below normal state average temperature on April 25th. A stationary front over central Indiana triggered rain showers statewide. A rare high pressure center over Hudson Bay forced the stationary front to sag southward to Tennessee the next day, giving Indiana skies a chance to clear after earlier showers dumped more than an inch of rain in the central part of the state.

On April 27th and 28th the Hudson Bay high migrated south towards Indiana. State temperatures held nearly steady between 6°F and 8°F below normal. On April 29th a new cold front stalled in Michigan, Indiana remained in slightly warmer air to the south with its state temperature rising a tad to 4°F below normal. Another high pressure center developed over Hudson Bay at the close of April, forcing the Michigan cold front through Indiana. April closed with the daily state average temperature at 5°F below normal.

Over the 6 day interval the state temperature averaged to 7°F below normal. Typically at the end of April daily maximum temperatures should range from 64°F in far northern Indiana to 72°F in the southwest corner of the state. Normal daily minimums vary between 43°F and 49°F north to south across the state. The warmest local maximum temperature in the 6 days in the cooperative station network was 75°F at Boonville 1s on April 25th and at Cannelton on April 26th. The coolest local minimum in this network was 24°F at Angola on April 25th.

Rainfall was noted statewide in the April 25th morning report with up to 0.5” in the northwest part of the state and about 0.2” elsewhere. The next day from 0.5” to 1” was measured in the central third of Indiana with generally less than 0.4” across the south. Amounts were variable up to an inch in northern Indiana. A few dry days followed before very light rain fell across the southwest quarter of the state according to the April 30th report.

Regionally over the 6 day interval northern Indiana rainfall averaged near 0.6” while 0.8” was collected in central areas and 0.5” was tallied across the south. These totals equate to about 90% of normal in the north, 110% of normal across central, but just 50% of normal in southern Indiana. The heaviest single day local rains were recorded the morning of April 26th. On that day the CoCoRaHS volunteer in Russiaville had 1.60” while two Carmel observers had 1.30” and 1.22”. In Portage 1.26” was collected and Logansport summed 1.25”. The heaviest totals in the 6 day interval were 1.35” and 1.29” observed by the two Carmel volunteers and 1.34” measured in Rensselaer. The Kokomo report came to 1.25” with 1.21” in West Lafayette.

The calendar says planting season has arrived but unfavorable weather has kept Indiana soils too cold and wet to germinate newly planted seed. The situation is reminiscent of the 2009 planting season. The USDA Indiana weekly crop bulletin stated that only 3% of the 2015 corn crop has been planted statewide compared to a more typical 26% by this time. Statistics show that only in 6 of the last 30 years has so little ground been planted by late April. Existing wheat and hay growth has been very slow. The progress of some winter wheat is so far behind that several acres have already been abandoned. Damage to fruit is unknown at this time. Untreated weeds may become a problem soon.

Rainfall since mid-February has been much less in northern Indiana than in the south. The more advanced field activity in northern counties than in the wetter south is evidence to this variation. The contrast is also obvious in the US Drought Monitor. The April 28th edition indicates no significant change in soil moisture status since a week earlier. A region of abnormally dry (D0 category) soil persists generally north of a Fort Wayne to Lafayette line with exception of Lake and Newton counties. This D0 area includes about 22% of total Indiana land area. The remainder of about 78% is still rated in normal status for this time of year.



April 2015

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	50.4	49.5	0.9
North Central	49.8	48.9	0.9
Northeast	49.2	48.5	0.7
West Central	53.1	51.5	1.6
Central	52.8	50.9	2.0
East Central	52.1	49.9	2.2
Southwest	56.9	54.9	2.0
South Central	56.3	54.2	2.1
Southeast	55.0	53.1	1.9
State	53.0	51.4	1.6

Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	2.77	3.60	-0.83	77
North Central	2.97	3.59	-0.62	83
Northeast	2.79	3.47	-0.68	80
West Central	4.66	3.88	0.78	120
Central	5.14	3.91	1.23	132
East Central	4.74	3.78	0.97	126
Southwest	6.54	4.45	2.09	147
South Central	7.30	4.42	2.88	165
Southeast	6.45	4.21	2.24	153
State	4.85	3.94	0.91	123

Spring so far (March - April)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	42.0	43.9	-1.9
North Central	41.5	43.3	-1.8
Northeast	40.9	42.8	-1.9
West Central	44.9	46.0	-1.1
Central	45.0	45.4	-0.4
East Central	44.0	44.4	-0.4
Southwest	49.4	49.7	-0.4
South Central	49.0	49.1	-0.1
Southeast	47.7	48.1	-0.3
State	45.0	46.0	-0.9

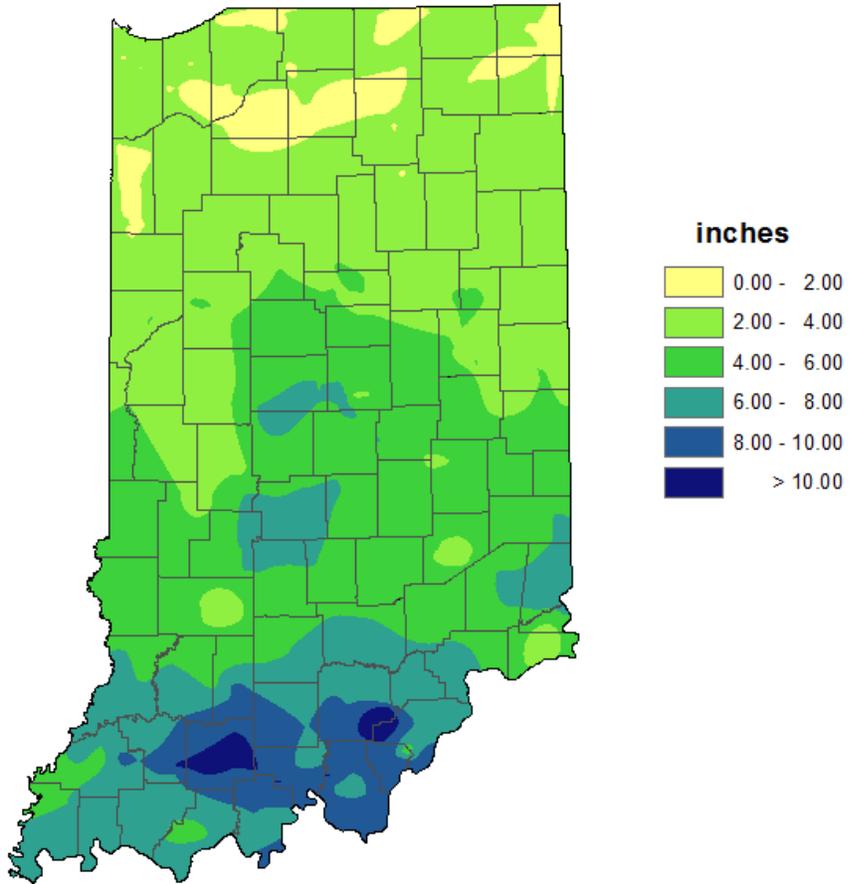
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	3.96	6.52	-2.56	61
North Central	4.15	6.37	-2.22	65
Northeast	4.19	6.18	-1.99	68
West Central	7.69	7.23	0.46	106
Central	8.58	7.19	1.38	119
East Central	8.20	6.85	1.35	120
Southwest	13.31	8.68	4.63	153
South Central	14.13	8.59	5.54	165
Southeast	12.17	8.16	4.01	149
State	8.55	7.34	1.21	116

2015 Annual (through April)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	30.7	34.7	-4.1
North Central	30.1	34.4	-4.3
Northeast	29.4	34.0	-4.6
West Central	33.6	36.9	-3.3
Central	33.8	36.5	-2.8
East Central	32.6	35.7	-3.1
Southwest	38.4	41.1	-2.7
South Central	38.1	40.7	-2.7
Southeast	36.8	39.8	-2.9
State	33.8	37.2	-3.3

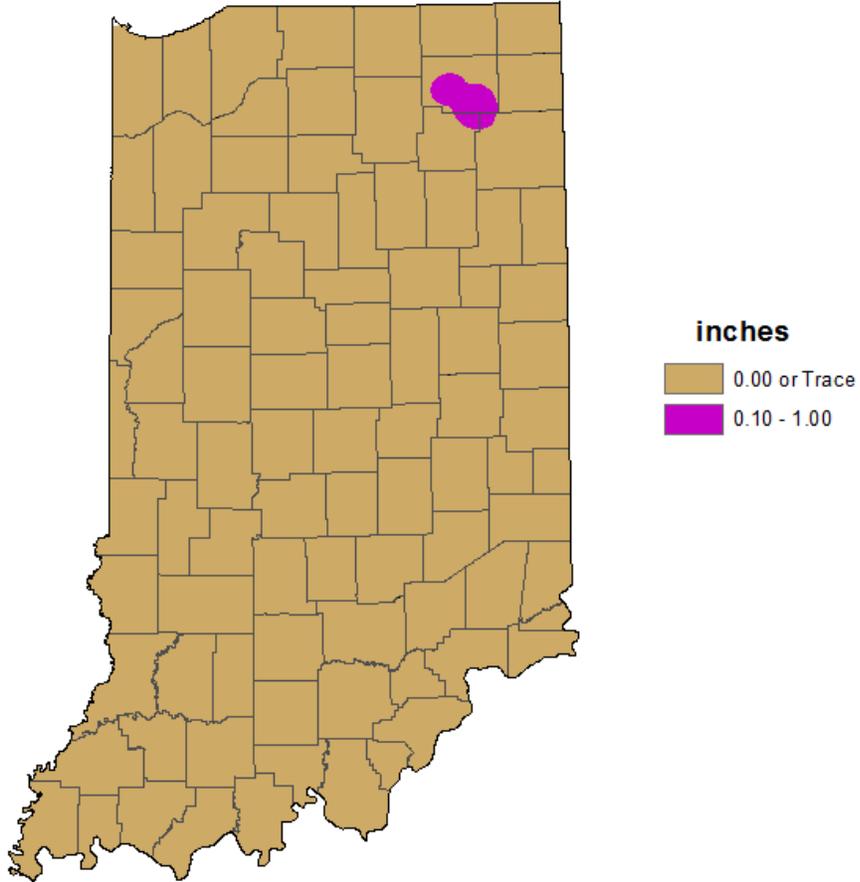
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	7.19	10.08	-2.89	71
North Central	7.50	10.21	-2.71	73
Northeast	7.29	9.95	-2.66	73
West Central	10.59	11.68	-1.09	91
Central	11.58	11.80	-0.23	98
East Central	11.80	11.29	0.51	105
Southwest	17.96	14.55	3.41	123
South Central	18.99	14.61	4.39	130
Southeast	16.24	13.96	2.27	116
State	12.17	12.05	0.11	101

**Total Precipitation
April 2015
CoCoRaHS network
(372 stations)**



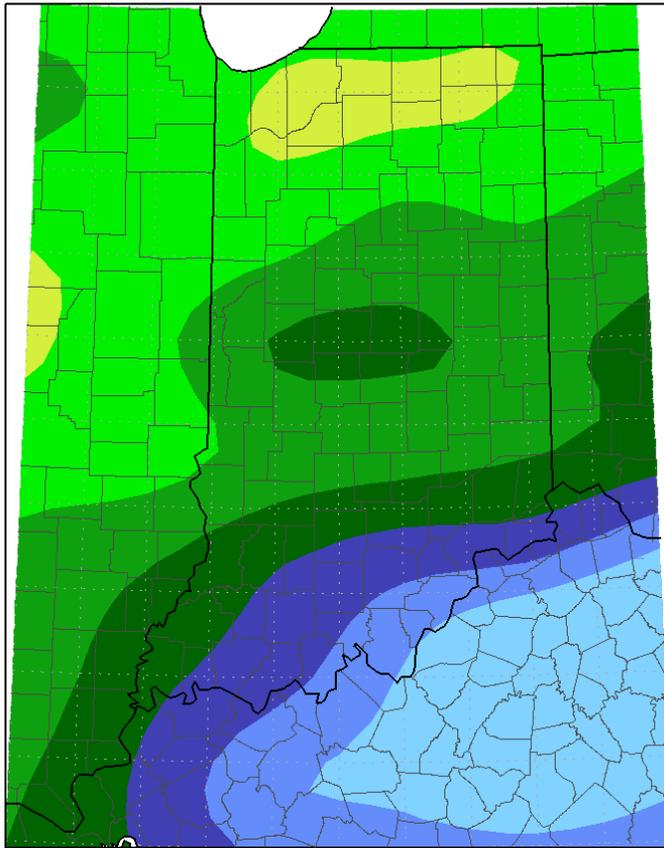
Analysis by Indiana State Climate Office
Web: <http://www.iclimate.org>

**Total Snowfall
April 2015
CoCoRaHS network
(372 stations)**

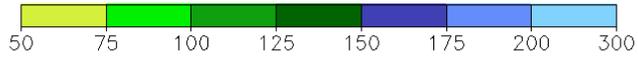


Analysis by Indiana State Climate Office
Web: <http://www.iclimate.org>

Accumulated Precipitation: Percent of Mean
April 1, 2015 to April 30, 2015

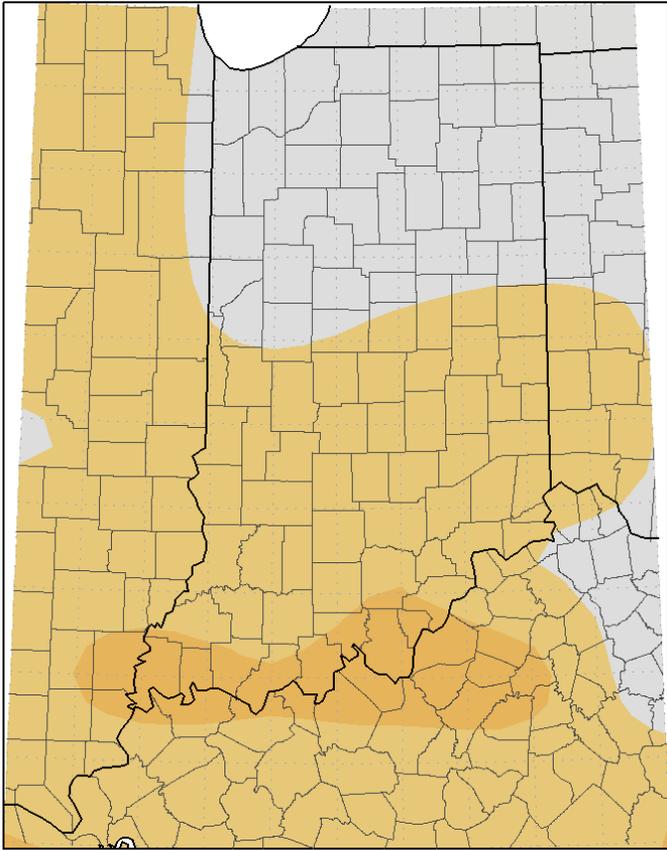


Mean period is 1981-2010.

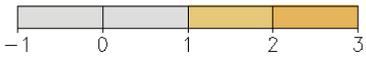


Midwestern Regional Climate Center
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Average Temperature (°F): Departure from Mean
April 1, 2015 to April 30, 2015



Mean period is 1981-2010.



Midwestern Regional Climate Center
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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

Drought Severity

	D0 - Abnormally Dry		D2 Drought - Severe		D4 Drought - Exceptional
	D1 Drought - Moderate		D3 Drought - Extreme		

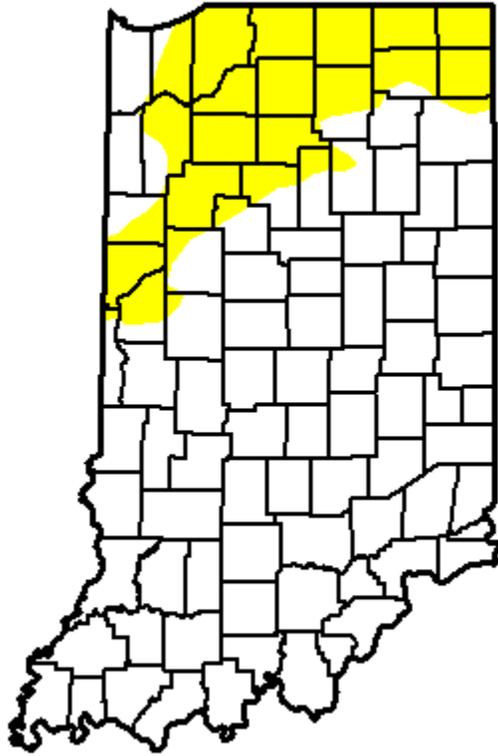
Popul

Statistics type: Traditional (D0-D4, D1-D4, etc.) Categorical (D0, D1, etc.)

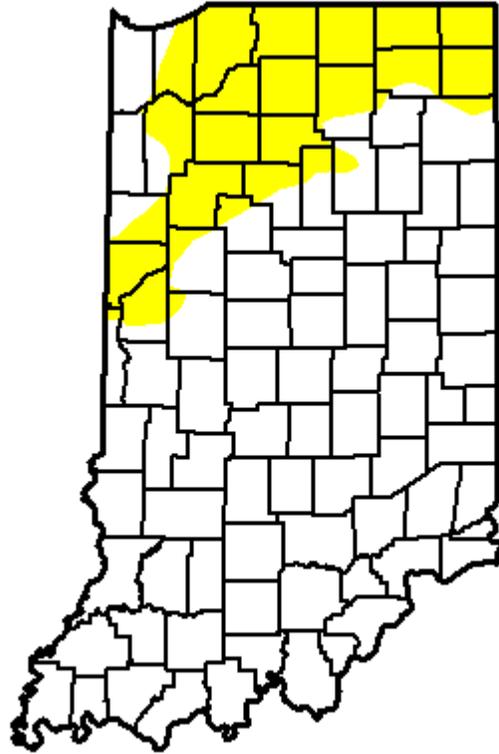
Percent Area in U.S. Drought Monitor Categories

Week	Nothing	D0	D1	D2	D3	D4
2015-05-05	78.45	21.55	0.00	0.00	0.00	0.00
2015-04-28	78.45	21.55	0.00	0.00	0.00	0.00
2015-04-21	78.28	21.72	0.00	0.00	0.00	0.00
2015-04-14	78.28	21.72	0.00	0.00	0.00	0.00
2015-04-07	78.44	21.56	0.00	0.00	0.00	0.00

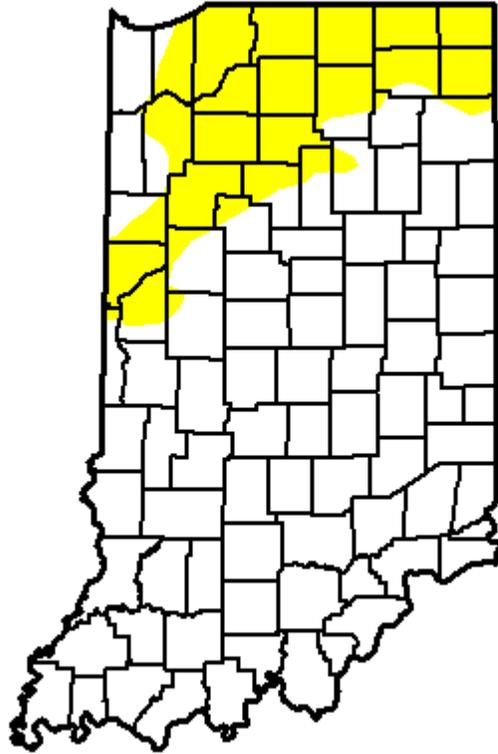
April 7th Drought Summary



April 14th Drought Summary



April 21st Drought Summary



April 28th Drought Summary

