

**Ken Scheeringa
and
Kayla Hudson**

Indiana State Climate Office

Monthly Weather Report

Dec 6, 2012



<http://www.iclimat.org>

November 2012 Climate Summary

Month Summary

November was one of those rare weather months in Indiana when not much happened: no tornadoes, no reports of hail or wind damage, no remnants of tropical storms, no significant snows, and well, not much rainfall either. It was a cold and very dry month. For the fourth consecutive month Indiana temperatures averaged below normal, but a three month wet cycle was broken. November was the first drier than normal month in the state since July. Snow fell on about three days this month, mostly along a Crawfordsville to Hartford City line.

The drought of 2012 was nearly over in October but the lack of rainfall this month has allowed the drought to crawl back especially in far northern counties. Near the end of November about 16% of Indiana area was listed in moderate drought status, an uptick from the 10% coverage a month ago. The growing season has ended and this will ease the demand on the soil moisture supply over the coming winter months.

This month was the 33rd coldest November on record since 1895. The state average temperature was 40.2°F, below normal by 2.2°F. Only one other November since 2000 has been colder: the 40.0°F average temperature recorded in 2002 ties 1895 as the 31st coldest November on record. There was a string of three cool Novembers in the mid 1990s: 36.4°F in 1995 tied for 5th place, 35.9°F in 1996 in the 3rd spot, and 38.7°F in 1997 which comes in at 22nd coolest. The coldest November on record was the 34.4°F average in 1976 which marked the start of the infamous three bitter cold consecutive winters of the 1970s. The day split in November 2012 was 19 days of below normal temperature, 1 day at normal, and 10 days with above normal temperature. On one day the state average temperature was at least 10°F above normal. At the opposite extreme there were 5 days at least 10°F below normal. Evansville topped the state with the highest official temperature at 76°F on November 10th. The coldest temperature was 14°F recorded on November 15th at Lexington.

The state precipitation total was just 1.02 inch, which is 28% of normal or a deficit of 2.57 inches below normal. The lack of precipitation this month ranks November 2012 as the 3rd driest on record. Only November 1917 with 0.54 inch and November 1904 with 0.38 inch have been drier. In more recent times the 1.07 inch in November 1999 and 1.51 inch in November 2009 had slightly higher precipitation than November 2012. Regionally precipitation this month was about 20% of normal in northern Indiana and near 30% of normal in central and southern counties. The highest daily cooperative station precipitation total this month was 1.55 inch, measured near Hovey Lake on November 12th. In the CoCoRaHS network the heaviest single day precipitation amount was 1.41

inch at Poseyville that same morning. Precipitation generally fell on a minimal 8 days in Indiana this month.

Snow totals were light this month as the snow season is just getting started. The highest snowfall total for the month at a CoCoRaHS station was 1.4 inch at Hartford City. Snow fell on about 3 days this month. A snowfall totals map is found later in this monthly report

Dense fog on November 21st, the day before Thanksgiving, caused vehicle accidents in northwest Indiana where the visibility was least.

November 1st – 10th

Weather in the new month began quietly following the exit of October and Superstorm Sandy. State average temperatures started cold at 11°F below normal, then recovered just a degree or two over the next few days. A “dirty” high pressure center southwest of Indiana brought clouds and sleet, not sunshine, on November 3rd, as trapped moisture near ground level kept temperatures low. Temperatures hit bottom at 19°F below normal on November 4th, the coldest day of the 10 day interval. Northwest winds spilled cold Canadian air into Indiana through the next day.

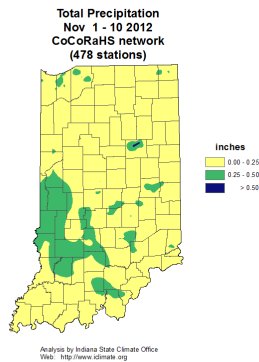
A slow warming trend began on November 6th and took hold through the remaining days. Finally the cold air pipeline was shut down. A warm front swung toward Illinois, well southeast of its low pressure center the next day. Indiana temperatures responded by rising to 5°F below normal. But the warm front weakened and pulled stationary, finally dissolving on November 8th as high pressure in Texas spread to Indiana. Yet warm winds behind this high pressure kept the warming trend going. Indiana temperatures finally found normal by November 9th. A new storm system was approaching from the west, forming an unseasonably warm pocket of air over the state. Temperatures jumped to 9°F above normal to close out the 10 day interval. Normally in these first 10 days of November daily maximum temperatures would be expected to range from 53°F in far northern Indiana to 62°F in the extreme southwest. Typical daily minimums would vary between 37°F and 40°F north to south across the state.

Persistent northwest winds from Canada carry little moisture since they originate over cold massive land areas. This was certainly reflected in the small precipitation amounts in Indiana during the 10 days. For the week regional precipitation averaged about 0.2 inch across the state. These totals are about 10% of normal in northern Indiana and less than 20% of normal in central and southern areas, quite a contrast to the wet weeks of October. Places with the greatest 10 day totals are barely worth mentioning, with all CoCoRaHS station sums under a half inch.

There was almost no change in Indiana drought status from a week ago according to the November 6th edition of the US Drought Monitor. Less than 10% of Indiana area, primarily 4 counties in the northeast corner of Indiana, is rated in moderate drought status (D1 category). Three east to west bands, one across the northern two tiers of counties, another mostly in central Indiana, and the last in far southwest Indiana, fall into the non-drought abnormally dry classification (D0 category). Just over half the remaining Indiana land area is labeled in normal autumn soil moisture condition. Weekly drought maps can be found near the end of this monthly summary.

The survey in the November 13th edition of the Indiana Weekly Weather and Crop report rates 12% of topsoils as short or very short of soil moisture. The survey places 36% of subsoils in these same

categories. The report also notes that corn and soybean harvest is about 95% complete. Wheat planting is essentially finished with 86% of this crop emerged. Pastures have rebounded into good condition as has the grazing livestock. There has been good growth of hay and cover crops with the improved soil moisture conditions around the state. Cover crops are being planted heavily this year to preserve the unused nutrients left over from the summer drought.



November 11th – 17th

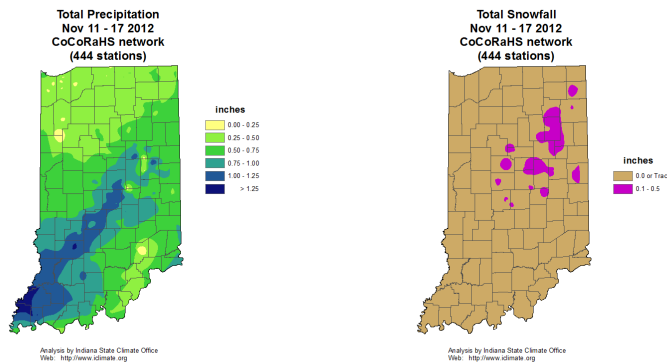
Warm air surged into Indiana and covered much of the eastern half of the country as this week began. A warm front to our north had reached the Canadian border while a strong cold front neared the Mississippi River. Indiana daily state temperatures soared to 18°F above normal with windy conditions. The cold front marched eastward and passed through our state on November 12th. The thermometer tumbled back to normal, then fell some more over the next two days to 9°F below normal, the lowest of the week. The cold front raced to the Atlantic coast on November 13th and high pressure moved overhead Indiana. The next day the high center drifted east of our state, marking the start of a steady but slow warm up to the end of the week. Temperatures gained a few degrees each day to end the week at 1°F below normal. Overall for the week state temperatures averaged about 1°F below normal. Typical daily maximum temperatures range from 49°F in far northern Indiana to 57°F in the extreme southwest. Normal daily minimums vary between 34°F and 37°F north to south across the state.

No other fronts crossed our state this week after the first one. High pressure held control over Indiana to the end of the week. An Alberta clipper front traveled to Michigan by November 16th but dissolved before it could find Indiana. As the first cold front forced the temperature to fall by 18°F, more than a half inch of precipitation was squeezed from Indiana clouds over two days. There was even a little snow mostly in parts of northeast and east central Indiana. But after the front was gone so was the precipitation for the remainder of the week. Regional precipitation totaled about 0.5 inch in northern Indiana, 0.7 inch in central sections, and 0.9 inch across southern counties. These amounts translate to about 80% of normal in the north, and about 95% of normal in central and southern areas. The highest local daily precipitation was measured as 1.41 inch in Poseyville on the morning of November 12th by a CoCoRaHS observer there. Some other larger amounts that day included 1.28 inch at Melody Hill and 1.26 inch in Hazleton. The greatest totals for the week were nearly the same as these daily readings and from this same southwest area.

The cold front moved east of the state late on November 12th. Some light snow fell in eastern Indiana after its departure. While a few spots received up to a half inch, of the 25 CoCoRaHS volunteers reporting snow, most measured around a quarter inch of snow the next morning. Precipitation and snowfall maps for this week can be found at the end of this weekly narrative.

There has been little week to week change in Indiana drought status this month according to the US Drought Monitor. Parts of 5 counties in far northeast Indiana continue in moderate drought status (D1 category), accounting for 6% of total land area. Three east to west bands across the state together account for 37% of land area designated as abnormally dry (D0 category). The remaining 57% of land largely in central Indiana has returned to normal soil moisture status according to the drought report. Weekly Indiana maps of this product are found at the end of this monthly report.

The final Indiana Weekly Weather and Crop bulletin for 2012 ends its survey of topsoil moisture at 13% short or very short of moisture. The subsoil moisture survey number is at 39% in these same categories. The report notes that corn and soybean harvest are each more than 90% finished. All of the winter wheat has been planted with 93% of this crop emerged and 90% rated in good or excellent condition going into winter. Livestock continue in mostly good condition. Pastures have recovered to mostly adequate condition after the summer drought. Hay supplies have improved to mostly adequate just in time for winter feeding.



November 18th – 24th

The near absence of fronts passing through Indiana this month has kept our weather pattern quiet with little precipitation. Again this week just one front managed to transit our state, a strong cold front late on Thanksgiving Day.

State average temperatures started the week at 1°F above normal, rose to about 4°F above normal two days later, then bounced to almost 9°F above normal by Thanksgiving Day, the warmest on this holiday in 39 years for several Indiana communities. Then it was back to autumn reality. The next day Indiana thermometers generally fell to 1°F below normal before ending the week at nearly 9°F below normal. Overall this week state temperatures averaged 2°F above normal. Typical daily maximum temperatures this time of year range from 45°F in our far northern counties to 54°F in the

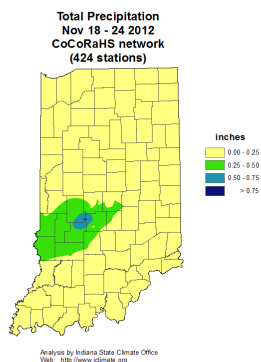
extreme southwest. Daily minimums normally vary from 31°F to 34°F north to south across the state.

The week was mostly dry with light precipitation measured on three days. A sprawling ridge of high pressure across the east half of the country slid east of Indiana on November 19th. This shift allowed a cold front to advance eastward into Wisconsin and Iowa the next day, sprinkling very light rain into Indiana. But the eastern ridge held. In the upper atmosphere a surge of warm air from the west into Indiana dismantled the surface front. The air masses mixed and the cold front lost its identity, dissolving before it could reach our state. The warm flow into Indiana intensified on Thanksgiving Day, forming a unseasonably warm sector of air. Meanwhile the cold air out west reorganized into a new cold front, much stronger than the last. This cold front swept easily through Indiana the next day. Up to a half inch of rain fell across the state. Cold air tapped from central Canada filtered into Indiana to the end of the week.

Regional rainfall totals this week were light, averaging about 0.1 inch statewide. These amounts equate to about 10% of normal in northern and southern parts of Indiana and about 25% of normal in central sections. The greatest daily rainfall in the CoCoRaHS network was measured on November 23rd. On that morning 0.80 inch was recorded at Cloverdale, while three Spencer volunteers noted 0.45 inch, 0.42 inch, and 0.41 inch. The Gosport observer had 0.43 inch. Rainfall the rest of the week was minor so maximum weekly totals were nearly identical to these single day measurements. A weekly Indiana rainfall map appears immediately following below.

When the initial cold front dissolved dense fog formed across northern and central Indiana that morning. The fog was heaviest northwest of Indianapolis, resulting in vehicle accidents caused by poor visibility. Later in the week gusty winds near 50 mph announced the arrival of the strong cold front that succeeded in its trip across Indiana. No damage reports due to the high winds were received. Of interest was the local 22°F to 29°F drop in 24 hour temperatures as this front traveled across the state.

The pause in week to week changes in Indiana drought status according to the US Drought Monitor persists. Again there was no real movement in the drought intensity or areas affected since a week ago. The weekly drought depiction map is found near the end of this monthly report.



November 25th – 30th

Air temperatures swung widely this week. Yet despite these roller coaster changes in the thermometer there was little precipitation to go along with it. The dominant zonal jet stream flow pattern in the upper atmosphere this week did not support storm and precipitation development at ground level.

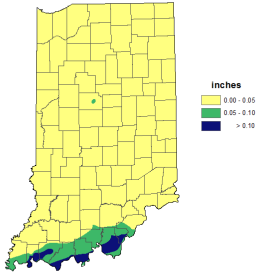
Indiana was positioned on the warm west side of a high pressure ridge as the week began. State temperatures started about 3°F below normal. On November 26th a strong cold front passed through Indiana and temperatures started to tumble. Over the next day cold air from Canada funneled directly into our state. As the cold dome of air settled over Indiana, state averaged temperatures bottomed to 16°F below normal by November 28th. Now this cold high pressure center pushed quickly east of our state and a fast warm up was underway. Temperatures rebounded 17°F in one day to reach 1°F above normal. By the end of the week the temperature had jumped to nearly 6°F above normal, that is, a 22°F recovery in just 48 hours. Mix the warm and cold numbers together and for the week overall state temperatures averaged 2°F below normal. Usually in this last week of November daily maximum temperatures would range from 42°F to 51°F north to south across Indiana. Normal daily minimums vary between 29°F in far northern Indiana to 32°F in the extreme southwest.

A dramatic temperature change inside a couple days might provide an opportunity for heavy precipitation with possible severe weather. But this week's cold front was quiet and mostly dry, yielding just 0.05 to 0.16 inch of precipitation in the southern tier of counties along the Ohio River and less than 0.05 inch elsewhere across the state. Precipitation was recorded on the mornings of just two days this week, November 26th and 27th, as the cold front moved through. There were no heavy single day precipitation amounts worthy of mention. Regional precipitation totals were near zero in northern and central Indiana and less than 0.05 inch across the south, equating to just 3% of normal weekly precipitation.

Light snow fell late on November 26th immediately after the cold front moved through. Up to a half inch of snow fell mostly along a line from Crawfordsville to Hartford City, but most amounts were less than this. Maps showing total precipitation and snowfall for this week are found below.

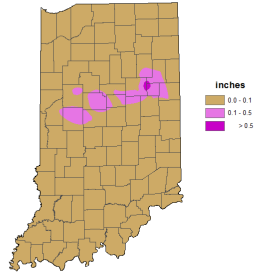
Dryness has persisted now throughout most of November. The US Drought Monitor edition of November 27th shows a regression in drought status in far northern counties. Areas of Indiana generally north of a Lake Village to Fort Wayne line have now slipped back into moderate drought status (D1 category). This category has increased from 6% last week to 16% of total Indiana land area. The map indicates 3 west to east bands of abnormally dry soils (D0 category), one of these a narrow band south and adjacent to the expanded moderate drought region. Most of Indiana south of a Covington to Liberty line is also rated abnormally dry with exception of parts of about 9 counties in southwest Indiana which have no drought and are at normal soil moisture status. One half of all Indiana area is now rated in normal soil moisture status and 35% as abnormally dry. A series of weekly Indiana Drought Monitor maps can be seen near the end of this monthly summary.

Total Precipitation
Nov 25 - 30 2012
CoCoRaHS network
(405 stations)



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

Total Snowfall
Nov 25 - 30 2012
CoCoRaHS network
(405 stations)



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

November 2012

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	38.9	40.5	-1.6
North Central	38.7	40.4	-1.7
Northeast	38.4	40.1	-1.7
West Central	39.9	42.1	-2.2
Central	39.8	41.9	-2.1
East Central	39.4	41.3	-1.9
Southwest	42.8	45.4	-2.6
South Central	42.0	45.0	-3.0
Southeast	41.5	44.3	-2.8
State	40.2	42.4	-2.2

Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	0.67	3.16	-2.49	21
North Central	0.62	3.16	-2.54	20
Northeast	0.79	3.02	-2.23	26
West Central	1.21	3.60	-2.39	34
Central	1.19	3.63	-2.45	33
East Central	0.94	3.36	-2.42	28
Southwest	1.29	4.27	-2.98	30
South Central	1.20	4.09	-2.89	29
Southeast	1.07	3.70	-2.63	29
State	1.02	3.59	-2.57	28

Autumn (September - November)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	50.5	52.7	-2.1
North Central	50.3	52.2	-1.9
Northeast	50.0	51.8	-1.8
West Central	51.5	54.0	-2.5
Central	51.5	53.6	-2.1
East Central	51.1	52.8	-1.7
Southwest	54.7	56.8	-2.1
South Central	54.0	56.2	-2.2
Southeast	53.3	55.4	-2.2
State	51.9	54.0	-2.1

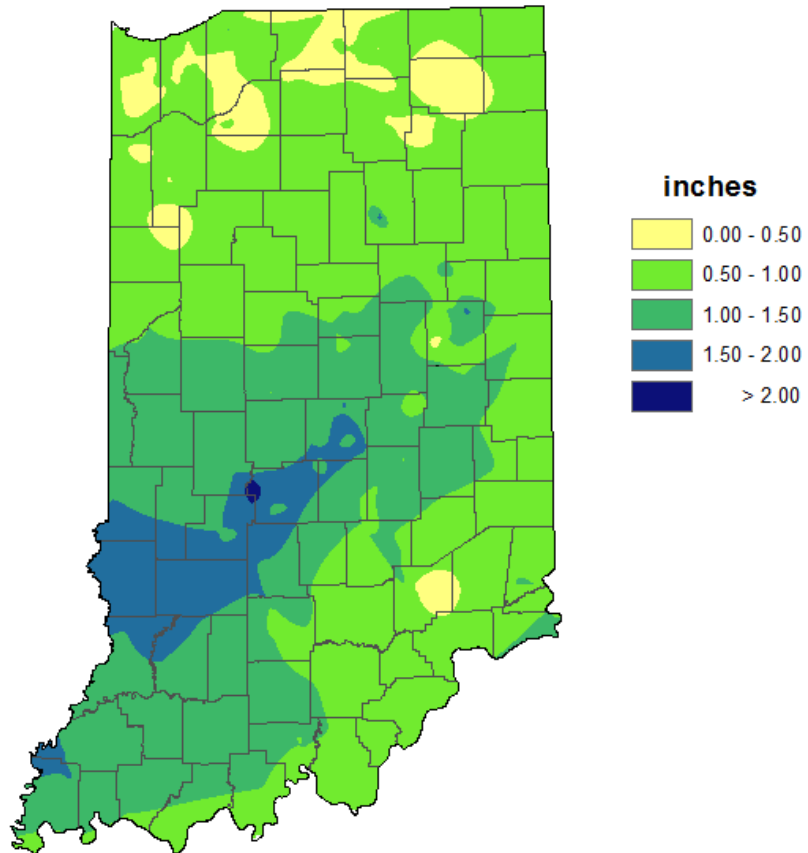
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	8.11	9.29	-1.18	87
North Central	7.36	9.41	-2.04	78
Northeast	7.03	8.92	-1.89	79
West Central	11.79	9.53	2.26	124
Central	12.73	9.44	3.29	135
East Central	11.81	8.88	2.93	133
Southwest	12.58	10.45	2.13	120
South Central	11.62	10.21	1.41	114
Southeast	10.20	9.66	0.55	106
State	10.55	9.58	0.97	110

2012 Annual (through November)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	54.8	52.2	2.6
North Central	54.5	51.7	2.8
Northeast	54.3	51.3	2.9
West Central	56.6	53.8	2.8
Central	56.3	53.3	3.0
East Central	55.6	52.5	3.1
Southwest	59.8	56.9	2.9
South Central	59.0	56.3	2.7
Southeast	58.0	55.5	2.5
State	56.6	53.8	2.8

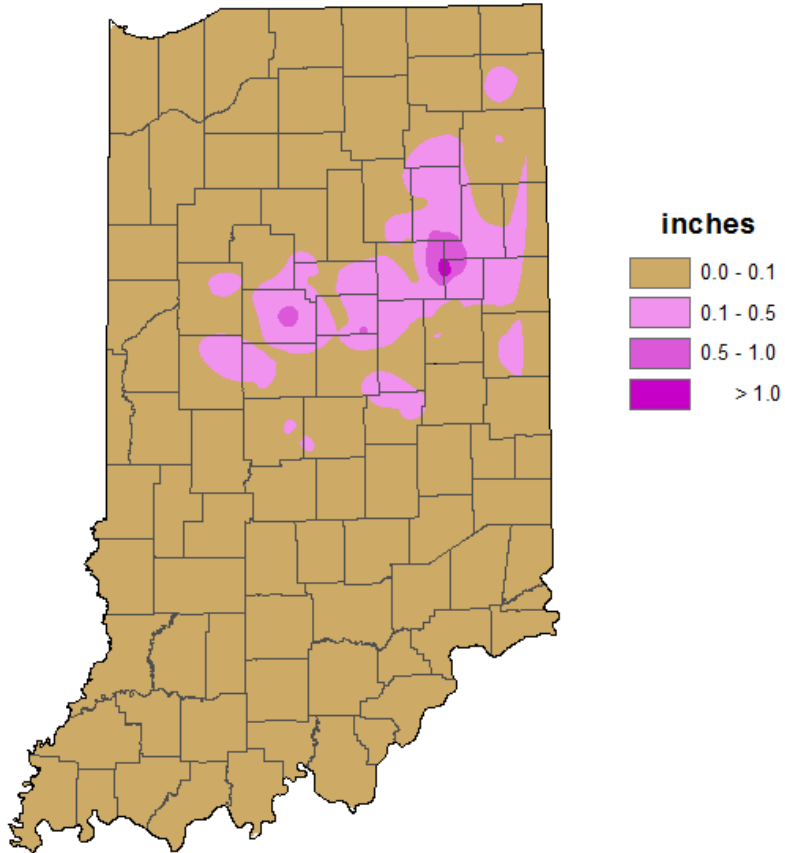
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	28.97	35.38	-6.42	82
North Central	27.97	35.43	-7.46	79
Northeast	26.35	34.07	-7.72	77
West Central	31.08	38.27	-7.19	81
Central	34.66	37.76	-3.10	92
East Central	32.67	36.37	-3.70	90
Southwest	32.35	42.03	-9.67	77
South Central	35.29	42.15	-6.86	84
Southeast	34.46	40.71	-6.25	85
State	31.65	38.13	-6.48	83

**Total Precipitation
November 2012
CoCoRaHS network
(456 stations)**



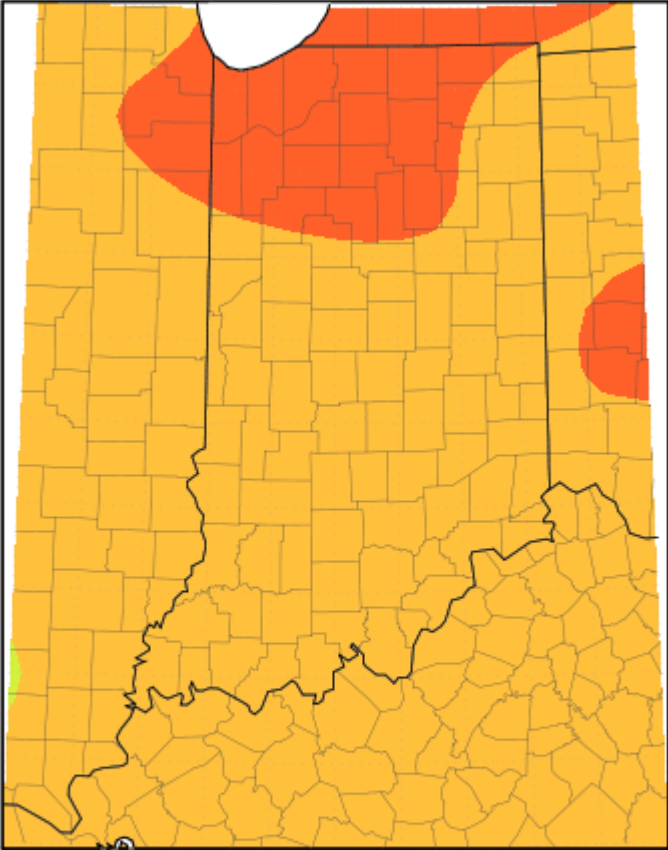
Analysis by Indiana State Climate Office
Web: <http://www.iclimate.org>

**Total Snowfall
November 2012
CoCoRaHS network
(456 stations)**



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

Accumulated Precipitation: Percent of Mean
November 1, 2012 to November 30, 2012

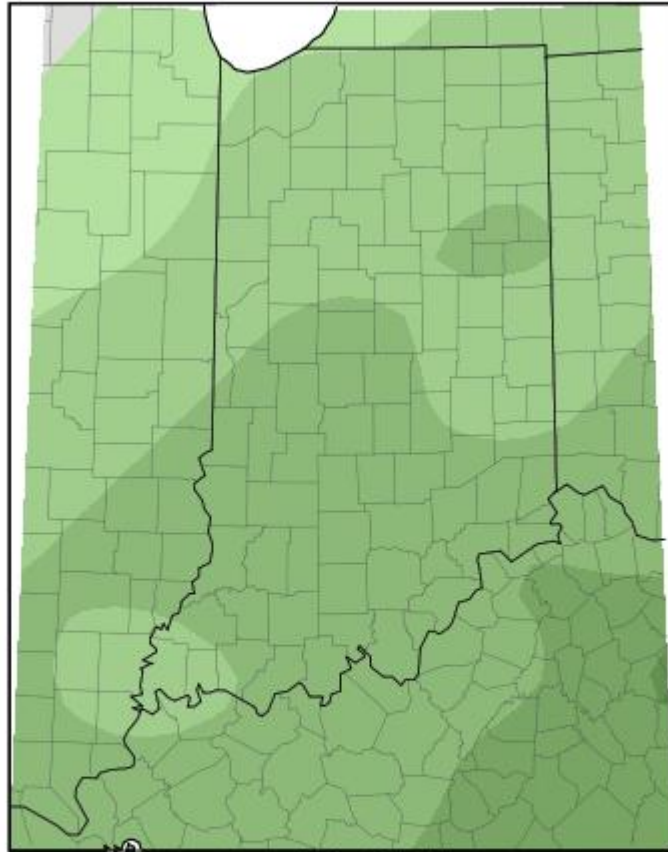


Mean period is 1981-2010.



Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at: 12/5/2012 1:33:57 PM CST

Average Temperature (°F): Departure from Mean
November 1, 2012 to November 30, 2012



Mean period is 1981-2010.



Midwestern Regional Climate Center

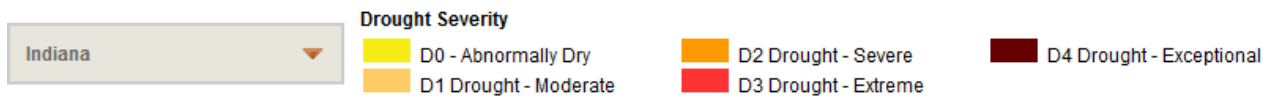
MRCC Applied Climate System

Generated at: 12/5/2012 1:35:07 PM 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 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.

For example, November 6th has 7.2% of Indiana under at *least* D1- D4 drought status and 43.6% under at *least* D0-D4 status. Subtracting the D1-D4 category (7.2%) from the D0-D4 category (43.6%), tells us that 36.4% of Indiana is in the D0 category alone (abnormally dry). Please note, however, that these areas are not exact, and much of this drought map has been created from reports throughout the state and in estimation, so use this information as a general view rather than for specifics.



Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
November 27, 2012	49.15	50.85	15.85	0.00	0.00	0.00
November 20, 2012	56.52	43.48	6.15	0.00	0.00	0.00
November 13, 2012	57.03	42.97	6.15	0.00	0.00	0.00
November 6, 2012	56.37	43.63	7.22	0.00	0.00	0.00

November 13th Drought Summary

