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And
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Indiana State Climate Office

Monthly Weather Report

Jan 8, 2015



<http://www.inclimate.org>

December 2014 Climate Summary

Month Summary

The harsh cold of November behind us, winter in December was generally pleasant and easy. The state average temperature was only 1.6°F colder than November and many reporting stations had fewer days fail to exceed freezing. Snowfall was nearly absent with December totals much less than in November, which occurs in about 16% of all Indiana winters. Winter driving was most challenging late in the month when 6 weather related deaths occurred.

The state average temperature was 34.2°F, which is 3.1°F above normal and the 26th warmest December on record since 1895. Some recent warmer Decembers include 2011 with a 36.6°F average, coming in at 13th warmest. The 36.9°F average in 2001 is good for 10th place. The 37.3°F value in 2006 ranks in the 8th spot while a 38.2°F average in 2012 holds down 4th. The warmest December on record was during a strong El Nino late in 1982 with an average of 39.9°F. The day split in December 2014 had 8 days of below normal temperature, 19 days above normal, and 4 days at normal. There was 1 day when the daily state temperature was 10°F or more below normal and 9 days when the daily average was at least 10°F above normal. The highest temperature of the month in the cooperative network was 69°F which was recorded on December 1st at Stendal and Tell City. On New Year's Eve the coldest minimum was 5°F at Indiana Dunes National Lakeshore, in Lowell, and at Wanatah 2wnw.

The December state precipitation average of 2.65" is 0.40" below normal. This ranks the month as the 56th driest December on record. Some recent drier Decembers include 2004 with a 2.57" state average placing at 54th driest. The next year 2005 had 2.15", ranking at 39th driest. December 2010 averaged 1.44", good for 16th place. The driest December on record was in 1958, when the state average was just 0.55". The highest single day precipitation amount among cooperative stations in December 2014 was 3.95" recorded on December 6th in Hazleton. That same day in the CoCoRaHS network the largest daily total was 2.71" at Washington 1.5nw.

Regionally December 2014 precipitation was about 60% of normal in northern Indiana, 85% of normal in central areas, and 110% of normal in the south. Normal December precipitation ranges from 2.7" in northwest Indiana to 3.6" in south central Indiana. Widespread precipitation fell on about 12 days this month.

Warm December temperatures allowed for few days of accumulating snowfall. The maximum total snowfall in the state was just 1.0" at New Ross! Most locations were held to under a half inch total for the entire month. Black ice was the greatest travel threat, claiming 5 of the 6 victims who lost their lives in weather related highway accidents this month.

December 1st – 7th

After extreme swings in late November, Indiana temperatures this first week of December have settled down closer to normal. A cold first half of the week led into a warmer end. Rain fell on all 7 days somewhere in the state while snow came on just a day or two. Travel was impacted by weather on two days, a freezing rain event on December 2nd and dense fog on December 5th.

High pressure in the Great Plains on December 1st pulled cold air into Indiana. State average temperatures started the month at 4°F below normal. The pressure center split into two nodes the next day, one moving into Texas and the other to Quebec. Moisture from southeast states poked through between the nodes, falling into central Indiana as freezing rain. The state average temperature at ground level had dipped to 7°F below normal, the coldest day of the week.

On December 3rd the Texas high migrated east to Tennessee and finally merged with a central Canadian high center that had moved into the Dakotas. It remained cloudy in Indiana with temperatures rising slightly to 3°F below normal. The next day the Dakota ridge vastly expanded to cover much of the country east of the Mississippi River. Despite high pressure over Indiana, skies remained cloudy as leftover moisture from days earlier became trapped at the surface, a condition termed a “dirty high”. Fronts west of Indiana had stalled, blocked by the dirty high. The state temperature barely changed, holding at 4°F below normal.

The dirty high relented on December 5th and drifted to the Atlantic coast. Once stalled fronts were on the move again. A stationary front developed along the Ohio River, attached to a low center in Oklahoma, and transported warmer air into Indiana to mix with colder air already in place. A soupy fog resulted across the southern half of the state. The state temperature rebounded to 1°F above normal. The next day the Oklahoma low slid through Kentucky, triggering heavy rainfall across central and southern Indiana. Daily temperatures warmed to 3°F above normal, the warmest day of the week.

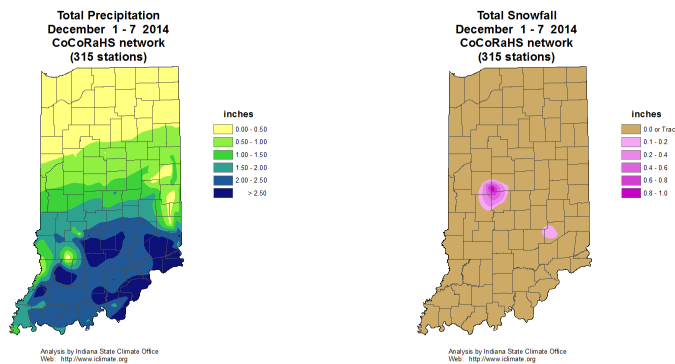
A cold front rushed south from Michigan on December 7th, overtaking and merging with the Kentucky system, moving off the Atlantic coast. High pressure sprawled over the entire east half of the country to end the week, finally bringing a rare day of sunshine to Indiana. The state temperature returned to normal to conclude the week. Over the full week the state temperature averaged to 2°F below normal. Typically this first week of December the daily maximum temperature ranges from 39°F in far northern Indiana to 48°F in the southwest corner of the state. Normal daily minimums vary between 26°F and 30°F north to south. The warmest daily maximum temperature in the cooperative station network was 69°F at Stendal and Tell City on December 1st. The coolest daily minimum was 16°F at Francesville and Goshen on December 2nd.

Rainfall was seen every day this week. Precipitation totals trended heavier southward across the state. Regionally about 0.2” fell this week across northern Indiana, 1.3” in central, and 2.5” in the south. These totals equate to about 30% of normal in the north, 220% of normal in central counties, and 330% of normal across southern Indiana. Snowfall was light and contributed little moisture to these weekly precipitation totals. According to CoCoRaHS reports the heaviest precipitation occurred on December 6th. The observer in Washington measured 2.71” that day while 10 miles northeast of Indianapolis 2.58” was found in the gage. Near Bedford 2.43” was noted while Oolitic had 2.32” and Taylorsville 2.23”. Over the full week Washington tallied 3.28”, Hazleton 3.19”, Bedford 3.15”, and Jeffersonville 3.03”.

Snow and rain both appear in the December 3rd morning reports. Up to 0.5” of snow fell at New Ross in central Indiana with 0.2” in the Greensburg vicinity. Trace dustings of snow fell and barely covered the ground the next day around Indiana as well.

Freezing rain and sleet on the morning of December 2nd surprised drivers in central Indiana. There were many crashes and slide-offs but with no serious injuries. Central, east central, and southeast Indiana travel seemed to have been impacted the worst.

Three days later travelers in central and southern Indiana contended with heavy fog before dawn, dropping visibility to less than a quarter mile or less in most spots. Schools in these areas delayed opening for a few hours until visibility improved.



December 8th – 14th

The warm ending to last week continued throughout this second week of December. The state average temperature was above normal on 6 of the 7 days. Precipitation was very light, falling mostly in the first half of the week. There were no weather related problems reported around the state.

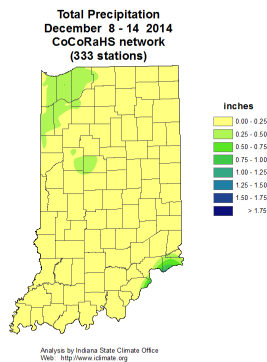
The state average temperature to start the week was 1°F above normal. A pair of fronts linked to a storm system in Minnesota approached Indiana on December 8th. Light rain showers in advance of the warm front were noted in parts of Indiana that day. The next day the paired warm and cold front of the storm crossed the state. The state temperature rose slightly to 3°F above normal.

Over the next 3 days high pressure behind the cold front slid from central Canada into Alabama. As it traveled south slightly cooler air was transported into Indiana, nudging the state average temperature downward from 2°F above normal on December 10th to 1°F below normal by December 12th, the coldest day of the week. Skies cleared in northern Indiana on December 11th and across the state the next day as the high center passed overhead. Once the high center was south of Indiana, its southerly winds kicked warmer air back into our region. The state average temperature climbed sharply, hitting 4°F above normal on December 13th and closing the week at 10°F above normal on December 14th, the warmest day of the week.

Overall the state temperature for the week averaged 3°F above normal. Usually in this second December week the daily maximum temperature ranges between 36°F and 45°F north to south across Indiana. Normal daily minimums vary from 24°F in the far north to 28°F in the southwest corner of the state. The warmest daily maximum in the cooperative station network was 55°F at Goshen Airport and South Bend Michiana Airport on December 14th. The coolest daily minimum was 9°F at Shoals 5s on December 12th.

Light rain fell the first few days and on the last day of the week. Snow was reported in the morning observations of two days. Regionally about 0.15” of precipitation was recorded in northern Indiana, 0.10” in central counties, and just 0.05” in the south. These amounts are 25% of normal across the north and just 10% of normal in central and southern Indiana. The highest single day precipitation among CoCoRaHS stations in the state topped out at 0.50” in Michigan City, reported the morning of December 9th. Kentland had 0.38” and New Carlisle 0.36” on that day. Some of the higher weekly totals included reports of 0.52” and 0.49” at two locations in Valparaiso, and 0.46” at Trail Creek and Chesterton.

A dusting of snow was noted the mornings of December 10th and 13th. Up to 0.3 inch was measured at CoCoRaHS stations in the lake effect region, including 0.3” at Dyer and Valparaiso on December 10th and 0.2” at Porter and Gary on December 13th. The weekly totals are equally as small with the highest reported at 0.3” in extreme northwest Indiana.



December 15th – 21st

The mild weather of last week continued a few more days before temperatures cooled to near normal. Light rain fell early in the week then turned into localized snow events when cooler air arrived. The gentle December weather to date has benefited construction crews as they push winter work schedules ahead faster than expected. The jet stream in the upper atmosphere has favored a mostly zonal pattern this month which has bottled up arctic cold in Canada.

Southerly winds on the back side of a Virginia high pressure center transported warm air into the eastern half of the country. The Indiana average temperature on December 15th was 10°F above normal. A storm system in Kansas advanced to Indiana the next day and pulled an occluded front

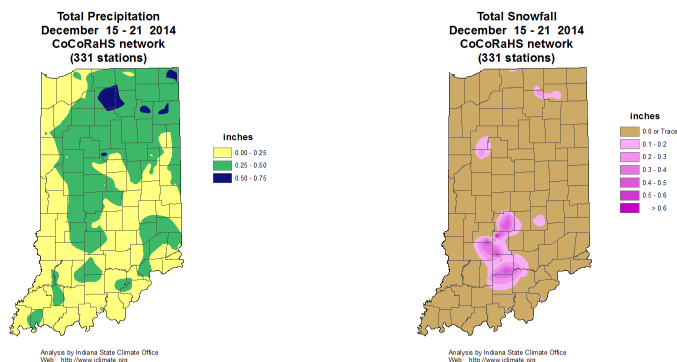
through the state, the leading edge of colder air. A secondary cold front followed close behind, surging east to the Atlantic Ocean on December 17th. The state average temperature cooled to normal then changed little the rest of the week.

High pressure moved overhead Indiana on December 18th. Its central core remained there over the next two days while it expanded northeast and southwest to cover nearly the eastern two-thirds of the country. During this sprawl Indiana state average temperatures barely moved, nudging upward to 1°F above normal. On December 21st the ridge drifted east to the Atlantic coastal states, beginning a new warm up in Indiana. The week closed with the state average temperature at 4°F above normal.

Overall for the week the state temperature averaged to near 4°F above normal. Typically at this point in December daily maximum temperatures should range between 34°F in far northern Indiana to 43°F in the southwest corner of the state. Daily minimums normally vary from 22°F to 26°F north to south across the state. The warmest daily maximum temperature in the cooperative observer network was 57°F at Boonville 1s on December 16th. The coolest daily minimum was 16°F at West Lafayette 6nw on December 19th and at Richmond Water Works on December 21st.

Rainfall was recorded into the morning reports of December 15th and 16th, a mix of rain and snow on December 17th, then snowfall the rest of the week. Regional precipitation totals were about 0.4” across northern Indiana and 0.2” in central and southern areas. These amounts equate to about 70% of normal in the north and 30% of normal elsewhere. The highest single day precipitation numbers were noted the morning of December 16th and included 0.51” at New Pekin, 0.48” in Rensselaer, 0.45” at Logansport, and 0.43” near Fort Wayne. For the full week the CoCoRaHS observer near Kokomo summed 0.77”, while a Fort Wayne volunteer tallied 0.61”. Gages in Indianapolis and Bourbon had 0.60” while Plymouth collected 0.57”.

Only a few places had snowfall to report and daily amounts were under an inch. Among the larger totals were 0.7” at Ellettsville and 0.5” at Martinsville, Spencer, Mitchell, and Bedford, all recorded the morning of December 20th. Total snowfall for the week was close to these same daily values as most other snow events were local dustings.



December 22nd – 31st

The December warmth just keeps on coming! Until the last few days of the month. Indiana state average temperatures these last 10 days of December peaked at 17°F above normal before tanking to 10°F below normal to close out the year. Temperatures held above normal for 7 of the 10 days. Light to moderate rain fell almost daily through December 28th when a rain-snow mix was recorded. Snow wrapped up the month on December 31st. Six deaths were blamed on the weather. One person died on rain soaked roads on December 22nd while 5 people were killed in a December 26th accident, likely due to black ice on the roadway.

Winds on the back side of high pressure over New England helped elevate Indiana temperatures to 10°F above normal on December 22nd. The warm front of an Alberta clipper storm system traveled through Indiana the next day, placing the state into a warm sector of air and raising the daily temperature to 15°F above normal. The clipper cold front passed through on Christmas Eve with little impact on Indiana temperature. Although this storm picked up speed and left the state on Christmas Day, high pressure in Louisiana sustained the flow of warm air into Indiana and shut down the normal cold inflow behind the clipper system. The next day the southern high center gained strength as it moved into the Appalachian Mountains and pumped still warmer air into Indiana. The state average temperature reached 17°F above normal, the warmest of the 10 days. The mountain ridge began to retreat eastward on December 27th as a new cold front approached Indiana.

A big cool down would now begin. On December 28th a cold front swept across Indiana and the state temperature plummeted to 3°F above normal. A second cold front followed it the next day but stalled over Indiana, lowering temperatures a few degrees more. The stationary front disappeared on December 30th, but a cold outbreak had already claimed Montana and its leading pulse was aimed for Indiana. The state temperature continued to drop to 5°F below normal. By New Year's Eve the cold mass had reached Kansas and was already edging into Indiana. The year closed with the state temperature at 12°F below normal.

Over the full 10 days the state temperature averaged to 7°F above normal. Usually near the end of December daily maximum temperatures in Indiana should range between 33°F and 42°F north to south across the state. Daily minimums normally vary from 20°F in far northern counties to 25°F in the extreme southwest. The warmest daily maximum temperature in the cooperative network over the 10 days was 58°F at Farmland 5NNW on December 24th, at Evansville Airport and Myers Dam on December 26th, and at the Franklin Water Works on December 27th. The coolest daily minimum was 5°F at Indiana Dunes National Lakeshore and Wanatah 2WNW on December 31st.

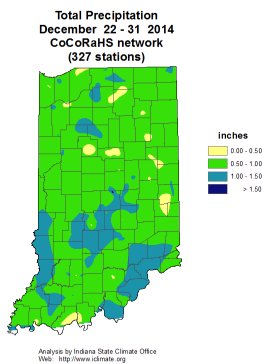
Rainfall was reported almost daily before switching entirely to snow the last day of the month. Most of the precipitation came during the warmth early in the interval and with the arrival of the cold air later. Regionally about an inch of total precipitation was recorded in northern and central Indiana over the 10 days while the south noted 1.1". These amounts equate to about 110% of normal in northern and southern Indiana and right at normal in central counties. The largest single day precipitation amounts were noted in the morning report of Christmas Day when 0.91" was observed by an Indianapolis area CoCoRaHS volunteer. Two Angola observers had 0.80" and 0.70" that day while 0.71" was collected in Hamilton. Over several precipitation days in the 10 day

interval Indianapolis total precipitation came to 2.04” while Charlestown had 1.50”. Oolitic had 1.46” and two Gosport gages tallied 1.33” and 1.32”.

Up to a half inch of snow was measured by two CoCoRaHS observers in Kokomo the morning of December 28th. Frankfort reported 0.3 inch as did the volunteer in Huntington. Over the entire 10 days two Kokomo observers had 0.5” totals while a third had 0.2”. The Huntington total was 0.5” while Frankfort summed to 0.3”.

On December 22nd a young driver was killed during a rain storm when his vehicle hydroplaned on I-65 in White county. The vehicle struck another and then rolled several times before spinning into a ditch. The driver and passengers in the other vehicle had only minor injuries.

Four days later 4 people died instantly in an accident in Tipton county while traveling on US 31. The vehicle crossed into oncoming traffic into the path of a semi after likely skidding on a patch of black ice. A fifth person in the vehicle died later in a hospital. There were multiple accidents reported around Indiana with injuries that same day due to slick roads but no other fatalities.



December 2014

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	32.3	28.5	3.7
North Central	32.3	28.7	3.6
Northeast	32.2	28.6	3.6
West Central	33.4	30.4	2.9
Central	33.9	30.7	3.3
East Central	33.4	30.2	3.2
Southwest	36.9	34.5	2.4
South Central	36.9	34.5	2.4
Southeast	36.3	34.0	2.3
State	34.2	31.1	3.1

Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	1.53	2.66	-1.13	58
North Central	1.56	2.79	-1.23	56
Northeast	1.58	2.68	-1.10	59
West Central	2.31	2.96	-0.65	78
Central	2.71	2.99	-0.27	91
East Central	2.46	2.87	-0.41	86
Southwest	3.74	3.53	0.21	106
South Central	4.13	3.56	0.57	116
Southeast	3.74	3.41	0.33	110
State	2.65	3.06	-0.40	87

Winter so far (same as December)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	32.3	28.5	3.7
North Central	32.3	28.7	3.6
Northeast	32.2	28.6	3.6
West Central	33.4	30.4	2.9
Central	33.9	30.7	3.3
East Central	33.4	30.2	3.2
Southwest	36.9	34.5	2.4
South Central	36.9	34.5	2.4
Southeast	36.3	34.0	2.3
State	34.2	31.1	3.1

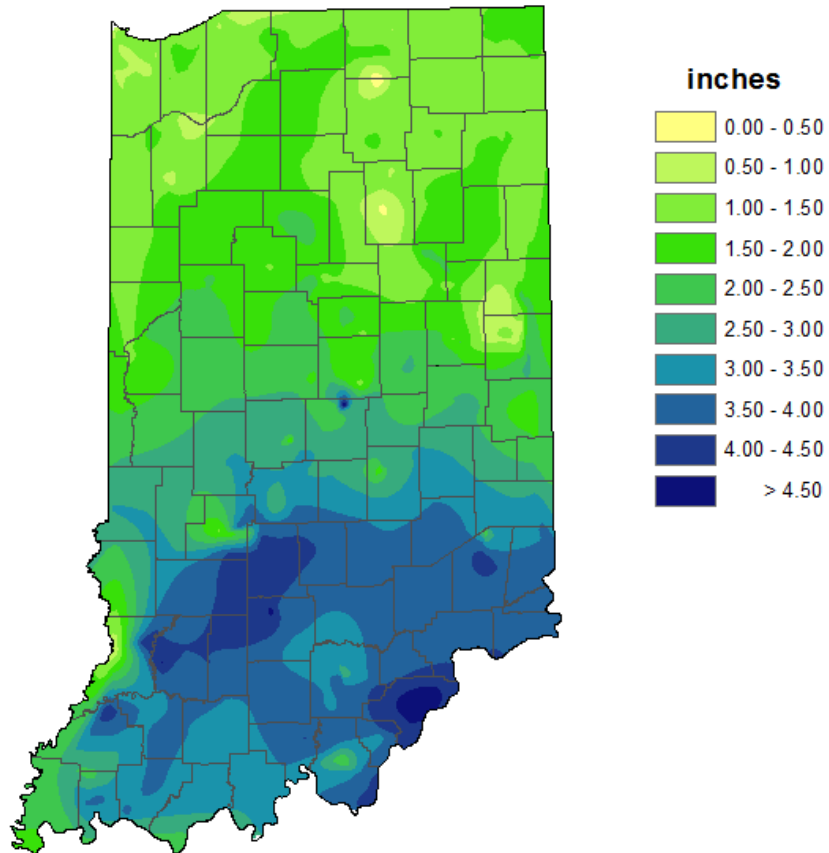
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	1.53	2.66	-1.13	58
North Central	1.56	2.79	-1.23	56
Northeast	1.58	2.68	-1.10	59
West Central	2.31	2.96	-0.65	78
Central	2.71	2.99	-0.27	91
East Central	2.46	2.87	-0.41	86
Southwest	3.74	3.53	0.21	106
South Central	4.13	3.56	0.57	116
Southeast	3.74	3.41	0.33	110
State	2.65	3.06	-0.40	87

2014 Annual

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	47.1	50.2	-3.2
North Central	46.9	49.8	-2.9
Northeast	46.7	49.5	-2.8
West Central	49.2	51.9	-2.6
Central	49.6	51.5	-1.9
East Central	48.9	50.7	-1.8
Southwest	53.1	55.1	-2.0
South Central	52.8	54.5	-1.7
Southeast	51.9	53.7	-1.7
State	49.6	51.9	-2.3

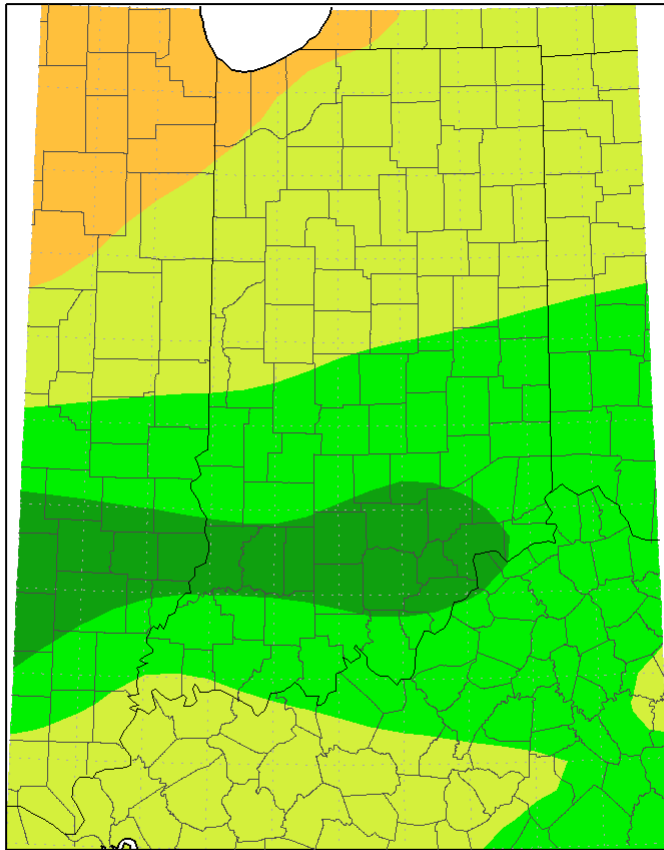
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	44.35	38.01	6.34	117
North Central	39.66	38.19	1.47	104
Northeast	36.58	36.75	-0.17	100
West Central	42.44	41.23	1.21	103
Central	43.29	40.74	2.55	106
East Central	40.69	39.23	1.46	104
Southwest	48.29	45.56	2.73	106
South Central	51.37	45.70	5.66	112
Southeast	44.47	44.12	0.36	101
State	43.74	41.18	2.57	106

**Total Precipitation
December 2014
CoCoRaHS network
(326 stations)**

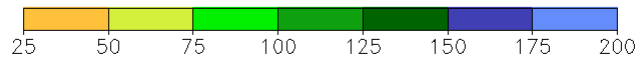


Analysis by Indiana State Climate Office
Web: <http://www.iclimat.org>

Accumulated Precipitation: Percent of Mean
December 1, 2014 to December 31, 2014

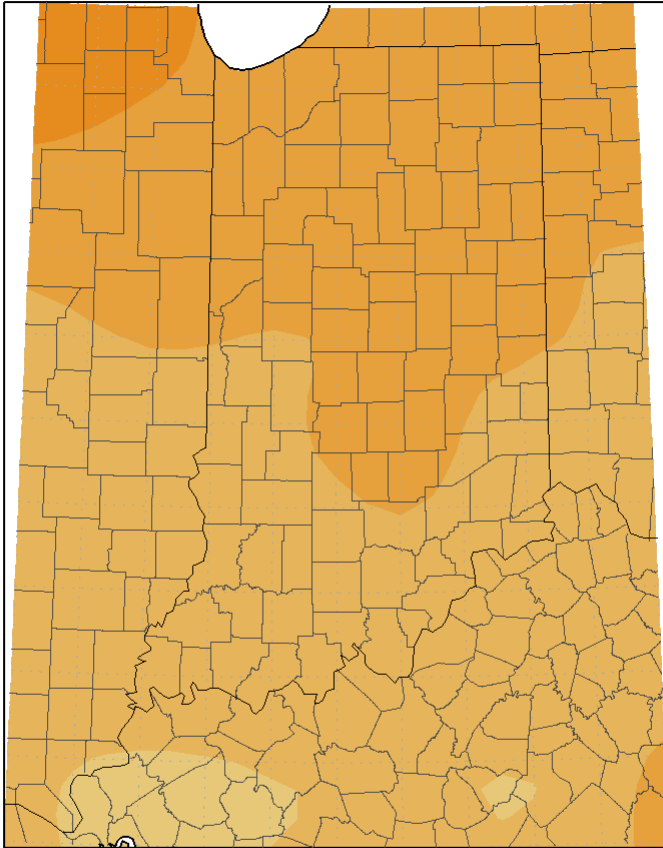


Mean period is 1981-2010.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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Average Temperature (°F): Departure from Mean
December 1, 2014 to December 31, 2014



Mean period is 1981–2010.



Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 1/8/2015 10:54:36 AM CST

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	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2015-01-06	100.00	0.00	0.00	0.00	0.00	0.00
2014-12-30	100.00	0.00	0.00	0.00	0.00	0.00
2014-12-23	100.00	0.00	0.00	0.00	0.00	0.00
2014-12-16	100.00	0.00	0.00	0.00	0.00	0.00
2014-12-09	100.00	0.00	0.00	0.00	0.00	0.00
2014-12-02	100.00	0.00	0.00	0.00	0.00	0.00

December 2nd Drought Summary



December 9th Drought Summary



December 16th Drought Summary



December 23rd Drought Summary



December 30th Drought Summary



