

**Joseph Mays**  
(765) 494-6574

## Indiana State Climate Office

### Monthly Weather Report

Jan 6, 2009



<http://www.iclimat.org>

## December 2008 Climate Summary

### Summary

December 2008 will enter the record books as the 7<sup>th</sup> wettest in Indiana since 1895 and the wettest December since 1990, with a statewide average precipitation of 5.14 inches. A steady parade of storm systems brought precipitation often and in many forms throughout the month: snow, rain, freezing rain, sleet, hail, and thunderstorms. Repeated episodes of freezing rain proved the most deadly and miserable, causing the death of 16 Hoosiers in traffic accidents and leaving more than 109,000 residents without power, some for more than a week. Up to two inches of snow fell in southern Indiana in December, while 2 to 5 inches was typical in the central part of the state. Four to nine inches was common in northern Indiana with the heaviest amounts between 10 and 18 inches in the lake effect region of Lake Michigan.

December temperatures swung wildly warm and cold as a fast jet stream wandered north and south across the state. Colder than normal weather dominated, as temperatures averaged nearly 3 degrees below normal for the month, among the top one-third coldest Decembers on record in Indiana, and the coldest December since 2005. Temperatures crashed dramatically at times, as much as 45 degrees in 13 hours on December 15, but also climbed as much as 60 degrees in five days, from December 22 to 27.

On several occasions advancing warm air slid over the top of a shallow layer of dense intensely cold air hugging the ground left in place from the previous arctic air mass outbreak. This provided ideal opportunities for mixed precipitation, especially freezing rain, to occur. Major freezing rain events took place on December 6, 16, 18, 23, and 26. The latter events were the most treacherous, causing 16 deaths in traffic accidents and many injuries due to falls on the ice covered ground. Some counties reported over 100 accidents each within a few hours with police unable to keep up. Long sections of interstate highways were closed at times due to numerous accidents and slide offs. High winds slowed utility crews from restoring widespread power outages after the December 18 storm. Mayors juggled city budgets to handle the excessive costs for snow plowing and employee overtime to clear city streets as storms arrived nearly every other day. A strong warm up pushed temperatures to daily record highs on December 27, causing a rapid meltdown of ice and snow. Along with heavy rains in thunderstorms, flooding began in northwest Indiana which continued through the rest of 2008. A tornado warning was issued for west central Indiana on December 27.

**December 1<sup>st</sup> – 7<sup>th</sup>**

The synoptic low pressure system responsible for the cold, moist conditions at the end of November lingered through the 1<sup>st</sup> and 2<sup>nd</sup>. Snow showers were present in the northern and central counties on the 1<sup>st</sup>, with accumulations ranging from a dusting to about two inches. Southern counties intermittent light rain showers. Snow engulfed all of the state on the 2<sup>nd</sup>. New accumulations were highest around Lake Michigan, while other areas experienced sporadic snow bands resulting in less than ½ inch of new snow. As soon as the remnants of that synoptic system were gone, a cold front associated with a separate system in Canada passed through Indiana on the 3<sup>rd</sup>. Light snow fell across the northern and central counties once again with drizzle in the south. Storm totals were minimal. Minor warming on the 4<sup>th</sup> converted snow in the south to rain. Isolated snow showers continued across the central and northern counties. Most of the state had a precipitation reprieve on the 5<sup>th</sup>, thanks to high pressure centered over northern Arkansas. Most counties were dry, save for areas around the lake. Some lake-effect snow fell in Lake, Porter, LaPorte, St. Joseph, and Elkhart counties. New snow accumulations were under ½ inch. Moist conditions returned on the 6<sup>th</sup> as a new cold front pushed its way south out of Canada. While accumulations were minimal for much of the state – except for around the lake again, where amounts approached two inches – hazardous driving conditions were prevalent. Many accidents and a few event cancellations resulted from the hazardous winter weather. Black ice was especially a problem in the Terre Haute area where several vehicle slide offs were reported. The snowfall continued into the 7<sup>th</sup>. Amounts on this date were a bit larger. Western counties reported between 0.3 and 0.5 inches while eastern areas were closer to an inch. Heavier snow fell in St. Joseph and Elkhart counties, with accumulations topping two inches once again.

The onslaught of cold fronts kept temperatures quite cold during the first week of December 2008. Some Hoosiers were caught off guard by the early season intense cold with home furnaces that were not ready to handle the mid-winter like cold. On the 1<sup>st</sup> high temperatures failed to breach freezing across the entire state. The 32°F or cooler temperatures were more than 10°F below normal for this time of year. Highs remained around freezing for the northern and central regions on the 2<sup>nd</sup> with the south experiencing a slight warming as highs reached close to 40°F. The warming moved north on the 3<sup>rd</sup> as highs approached 40°F around the lake, in line with the normal. That wouldn't last as the cold front passed late on the 3<sup>rd</sup> and into the 4<sup>th</sup>, dropping highs back below freezing across Indiana. Temperatures dropped even lower on the 5<sup>th</sup>, with a statewide average temperature about 24°F, approximately 19°F below normal! Minor warming happened on the 6<sup>th</sup> as high temperatures rose into the mid-30's, still about 10°F below normal for early December. Temperatures again dropped on the 7<sup>th</sup> as the cold front from Canada passed. High temperatures failed to climb out of the 30's. The first week of December was absolutely frigid. The average deviation from normal high temperatures for the first week was almost 12°F.

### **December 8<sup>th</sup> – 14<sup>th</sup>**

Week two started relatively dry, though there were some lake-effect snow showers in extreme northern counties on the 8<sup>th</sup>. The 9<sup>th</sup> brought a new disturbance and more moisture. With temperatures above freezing the entire state experienced rain. Southwestern counties received close to ½ inch of rain. Totals were smaller in the central and north. The rain carried over into the morning and early afternoon on the 10<sup>th</sup> across the state. The heaviest rain fell in the

southeast and along the Indiana-Ohio border. New rainfall amounts of over an inch were reported in some areas. Much of the state was dry for the next few days. Some lake-effect snow fell in the north on the 12<sup>th</sup> but elsewhere was mostly dry until the evening on the 14<sup>th</sup>. Rain (and snow in northern counties) moved back into the state at this time as a result of a new cold front pushing eastward across the U.S. The precipitation continued throughout the 15<sup>th</sup>.

A warm front passed through the state at the beginning of week two raising temperatures slightly above normal for the first time this month. The statewide average high temperature was approximately 45°F on the 8<sup>th</sup>. Highs remained in the mid-40's on the 9<sup>th</sup> as the next front passed. Once the cold sector of the disturbance approached things changed. High temperatures dropped back below normal and into the mid-30's on the 10<sup>th</sup>. They remained there on the 11<sup>th</sup> but grew colder on the 12<sup>th</sup>, with high temperatures regressing into the upper-20's. With the presence of high pressure on the 13<sup>th</sup> temperatures crept back to normal (mid- to upper-30's, depending on the area). The warming continued on the 14<sup>th</sup> as highs skyrocketed into the upper-50's, more than 10°F above normal.

### **December 15<sup>th</sup> – 21<sup>st</sup>**

A parade of storm systems about every other day rode a fast jet stream located directly over Indiana last week. Temperatures crashed on Dec 15, falling as much as 45 degrees in a 13 hour period. The first three days of the week continued quite cold, averaging 6 to 12 degrees below normal with high temperatures mostly in the mid 20s and lows in the mid teens. Temperatures moderated the last half of the week to slightly above normal with highs mid 30s north to as warm as the 60s in the far southwest. Lows ranged from single digits north to around freezing in the southwest. Temperatures plunged again over the weekend as a strong polar front with high winds roared into the state.

Precipitation during the week occurred in many forms: rain, freezing rain, sleet, snow, and thunderstorms. Water equivalent for the week totaled an inch to an inch and a half. Snowfall totals were as much as 5 inches in the lake effect region around South Bend.

The temperature extremes and varied precipitation types wreaked havoc around Indiana all week long. Three people were killed Dec 16 when a van slid off I-70 in Henry County and was struck by a truck. A rash of accidents, several involving school buses, resulted in at least 5 deaths across Indiana Tuesday evening and into Wednesday. A bus flipped in a school parking lot in Anderson and 7 other buses slid off the road near Evansville.

But the impact of the next storm the evening of Dec 18 was much more widespread as snow and sleet switched over to freezing rain. More than 100,000 Indiana utility customers were without power due to the overnight ice storm. Numerous slide-off vehicle accidents were blamed on glazed icy roads. A half to one inch of ice was common across northern Indiana in this storm. A half inch of ice coated trees and power lines in the Fort Wayne area. Allen County, including Fort Wayne, declared a Level 2 weather emergency, meaning only essential travel was recommended and businesses should start their emergency action plans. Many traffic signals were out, tree limbs came down, and high water caused by flash flooding plagued the city after warmer rains followed the ice storm. North of Fort Wayne near Auburn there were many slide

offs of I-69. NIPSCO reported 27,000 outages in its northern Indiana service area with the Monticello and Hammond areas the hardest hit. In Wells county 8 traffic accidents occurred when several vehicles slid off roads and flipped into ditches. Besides the downed power lines and trees, high water on roadways was common due to blocked drains.

High winds and arctic temperatures returned to Indiana on Sunday Dec 21, hampering clean up efforts. Indiana utilities reported more than 70,000 homes and businesses remained without power as most of those customers waited a third day for electricity following the Thursday night ice storm. Major outages remained in Fort Wayne, Crown Point, and in the Goshen areas. Wind gusts in excess of 30 mph have made repair work difficult. Residents still without heat were urged to go to local shelters.

The harsh winter weather this month has had other costs. A Porter county street commissioner stated that since the Nov 18 lake-effect snow, he has had to order salt three times at a total cost of \$30,000, has already run through nearly half his season's salt budget, and paid lots of overtime. The winter weather events keep coming every 48 hours or so and his budget is really taking a hit. And winter had not officially started yet!

### **December 22<sup>nd</sup> – 31<sup>st</sup>**

Another week of wild weather challenged storm weary Hoosiers. Temperatures continued to swing dramatically warm and cold with each passing weather system. Daily maximum temperatures ranged from the single digits on December 22 to record breaking warmth in the 60's just five days later.

Precipitation took many forms during the week: snow, freezing rain, rain, and even hail. Thunderstorms occurred on the weekend of December 27 and a tornado warning was issued for western Indiana. Two strong storm systems, one on December 23 and another on December 26, were blamed for 11 deaths on Indiana highways as two more rounds of freezing rain hammered the state yet again.

Northeast Indiana struggled to restore power from the earlier ice storm of December 18. As of December 26, more than a week later, 170 homes remained without electric service due to the earlier ice storm. Mayors juggled city budgets to handle the excessive costs for snow plows and employee overtime to clear city streets.

A new ice storm on December 23 caused havoc in central and southern Indiana. Four people died in accidents on slick roads, two in Boone County and another two in Dubois County. Some counties reported over 100 accidents each within a few hours with police unable to keep up. A hospital in central Indiana reported over a dozen patients injured due to falls on the ice. Parts of two interstates, I-465 and I-69 near Indianapolis were closed. The misery spread to northern Indiana the next day, forcing the closing of I-69 north of Fort Wayne to Michigan. Huntington County issued a Level 2 emergency due to the storm on December 24. A section of I-70 in west central Indiana was also closed down due to numerous accidents that day.

Just two days later yet another ice storm plagued Indiana. Four people died in two accidents in Tippecanoe County on December 26 while three others died in Hamilton county crashes that same day. The entire length of the Indiana Toll Road was closed due to extremely slick conditions. The northern leg of I-69 north of Fort Wayne was closed again due to numerous accidents and slide offs.

A strong warm up in advance of another storm system pushed temperatures to daily record highs across the state on December 27. This sudden warming caused a rapid meltdown of ice and snow, and along with heavy rains, caused flooding in northwest Indiana which continued through the rest of 2008.

A very welcome break in the stormiest and deadliest December in years finally came on December 28 with mostly dry conditions and seasonable temperatures to the end of the month.

## December Summary

### Temperature

Region	Temperature	Normal	Deviation
Northwest	24.6	28.5	-3.9
North Central	25.0	28.7	-3.7
Northeast	25.7	28.6	-2.9
West Central	27.7	30.4	-2.7
Central	28.0	30.7	-2.7
East Central	28.2	30.2	-2.0
Southwest	33.0	34.5	-1.5
South Central	32.1	34.5	-2.4
Southeast	31.4	34.0	-2.6
<b>State</b>	<b>28.4</b>	<b>31.1</b>	<b>-2.7</b>

### Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	4.60	2.66	1.94	173
North Central	4.53	2.79	1.74	162
Northeast	4.40	2.68	1.72	164
West Central	5.39	2.96	2.43	182
Central	5.68	2.99	2.69	190
East Central	5.36	2.87	2.49	187
Southwest	5.13	3.53	1.60	145
South Central	5.64	3.56	2.08	158
Southeast	5.27	3.41	1.86	155
<b>State</b>	<b>5.14</b>	<b>3.06</b>	<b>2.08</b>	<b>168</b>

**Winter-to-Date**  
(November & December)

**Temperature**

<b>Region</b>	<b>Temperature</b>	<b>Normal</b>	<b>Deviation</b>
Northwest	31.6	34.4	-2.8
North Central	31.6	34.4	-2.8
Northeast	31.9	34.3	-2.4
West Central	33.8	36.2	-2.4
Central	33.9	36.2	-2.3
East Central	33.7	35.6	-1.9
Southwest	37.7	39.9	-2.2
South Central	36.9	39.7	-2.8
Southeast	36.3	39.0	-2.7
<b>State</b>	<b>34.2</b>	<b>36.7</b>	<b>-2.5</b>

**Precipitation**

<b>Region</b>	<b>Precipitation</b>	<b>Normal</b>	<b>Deviation</b>	<b>Percent of Normal</b>
Northwest	6.02	5.81	0.21	104
North Central	6.29	5.95	0.34	106
Northeast	6.45	5.70	0.75	113
West Central	7.29	6.57	0.72	111
Central	7.93	6.62	1.31	120
East Central	7.67	6.23	1.44	123
Southwest	8.00	7.80	0.20	103
South Central	8.27	7.65	0.62	108
Southeast	7.55	7.11	0.44	106
<b>State</b>	<b>7.32</b>	<b>6.64</b>	<b>0.68</b>	<b>110</b>

**Annual-to-Date**  
(2008 Summary)

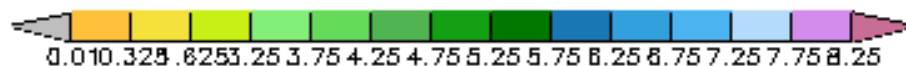
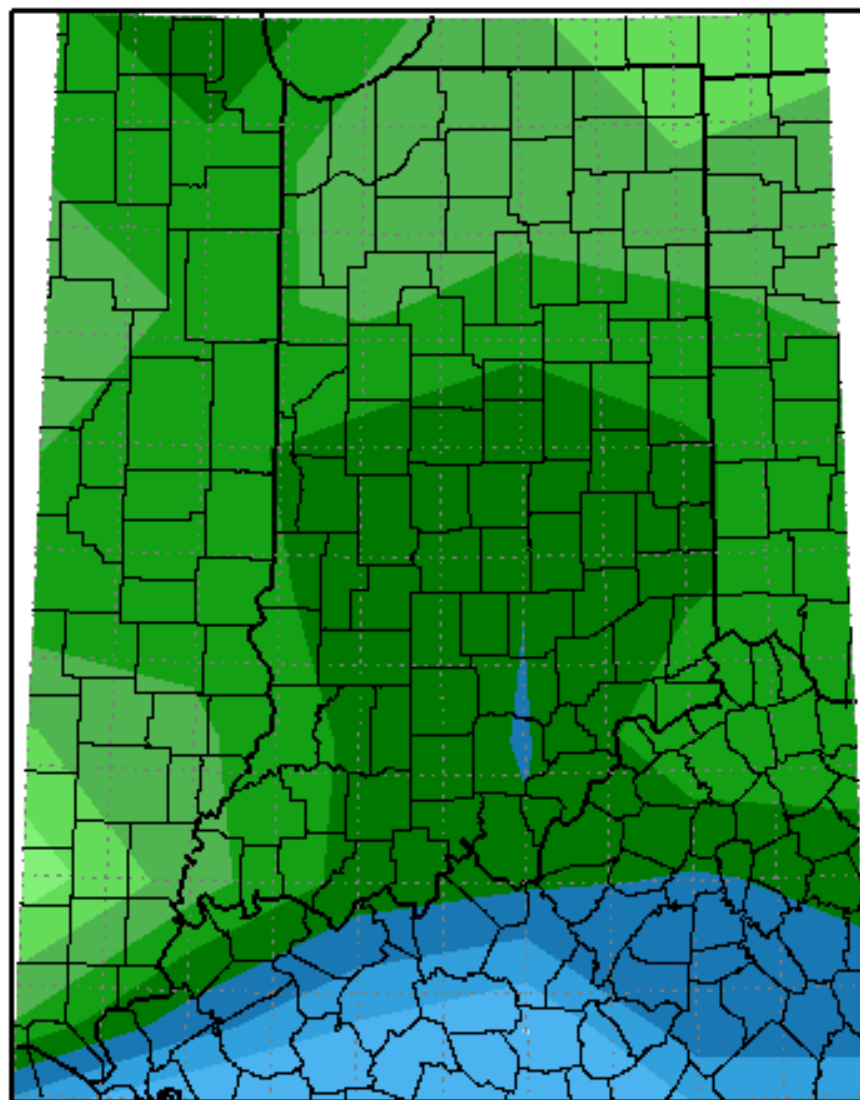
**Temperature**

<b>Region</b>	<b>Temperature</b>	<b>Normal</b>	<b>Deviation</b>
Northwest	48.8	50.2	-1.4
North Central	48.8	49.8	-1.0
Northeast	48.9	49.4	-0.5
West Central	50.6	51.8	-1.2
Central	50.7	51.4	-0.7
East Central	50.2	50.6	-0.4
Southwest	54.2	55.0	-0.8
South Central	53.5	54.5	-1.0
Southeast	52.8	53.7	-0.9
<b>State</b>	<b>51.0</b>	<b>51.9</b>	<b>-0.9</b>

## Precipitation

<b>Region</b>	<b>Precipitation</b>	<b>Normal</b>	<b>Deviation</b>	<b>Percent of Normal</b>
Northwest	48.36	38.04	10.32	127
North Central	46.42	38.22	8.20	121
Northeast	42.26	36.75	5.51	115
West Central	51.77	41.24	10.53	126
Central	53.07	40.74	12.33	130
East Central	47.61	39.24	8.37	121
Southwest	55.03	45.56	9.47	121
South Central	55.68	45.71	9.97	122
Southeast	51.29	44.12	7.17	116
<b>State</b>	<b>50.63</b>	<b>41.19</b>	<b>9.44</b>	<b>123</b>

Total Precipitation in Inches  
December 1, 2008 to December 31, 2008



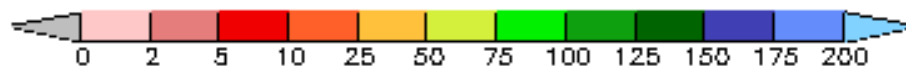
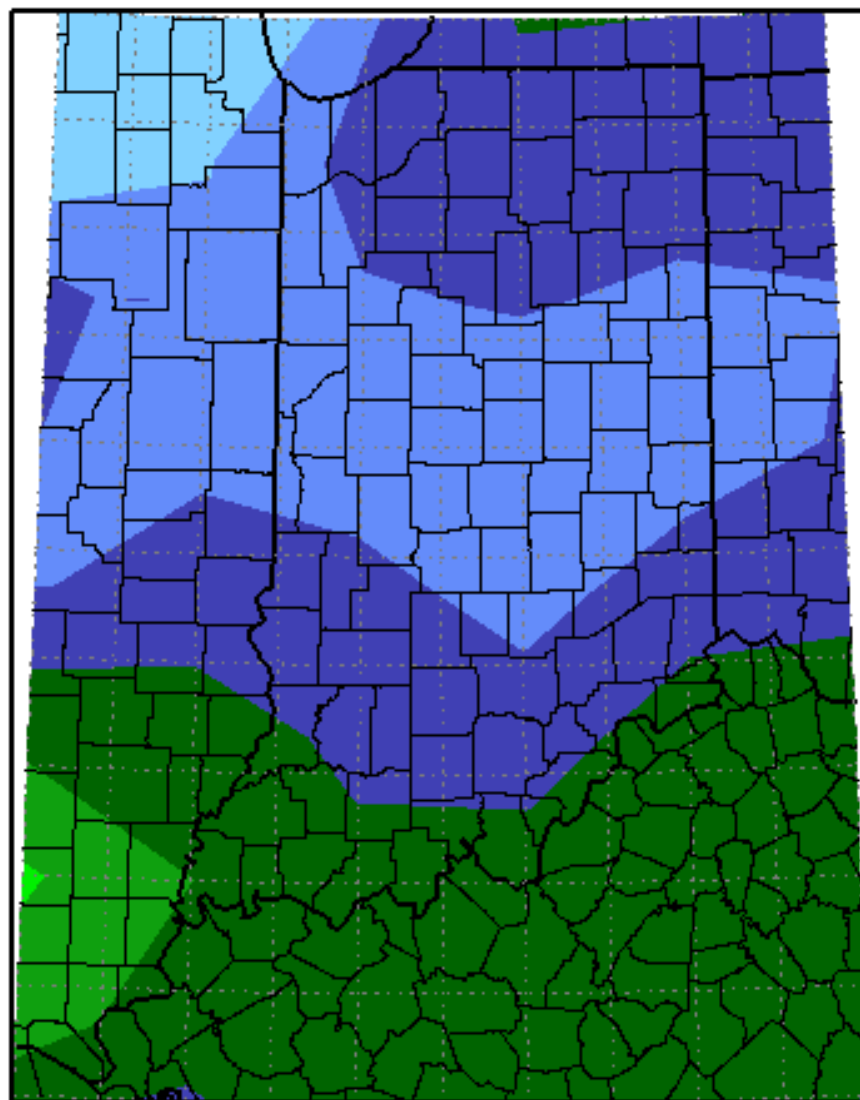
NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois



Total Precipitation Percent of Mean  
December 1, 2008 to December 31, 2008

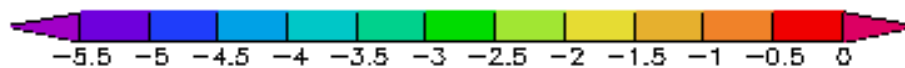
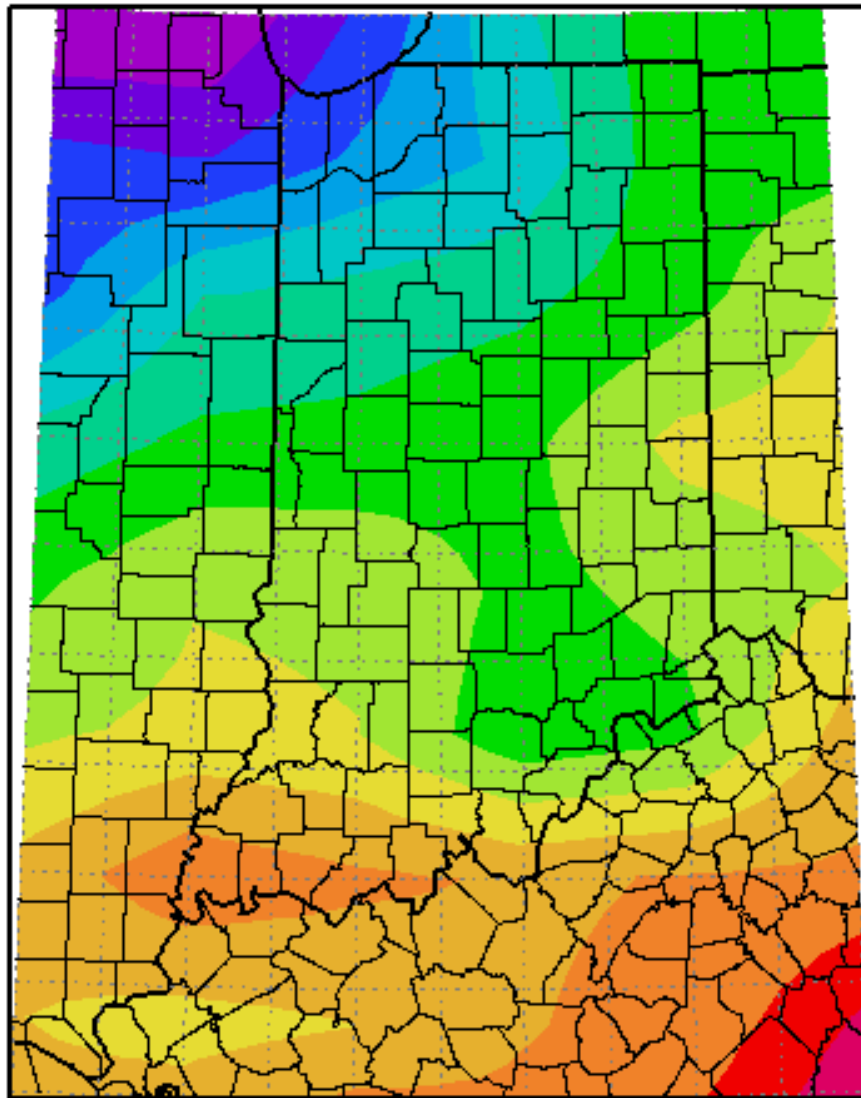


NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Average Temperature Departure from Mean in Degrees F  
December 1, 2008 to December 31, 2008

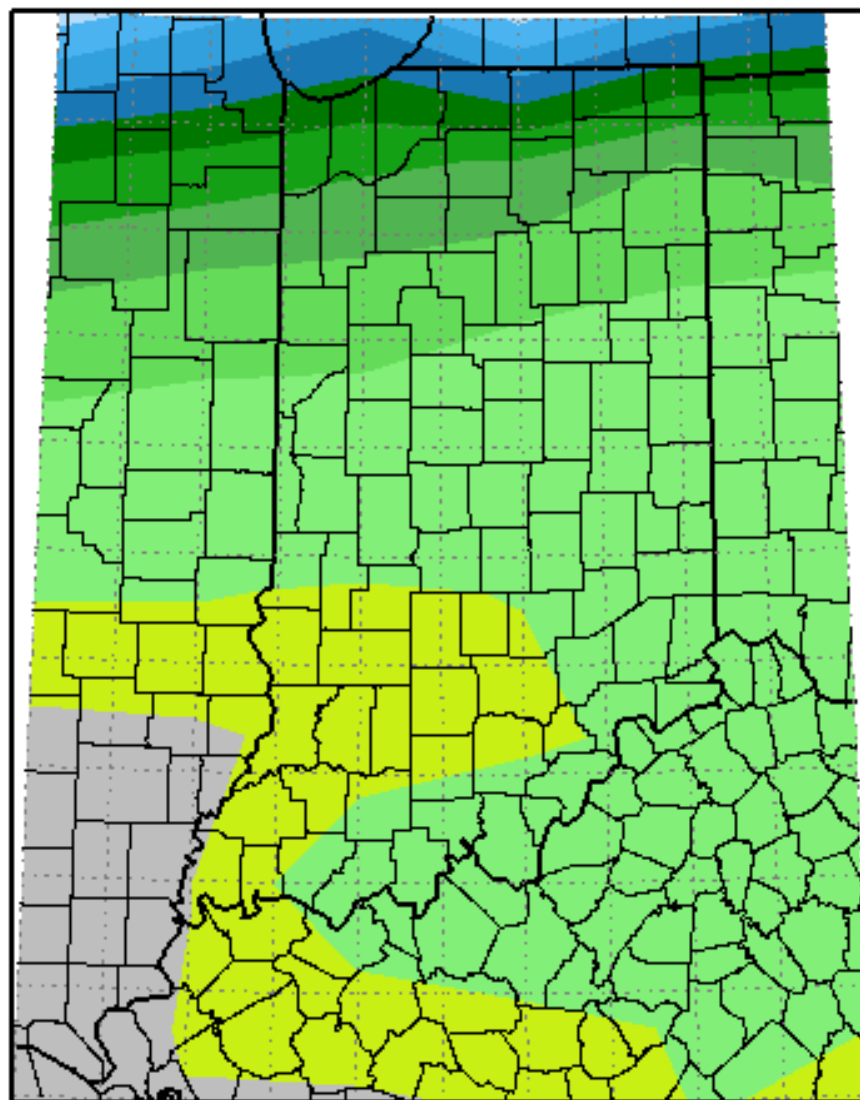


NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

**Total Snowfall in Inches  
December 1, 2008 to December 31, 2008**



0.75 1.5 4.5 7.5 10.5 13.5 16.5 19.5 22.5 25.5

**NOAA** Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

## *Drought Summary from the U.S. Drought Monitor*

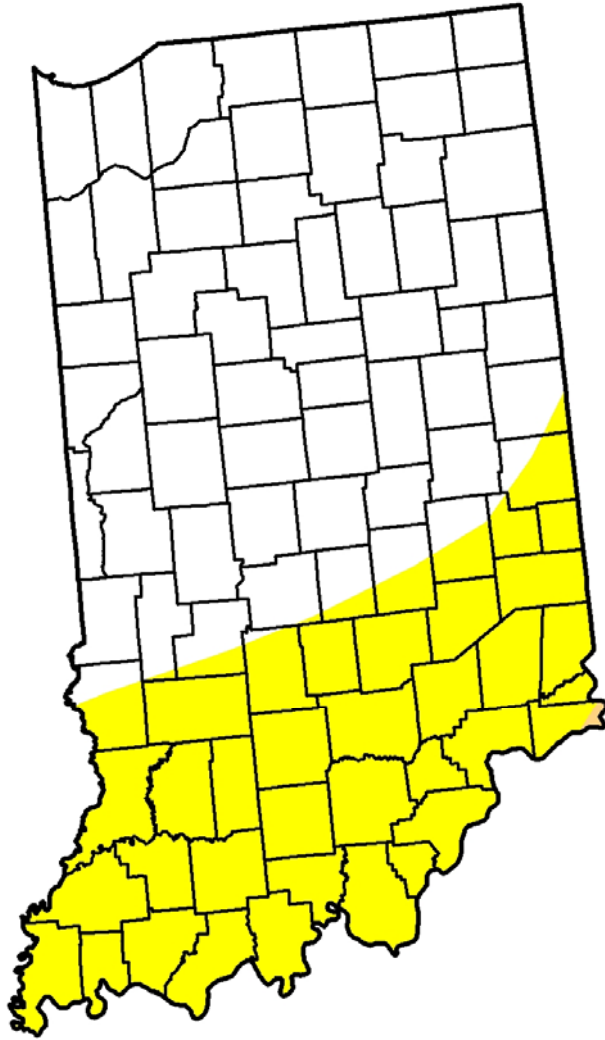
Below is a drought summary for the state of Indiana from the U.S. drought monitor. Areas in white are not experiencing any drought. Yellow areas are abnormally dry, but not entirely considered a drought. Drought begins when the moisture levels become more severe, with beige, orange, red, and brown indicating 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, December 2<sup>nd</sup> has 51.77% of Indiana under no drought, and 48.24% of Indiana under at *least* D0 through D4 drought status. This is followed by 21.62% as D1 through D4 status. To obtain the amount that is D0 status, simply subtract the D1-D4 column from the D0-D4 column, thus giving you the percentage of area with abnormally dry conditions. Please note, however, that these areas are not exact, and much of this drought map has been created from reports throughout the state and estimation, so use this information as a general view rather than for specifics.

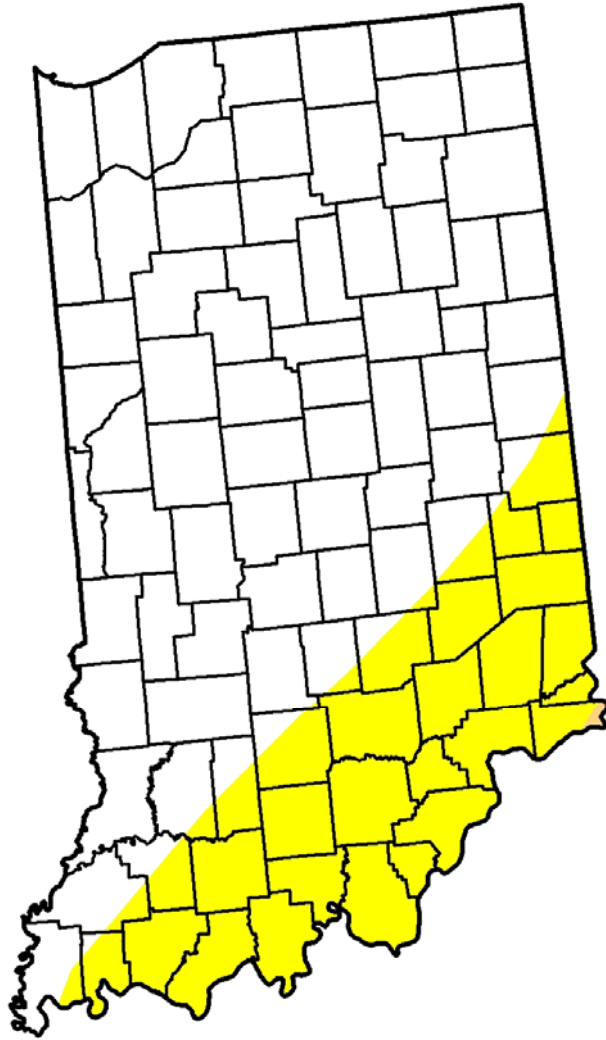
D0 Abnormally Dry
  D1 Drought - Moderate
  D2 Drought - Severe
  D3 Drought - Extreme
  D4 Drought - Exceptional

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
12/02/08	51.77	48.24	21.62	7.91	2.12	0.62
12/09/08	52.70	47.30	21.77	8.59	2.21	0.77
12/16/08	53.08	46.92	20.86	7.19	1.56	0.37
12/23/08	54.32	45.68	20.35	6.68	1.36	0.37
12/30/08	58.21	41.79	19.19	6.17	1.24	0.37

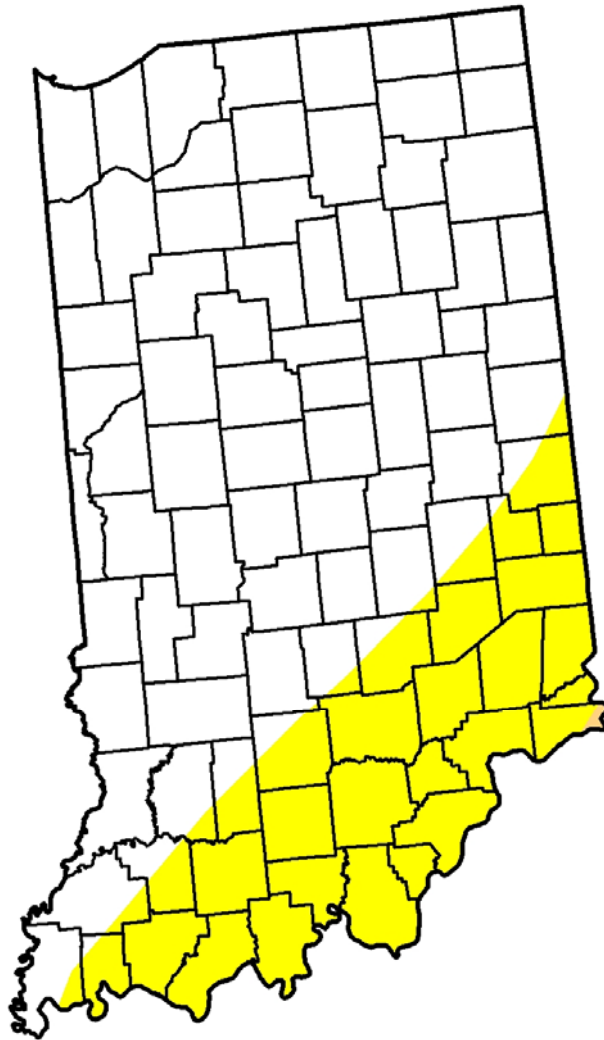
*December 2<sup>nd</sup> Drought Summary*



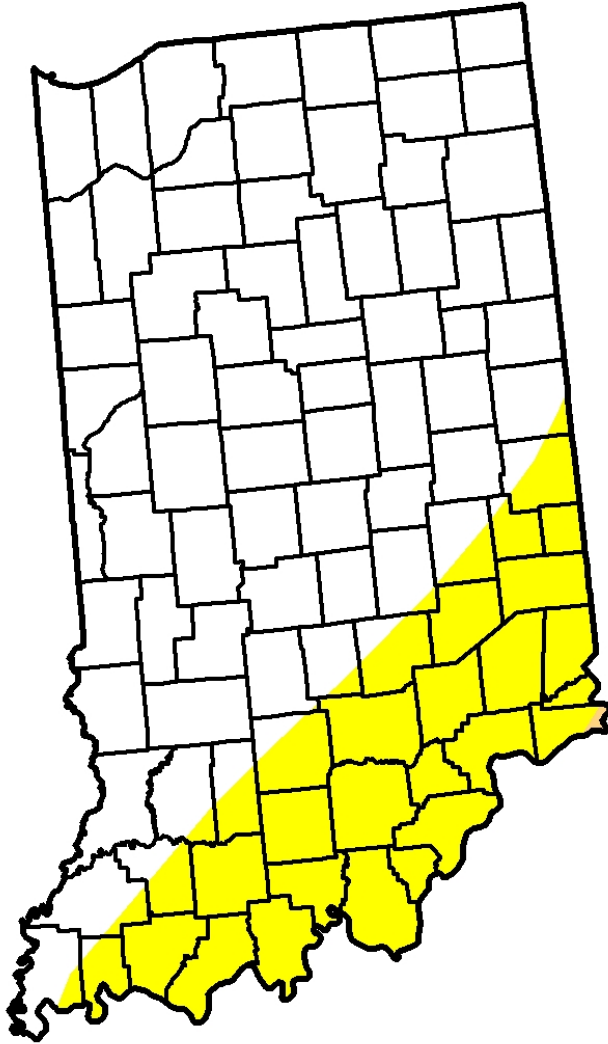
*December 9<sup>th</sup> Drought Summary*



*December 16<sup>th</sup> Drought Summary*



*December 23<sup>rd</sup> Drought Summary*





*December 30<sup>th</sup> Drought Summary*

