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and
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Indiana State Climate Office

Monthly Weather Report

Jun 7, 2013



<http://www.iclimat.org>

May 2013 Climate Summary

Month Summary

Weather in May was generally warmer and slightly drier than normal. Yet rain fell often and locally heavy at times, slowing spring planting progress to a crawl until mid-month. Missing in Indiana since January has been tornadoes, where slow is a good thing. Five small tornadoes touched down in Indiana in May: two in Vigo county on May 9th, another two in Putnam and Hendricks counties on May 21st, and finally one on May 31st in Benton county. Most reported damage due to severe weather came this last day of the month. There were no weather related deaths in May.

With a state average temperature of 64.4°F, this May ranks as the 24th warmest May on record in a tie with 1939 and 1970. May 2013 was 2.4°F above normal. Only three Mays since 2000 have been warmer. Last year the May state average temperature was 67.4°F, ranking in 5th place. The May 2007 average was 66.2°F, good for the 13th spot. A few years before that May 2004 posted a 65.8°F average, coming in at 14th place. The warmest May on record was 68.4°F set way back in 1896. The day split in May 2013 leaned heavily to the warm side with 8 days of below normal temperature and 23 days at above normal. The daily state average temperature was 10°F or more above normal on 3 days and at least 10°F below normal on 4 days. The warmest temperature in the state this month was 96°F observed on May 22nd at Poseyville. At the opposite corner of the state Angola recorded the coldest reading at 29°F on the morning of May 13th.

The state average precipitation this month was 3.80 inches, or 0.60 inch below normal. This value falls near the middle historically, as the 50th driest May in Indiana since 1895. Last year was drier with its 2.70 inch amount, ranking as the 21st driest on record. Some other recent dry Mays include the 9th place 1.84 inch average recorded in 2007 and 2.55 inches tallied in 2005, falling into 18th place. The driest May on Indiana record was the meager 1.12 inch recorded in 1934. Regionally May 2013 precipitation was about 80% of the 3.9 inch normal in northern Indiana, near 75% of the 4.4 inch normal in central, and 95% of the 4.9 inch normal in the south. The highest single day cooperative station precipitation this month was 3.80 inches measured at Vincennes on May 17th. The heaviest CoCoRaHS single day precipitation amount was 2.51 inches received at Leopold on May 5th. Precipitation generally fell on about 20 days this month. Rain which fell after early morning on May 31st is officially reported to June and those numbers are not considered in any of the above statistics.

Five tornadoes occurred this month as noted earlier. Details on each event are found in the weekly narratives below. On May 21st widespread high wind damage occurred mostly in central Indiana. Damages resulting from the late May 31st storms will be described in the June weather summary.

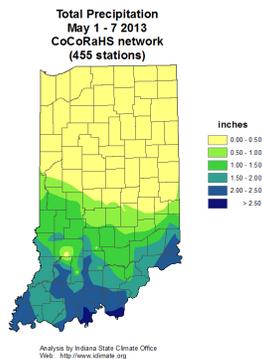
May 1st – 7th

Southerly winds from a departing high pressure center pushed state temperatures to near 12°F above normal at the start of this week and month. In the upper atmosphere the jet stream was splitting into a far northern Canadian branch and a southern branch plunging southward to Texas. Deepening low pressure centers formed in the wide gap between these rivers of air, floating slowly out of reach. In response at the surface an approaching storm slowed to a crawl the next day, positioned as a stationary front on the Illinois state line.

On May 3rd the stationary front managed to inch its way eastward halfway across Indiana. State temperatures were now on a downward trend, falling to 9°F above normal as cloudy skies limited heating from the sun. The strong high pressure ridge east of Indiana refused to budge, forcing the storm to stop, retreat, and pursue a new southern route. Meanwhile temperatures continued to slip, falling to 1°F below normal by May 5th. Finally the stationary front was torn apart, its northern segment back peddling to Iowa while the core of the storm moved south to Mississippi.

On May 6th the southern low center wandered north to Tennessee where it stalled. Moisture embedded in this storm now wrapped around its center, delivering heavy rain showers in an unusual east to west pattern to Ohio River counties and lighter showers to central Indiana. The southeasterly winds caused state temperatures to rise to end the week at 4°F above normal. The Tennessee low pressure system finally moved east into North Carolina on May 7th and the pesky showers over Indiana came to an end. State temperatures were mostly warmer than normal for the week, averaging nearly 6°F above normal. Typical early May daily maximum temperatures should vary between 66°F and 74°F north to south across the state. Daily minimums normally range between 45°F in the far north to 51°F in extreme southwest Indiana.

The first few days of the week were dry but then rainfall increased each day as the stationary front was drawn into the state. The bulk of the rainfall this week fell in far southern Indiana closest to the storm center moving through Tennessee. On average less than an inch was reported on the morning of May 5th but locally heavy amounts were noted by CoCoRaHS observers in far southern Indiana. Among the largest single day amounts received were two reports in Leopold of 2.51 and 2.13 inches, 2.25 inches at Cannelton, and 2.17 inches in Birdseye, all in Perry county. A little more rain fell on May 6th and 7th. For the week the heaviest rainfall totals were 2.56 inches in Milltown, and 2.49 inches at Elizabeth. The Birdseye observer recorded 2.35 inches while the Aurora gage collected 2.29 inches over the 7 days. Regionally on average less than 0.1 inch fell in northern Indiana, about 0.4 inch in central areas, and 1.8 inch across the south. These numbers equate to a meager 5% of normal in the northern third of Indiana, 50% in central counties, and 150% of normal in southern Indiana.



May 8th – 14th

Last week's slow southern storm that delivered off and on rain showers to Indiana finally moved away to North Carolina before back tracking to West Virginia. Just two cold fronts moved through Indiana this week, accounting for a general cooling trend. The first front spawned two small tornadoes in Vigo county. Isolated wind damage was reported in Bartholomew county to the east that same day.

The week opened 6°F warmer than normal. But a new strong cold front was in Illinois on May 9th. Severe weather broke out in the warm air ahead of the front in west central Indiana. The cold front crossed the state the next day, cooling the state average temperature to normal. Temperatures continued falling on May 11th to 8°F below normal. A second cold front was in Illinois, ready to pounce and reinforce the cold air already in our state. This front traveled quickly through Indiana on May 12th, lowering the state average temperature to 15°F below normal, the coldest day of the week.

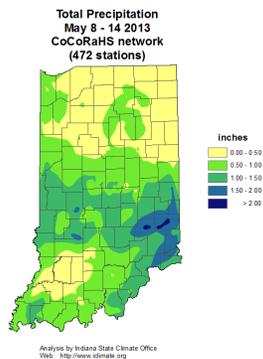
Behind the second front a strong ridge of high pressure moved overhead Indiana on May 13th. The wet weather that has dominated the state for many days was driven out and replaced by welcome sunny skies. As the week closed the ridge drifted east to the Atlantic coast. Southerly winds now arrived in Indiana, tapping into much warmer air and lifting temperatures to 1°F above normal. For the week the state temperature averaged about 3°F below normal. Usually at this time in May daily maximum temperatures should range from 68°F in far northern Indiana to 75°F in the extreme southwest. Daily minimums normally vary between 47°F and 53°F north to south across the state.

Dry days have been scarce this month especially in southern Indiana. The wet pattern continued into this week until the high pressure ridge shut down the precipitation and provided a welcome break. The bulk of the rainfall this week came during the passage of the cold fronts. Some of the heavier single day reports from CoCoRaHS volunteers were found in southeast and west central Indiana. In southeast Indiana the Lawrenceburg observer measured 1.63 inch, while 1.57 inch was recorded at Aurora and 1.54 inch at Moores Hill. Two Spencer reports from west central Indiana were at 1.53 and 1.50 inch. The largest totals for the week approached 2 inches. The Batesville location noted 2.05 inches, Aurora had 1.91 inch, and 1.85 inch was totaled at Spencer. The Greencastle rain gage collected 1.80 inch for the week while just south of Indianapolis 1.78 inch

was tallied. Regionally about a half inch of rain was observed in northern Indiana, an inch in central counties, and about 0.9 inch in the south. These totals equate to about 60% of normal in the north, 110% in central, and 80% of normal across southern Indiana.

Severe weather erupted ahead of the first cold front on May 9th. Two confirmed tornadoes, each rated as an EF-0 with 80 mph winds, touched down in Vigo county south of Terre Haute. The first tornado did minor damage to several trees. The second tornado touched down near the town of Riley, destroyed a small shed, blew windows out of a house, and ripped down trees and limbs. There were no injuries in either of these tornadoes. Later as the front moved eastward, high winds took down trees and limbs in Bartholomew county.

Indiana farmers anxiously wait for a break in the rainy weather. The planting season traditionally begins about April 15th but through this week the Indiana Ag Statistics Service reports only 30% of the intended corn acreage has been planted statewide. The average by this date is 54% complete. The report said northern Indiana farmers are the furthest along at 44% corn planted compared to about half that much in central and southern counties. Yet farmers are still ahead of the very slow planting starts in 2009 and 2011. The sunshine at the end of this week is an encouraging sign that drier weather may lie ahead.



May 15th – 21st

This was a rather quiet weather week until the last day. Daily state average temperatures held fairly steady over the 7 days within just a 5°F range. The week began with the temperature about 8°F above normal as Indiana was positioned within a sector of warm air. A cold front bearing down on the state had slowed then stalled cross country, straggling a long line from Michigan to Kansas, Wyoming, and on to California. On May 16th this front sank a bit further south into central Indiana, then halted again. In response the state temperature dipped a few degrees to 6°F above normal.

Over the next 3 days cooler Canadian air oozed southward into the western states but the stationary front stayed put over the Midwest and central Indiana. Late on May 19th the eastern segment of this front suddenly advanced northward into Michigan. Indiana was again fully wrapped into the warm air sector and the state temperature rebounded to 8°F above normal.

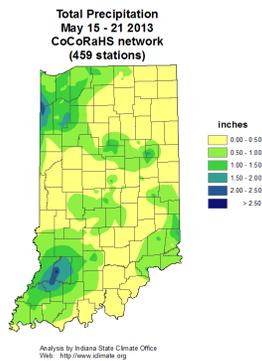
The cold air in the west now began a push eastward, forming an intense storm center over South Dakota. The warm southerly wind flow into Indiana strengthened ahead of the storm, lifting temperatures to 10°F above normal by May 20th. The cold air to the west moved still closer to Indiana the next day and the warm air mass over the state became more unstable. Severe weather became widespread across central Indiana early on May 21st. The week ended with the state average temperature at 9°F above normal. Given the narrow temperature range the state temperature this week overall was about 7°F above normal. Typically for this third week in May daily maximum temperatures should vary between 71°F and 77°F north to south. Daily minimums normally vary from 49°F in far northern counties to 55°F in the southwest corner of Indiana.

With a stationary front in the vicinity of Indiana nearly all week long, light amounts of rain fell on most days this week. Regionally about a half inch of total precipitation fell in northern and central Indiana while about 0.9 inch was received in the south. These totals equate to about 70% of normal in northern Indiana, 50% in central, and 90% of normal across southern areas. Local thunderstorms dumped heavier daily rainfall amounts in isolated spots all week long. On the morning of May 17th the CoCoRaHS observer in Washington found 1.85 inches in the rain gage there. The next morning the Shamrock Lakes volunteer measured 1.58 inch while two Hartford City rain gages had 1.49 and 1.47 inch. On May 21st the Lake Village observer read 1.68 inch. Rainfall this week totaled to 2.77 inches at Washington and 2.17 inches in Petersburg. The Plainville and Brook observers each recorded 1.69 inch for the week while Hartford City tallied 1.67 inch.

The tranquil weather pattern ended abruptly on the last day. Two confirmed tornadoes hit west central Indiana on the morning of May 21st. An EF-0 tornado touched down in Putnam county, destroying a barn, flipping an irrigation system, and tearing down some trees. A few minutes later another EF-0 tornado damaged a house roof in Hendricks county and also ripped into trees in that vicinity.

High wind damage was widespread, especially in central areas. Downed trees were noted in all 22 counties that filed storm reports: Porter, Carroll, Fountain, Montgomery, Boone, Tipton, Hamilton, Madison, Delaware, Putnam, Hendricks, Marion, Clay, Owen, Morgan, Shelby, Rush, Decatur, Monroe, Greene, Daviess, and Scott. Buildings were damaged or destroyed in four counties including two chicken coops in Carroll county, a barn in Fountain county, a building in Hamilton county, and the roof of a home in Owen county. Trees fell on to vehicles in Shelby and Rush counties. Power outages occurred, some due to fallen power lines, in Carroll, Hamilton, Owen, Monroe, and Morgan counties. In Madison county fallen trees blocked highways.

Yet there was some good news this week. The May 20th edition of the weekly Indiana Crop and Weather Report proclaimed a nice bump in the crop land acreage planted over the previous 7 days. The report stated that 64% of the state corn crop is now planted, more than double the progress of all prior weeks, and matching the 5-year average for this date. Progress was slowest in southern Indiana due to wet soils in that region. Soybean planting stood at 30% complete which is just shy of the 5-year average mark. Both corn and soybean planting numbers this week are a big improvement from just a week ago.



May 22nd – 31st

The final 10 days of May began quietly but on May 27th the storm machine cranked up once again until the close of the month. On May 31st a tornado touched down in Benton county, the fifth to occur in Indiana this month.

The state average temperature tumbled at the start of the 10 day interval, falling from 5°F above normal to 12°F below normal by May 24th, the coldest day of these ten. Two cold fronts in rapid succession pushed through the state on May 23rd, forcing the warm air of the previous day eastward. Much cooler air was driven south into Indiana by a high pressure center near Lake Superior. The pressure center drifted to Kentucky on May 25th. Southerly winds on the backside of this high center marked the start of a gradual 5 day warm up in Indiana. State temperatures lifted to 6°F below normal by May 26th and to normal the day after. The high center over Kentucky had moved east and far out of our area by then, and a new storm system in Iowa was approaching our state on Memorial Day. The holiday was misty and dreary with temperatures a few degrees above normal. Light intermittent showers resulted when warmer air south of Indiana eroded cool air at the surface. The warm front advanced into Michigan the next day, opening the way to noticeably muggier and unstable air into our state. State temperatures peaked at about 9°F above normal by May 29th. The arrival of this warm air marked the start of turbulent weather in Indiana which would continue to the end of the month.

On May 28th the former high pressure ridge had moved well into the Atlantic Ocean but its influence on Indiana wasn't finished just yet. The ridge retreated southwest into South Carolina on May 30th, reinforcing the extensive warm air mass in the southeast states. In response the next storm in South Dakota intensified and its eastward progress halted while waiting for the blocking ridge now over the southeast states to move away. Indiana was positioned within the unstable warm air with the state temperature near 5°F above normal as the month came to a close. Normally in the last 10 days of May daily state maximum temperatures average between 73°F in far northern Indiana to 80°F in the far southwest. Typical daily minimums vary between 52°F and 58°F north to south across the state.

The two cold fronts on May 23rd and the dominant warm unstable air the last days of the month caused rain showers nearly every day of the interval. The heaviest amounts fell over the holiday and late on the final day. The rainfall which occurred on May 31st will be officially reported into June and those numbers are not considered here.

Regionally over the entire 10 day interval rainfall was heaviest in northern Indiana and decreased trending south. Northern Indiana averaged near 2.1 inches for the 10 days, while the central area had about 1.5 inch and 1.1 inch was average in the south. These totals equate to about 40% above normal in northern sections, near normal in central Indiana, and about 60% of normal across the southern third of the state. Two CoCoRaHS observers in Kentland reported the heaviest single day amounts with 2.25 and 2.13 inches on the morning of May 27th. West Lafayette recorded 1.85 inch. The morning report on May 28th included 2.01 inches at Winamac while the Fort Wayne gage caught 1.91 inch. The heaviest 10 day totals were in northwest Indiana. Kentland noted a 4.53 inch sum while five Rensselaer volunteers had 3.73, 3.47, 3.43, 3.42, and 3.36 inches. The total at Winamac was 3.32 inches while New Carlisle had 3.24 inches and 3.23 inches fell at Mt Ayr.

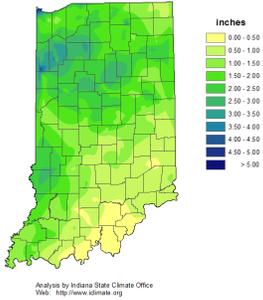
Daily severe weather action was limited to a few counties at the start but extended to a larger region on May 31st. On May 27th high winds in Madison county snapped power line poles and left several others leaning. Wind damage moved north the next day along with the warm front. In Laporte county winds up to 77 mph pushed power poles onto highways and ripped trees all through the county. In neighboring St. Joseph county large trees were downed by gusts to 64 mph.

Severe weather took the next day off before returning on May 30th. High winds in Knox county uprooted trees that day.

The next day high wind damage spread to include several counties in northwest Indiana. Power lines came down in Jasper, Pulaski, White, and Benton counties. Trees fell in these same counties as well as in Newton, Fulton, Miami, and Tippecanoe counties. A shed was damaged in Benton county. In Newton county power poles were left leaning along roadways. Lightning struck a home in Tippecanoe county and power was lost to 2000 customers. Reported wind gusts were between 60 and 70 mph in northwest Indiana and in Boone and Monroe counties to the south. Trees blocked a state highway in Daviess county in southwest Indiana.

In Benton county a tornado touched down for a half mile in an open field. Fortunately there was no damage or deaths as this occurred in a very rural area. This tornado was not rated on the EF scale but was documented on a personal video clip.

**Total Precipitation
May 22 - 31 2013
CoCoRaHS network
(453 stations)**



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

May 2013

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	63.0	60.8	2.3
North Central	63.2	60.3	2.9
Northeast	63.3	59.8	3.5
West Central	64.6	62.3	2.3
Central	64.6	61.7	2.9
East Central	64.5	60.8	3.7
Southwest	65.7	64.6	1.1
South Central	65.5	63.9	1.6
Southeast	65.2	63.0	2.1
State	64.4	62.0	2.4

Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	4.17	3.98	0.19	105
North Central	3.31	3.85	-0.54	86
Northeast	2.36	3.78	-1.41	63
West Central	3.73	4.38	-0.65	85
Central	3.42	4.40	-0.98	78
East Central	2.85	4.31	-1.46	66
Southwest	5.12	4.99	0.13	103
South Central	4.30	5.00	-0.70	86
Southeast	4.52	4.85	-0.33	93
State	3.80	4.40	-0.60	86

Spring (March - May)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	47.8	49.6	-1.8
North Central	47.6	49.0	-1.4
Northeast	47.4	48.5	-1.2
West Central	49.9	51.5	-1.6
Central	49.9	50.9	-1.0
East Central	49.5	49.9	-0.4
Southwest	52.6	54.7	-2.1
South Central	52.2	54.1	-1.9
Southeast	51.6	53.1	-1.5
State	49.9	51.4	-1.5

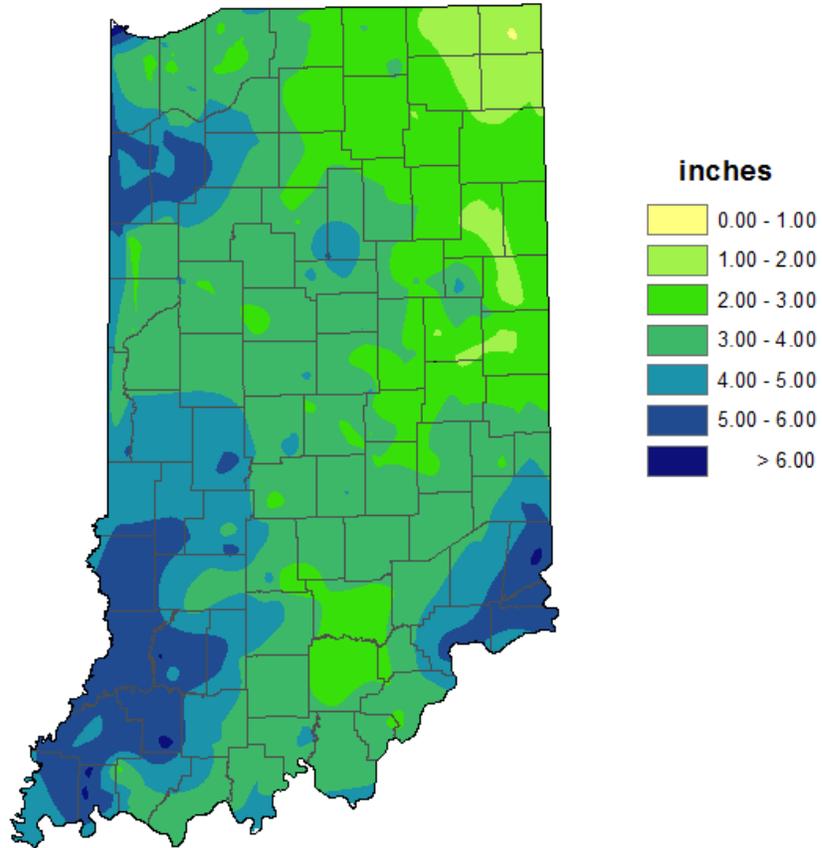
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	12.40	10.50	1.90	118
North Central	12.40	10.22	2.18	121
Northeast	10.68	9.96	0.72	107
West Central	14.20	11.61	2.59	122
Central	13.67	11.59	2.07	118
East Central	11.12	11.16	-0.04	100
Southwest	13.70	13.66	0.03	100
South Central	12.99	13.59	-0.60	96
Southeast	12.44	13.01	-0.57	96
State	12.81	11.74	1.06	109

2013 Annual (through May)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	39.5	40.1	-0.6
North Central	39.4	39.7	-0.3
Northeast	39.2	39.3	-0.1
West Central	41.7	42.1	-0.3
Central	41.7	41.7	0.0
East Central	41.3	40.8	0.5
Southwest	45.1	45.9	-0.8
South Central	44.8	45.5	-0.7
Southeast	44.1	44.5	-0.5
State	41.9	42.3	-0.3

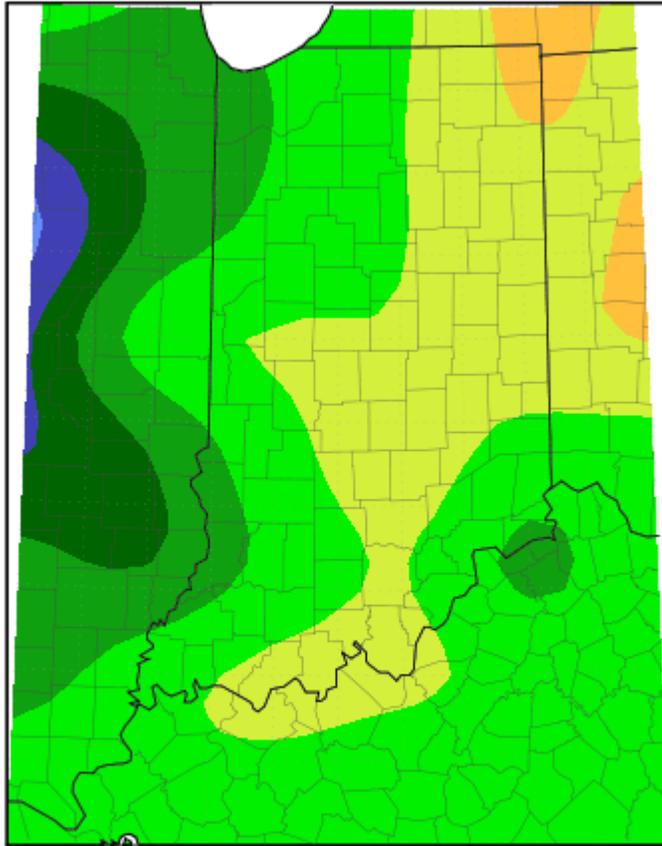
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	18.00	14.05	3.95	128
North Central	18.34	14.07	4.27	130
Northeast	16.19	13.72	2.47	118
West Central	21.88	16.06	5.82	136
Central	21.24	16.20	5.04	131
East Central	17.14	15.60	1.53	110
Southwest	22.69	19.54	3.15	116
South Central	21.44	19.61	1.83	109
Southeast	18.78	18.82	-0.04	100
State	19.87	16.46	3.41	121

**Total Precipitation
May 2013
CoCoRaHS network
(449 stations)**



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Accumulated Precipitation: Percent of Mean
May 1, 2013 to May 31, 2013

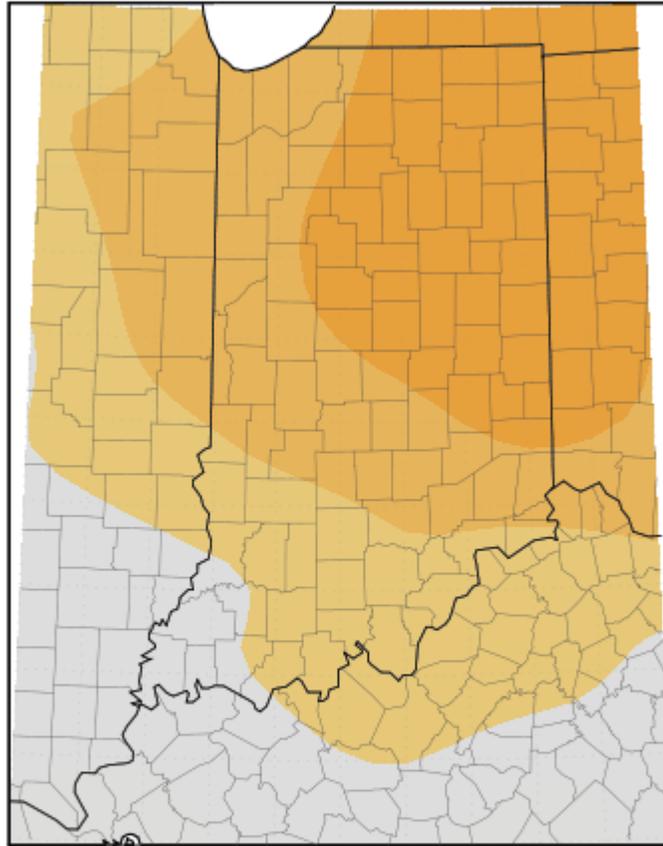


Mean period is 1981-2010.



Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at: 6/6/2013 3:31:15 PM CDT

Average Temperature (°F): Departure from Mean
May 1, 2013 to May 31, 2013



Mean period is 1981–2010.



Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at: 6/6/2013 3:32:13 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 how much of the state is not under drought conditions, and also how much of the state is under drought conditions from its respective column upwards.

There were no drought categories active this month so there are no calculations to be made. The D0 category (abnormally dry) is not a drought category in and of itself.

Indiana		Drought Severity				
		D0 - Abnormally Dry	D1 Drought - Moderate	D2 Drought - Severe	D3 Drought - Extreme	D4 Drought - Exceptional
Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
June 4, 2013	100.00	0.00	0.00	0.00	0.00	0.00
May 28, 2013	100.00	0.00	0.00	0.00	0.00	0.00
May 21, 2013	100.00	0.00	0.00	0.00	0.00	0.00
May 14, 2013	100.00	0.00	0.00	0.00	0.00	0.00
May 7, 2013	100.00	0.00	0.00	0.00	0.00	0.00

May 7th Drought Summary



May 14th Drought Summary



May 21st Drought Summary



May 28th Drought Summary

