

Ken Scheeringa

(765) 494-8105

Indiana State Climate Office

Monthly Weather Report

Dec 3, 2009



<http://www.iclimat.org>

November 2009 Climate Summary

Summary

When the calendar flipped from October to November so did Indiana weather! While October 2009 entered Indiana weather history as one of the coldest and wettest of all Octobers on record, November 2009 will be remembered as one of the warmest and driest among Novembers. The abundance of sunshine the first half of this month was a delight as November in Indiana has a reputation as being typically cloudy, dark, and unpleasant.

Residents enjoyed a 20 day warm spell from November 6th through the 25th when statewide average temperatures remained above normal each day. The warmth lifted November 2009 into a tie with 2003 as the 9th warmest November in 114 years of state records. The November 2009 state averaged temperature was 46.2F degrees, while the normal is 42.4F degrees. The most recent warmer November occurred in 2001 which placed 3rd in the record books and was 3F degrees warmer than the current November. The only other warmer November in recent years was 1999 which holds 5th place.

The nearly dry first half of this month set November on pace to become one of the driest on record. Indeed November 2009 ranks as the 16th driest of all Novembers in the state record books. The state averaged precipitation this month was 1.52 inch, much below the normal 3.59 inches. The most recent November drier than this year was ten years ago in 1999 which placed 4th among all Novembers and received a state averaged 1.07 inch, about a half inch less precipitation than the current November. There have been no other recent Novembers this dry in the Indiana weather record books.

Indiana farmers welcomed the warm and dry November weather. The wet corn fields of October were finally able to continue dry down and the delayed harvest season resumed in earnest. The Indiana Agricultural Statistics Service reports that Indiana corn harvest progress which began at 29 percent complete at the start of November ended the month at 84 percent complete, a substantial improvement. Soybean harvest jumped from 63 percent complete at the start of November to 99 percent complete at the end of the month. Historically both corn and soybean harvest in Indiana should be nearly wrapped up by the end of November.

November 1st – 7th

Mostly sunny skies and a nearly dry first week of November were a welcome relief to Hoosiers after a cold and wet October. A warming trend throughout the week lifted air temperatures from

well below normal at the start of the week to much above normal by week's end. The month opened with statewide averaged air temperatures 11F degrees below normal. Temperatures rebounded to near normal by November 4th. A burst of unseasonably warm air the final two days of the week ramped state averaged temperatures to 14F degrees above normal, a bounce of 25F degrees over the 7 day interval. Typical early November maximum temperatures in Indiana range from 56F to 62F degrees north to south across the state. Normal minimums vary between 38F and 42F degrees north to south.

A rather flat zonal jet stream pattern in the upper atmosphere this week blocked the bulk transport of moisture from the Gulf of Mexico into Indiana. Under this pattern storms originating in continental Canada, known as "Alberta clippers", race southeastward to Indiana before turning northeastward into eastern Canada. These storms cannot tap into major water sources and pass through our state as dry fronts with temperature changes but very little or no rainfall. For the week total precipitation averaged only a few hundredths of an inch statewide. Normally Indiana would expect about 0.75 inch of precipitation in northern Indiana this first week of the month to about 0.85 inch in southern counties.

November 8th – 14th

A second week of sunny skies and warm temperatures encouraged Indiana farmers as they worked to catch up a much delayed harvest season. The week opened with statewide averaged temperature departures 14F degrees above normal, as a far northward location of the jet stream favored unusually warm temperatures in the state. Over the next four days temperatures slid each day, slowing to 3F degrees above normal as a cold front nudged closer to our state. Once this front passed the temperature trend reversed itself and the state temperature anomaly gradually rebounded to 8F above normal by the close of the week. In the second week of November normal maximum temperatures range from about 50F degrees to 57F degrees north to south across Indiana. Minimums typically vary between 33F to 37F degrees across the state.

Early this week all eyes were on the potential impact of the Gulf coast landfall of hurricane Ida on our weather. The critical timing of a cold front passage across Indiana on November 10th just ahead of Ida's advance and a ridge of high pressure behind the front blocked the transport of moisture northward into our state. Instead of another round of heavy precipitation, less than a half inch of rain fell in far northern communities this week. On average only a few hundredths fell midweek and near the end of the week in northern Indiana. It was dry this week in central and southern Indiana. Normally precipitation should total about 0.75 inch in the north, 0.95 inch in central, and 0.90 inch for the second week of November across southern Indiana. The high pressure system moved east of Indiana on November 13th. Clouds increased and a new storm system arrived the next day.

November 15th – 21st

A dry storm system at the start of the week moved quickly through Indiana and departed. But the next storm system behind it was in no hurry and dominated the week's weather. A deep low pressure center formed over Kansas and stretched vertically from ground level high into the atmosphere. The jet stream broke away to the north on November 16th, leaving this massive storm alone spinning in place for some days on the High Plains. On the leading side of this cutoff system,

warm moist air was pumped northward into Indiana from the Gulf of Mexico. On November 19th the cutoff low began to fill and pulled slowly northward over Illinois. The next day this system began to fill rapidly, increased its speed northeastward, and was caught up again in the polar jet stream over eastern Canada. The departure of the cutoff low changed the wind patterns over Indiana. The rains stopped and dry weather returned to Indiana as the week closed.

For the second week in a row statewide averaged temperatures held above normal on every day of the week. The week opened with temperature departures 9F degrees above normal, then slipped each day over the next four days to slightly above normal by November 19th, as clouds and rain sapped the sun's warmth. The temperature rebounded to 5F degrees above normal by November 21st as the cutoff storm departed northeast of Indiana. Overall for the week statewide temperatures averaged 4F degrees above normal. Typically in the third week of November maximum daily temperatures should reach 47F degrees in the north, 52F degrees in central, and 55 degrees in southern Indiana. Daily minimums should vary from around 32F degrees in northern Indiana, 34F degrees in central, and 36F degrees in the southern third of the state.

Rain fell on five consecutive days from November 16th through 20th with the heavier amounts noted early on. For the week total precipitation ranged from at least 0.6 inch at most locations up to 1.2 inches in northern and southern Indiana and 1.9 inches in the central part of the state. The heaviest one day amount was 2.60 inches as recorded by a CoCoRaHS observer in Valparaiso on the morning of November 16th. These totals are well above the weekly normals of about 0.6 inch in northern Indiana, 0.7 inch in central, and 0.9 inch in southern sections.

A flood advisory was issued for portions of west central Indiana on November 17th. Near bankful conditions were expected along the Wabash River from November 18th through the 22nd.

November 22nd – 30th

The final interval of the month began and ended warmer than normal but a midweek cold front made for a miserably cold and wet Thanksgiving Day in Indiana. The week started with warm southerly winds as a high pressure ridge moved east of the state. Statewide average temperatures ran 6F to 8F degrees above normal until November 25th when a cold front swung through the state. The merger of two upper atmosphere low pressure troughs over Indiana the next day intensified a push of cold Canadian air into the region. Temperatures dipped to 4F degrees below normal, ending a 20 day warm spell. Yet the cold snap was brief. Two days later skies cleared and a strong Bermuda high pressure center took over, lifting Indiana temperatures once again to 8F degrees above normal on November 28th. The month ended like it began with warmer than normal temperatures. For the overall 10 day interval the statewide average departure was 4F degrees above normal. Typically during this period maximum daily temperatures should range from about 43F degrees in far northern Indiana to 47F in central and 51F in southern Indiana. Normal daily minimums range from 30F in the north to 31F in central and 34F degrees in southern Indiana.

After a dry start to the week rain approached Indiana in advance of and during the midweek cold front. Light rain fell from November 23rd through 26th. More light rain fell on November 28th and 29th. For the week rainfall totaled about 0.75 inch in northern Indiana, 0.45 inch in central, and around 0.30 inch in the south. These amounts are less than normal for this period in November,

which ranges from about 1.2 inch in far northern Indiana to approximately 1.6 inch in the far south. The largest single day rainfall amount noted was 0.73 inch ending the morning of November 25th by the CoCoRaHS observer at Lakes of the Four Seasons.

November Summary

Temperature

Region	Temperature	Normal	Deviation
Northwest	44.8	40.5	4.2
North Central	44.4	40.4	4.0
Northeast	44.2	40.1	4.1
West Central	46.3	42.1	4.2
Central	45.6	41.9	3.7
East Central	45.1	41.3	3.9
Southwest	49.4	45.4	4.0
South Central	47.9	45.0	2.9
Southeast	47.0	44.3	2.7
State	46.2	42.4	3.8

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	1.98	3.16	-1.17	63
North Central	1.66	3.16	-1.50	52
Northeast	1.47	3.02	-1.56	48
West Central	2.44	3.60	-1.16	68
Central	1.27	3.63	-2.37	35
East Central	1.03	3.36	-2.34	30
Southwest	1.53	4.27	-2.74	36
South Central	1.10	4.09	-2.99	27
Southeast	0.96	3.70	-2.74	26
State	1.52	3.59	-2.07	42

Autumn to date

Temperature

Region	Temperature	Normal	Deviation
Northwest	52.6	52.7	-0.1
North Central	52.3	52.2	0.1
Northeast	52.1	51.8	0.3
West Central	54.1	54.0	0.1
Central	53.7	53.6	0.1
East Central	53.2	52.8	0.4
Southwest	56.9	56.8	0.1
South Central	55.7	56.2	-0.5
Southeast	55.1	55.4	-0.4
State	54.0	54.0	0.0

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	10.05	9.29	0.76	108
North Central	8.75	9.41	-0.66	93
Northeast	8.17	8.92	-0.74	92
West Central	10.75	9.53	1.22	113
Central	9.66	9.44	0.22	102
East Central	8.30	8.88	-0.58	93
Southwest	15.31	10.45	4.86	147
South Central	15.15	10.21	4.94	148
Southeast	12.57	9.66	2.91	130
State	11.09	9.58	1.52	116

Annual-to-date

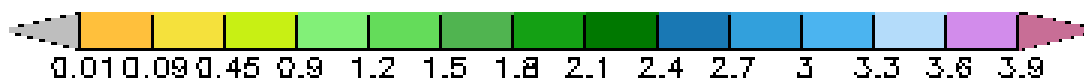
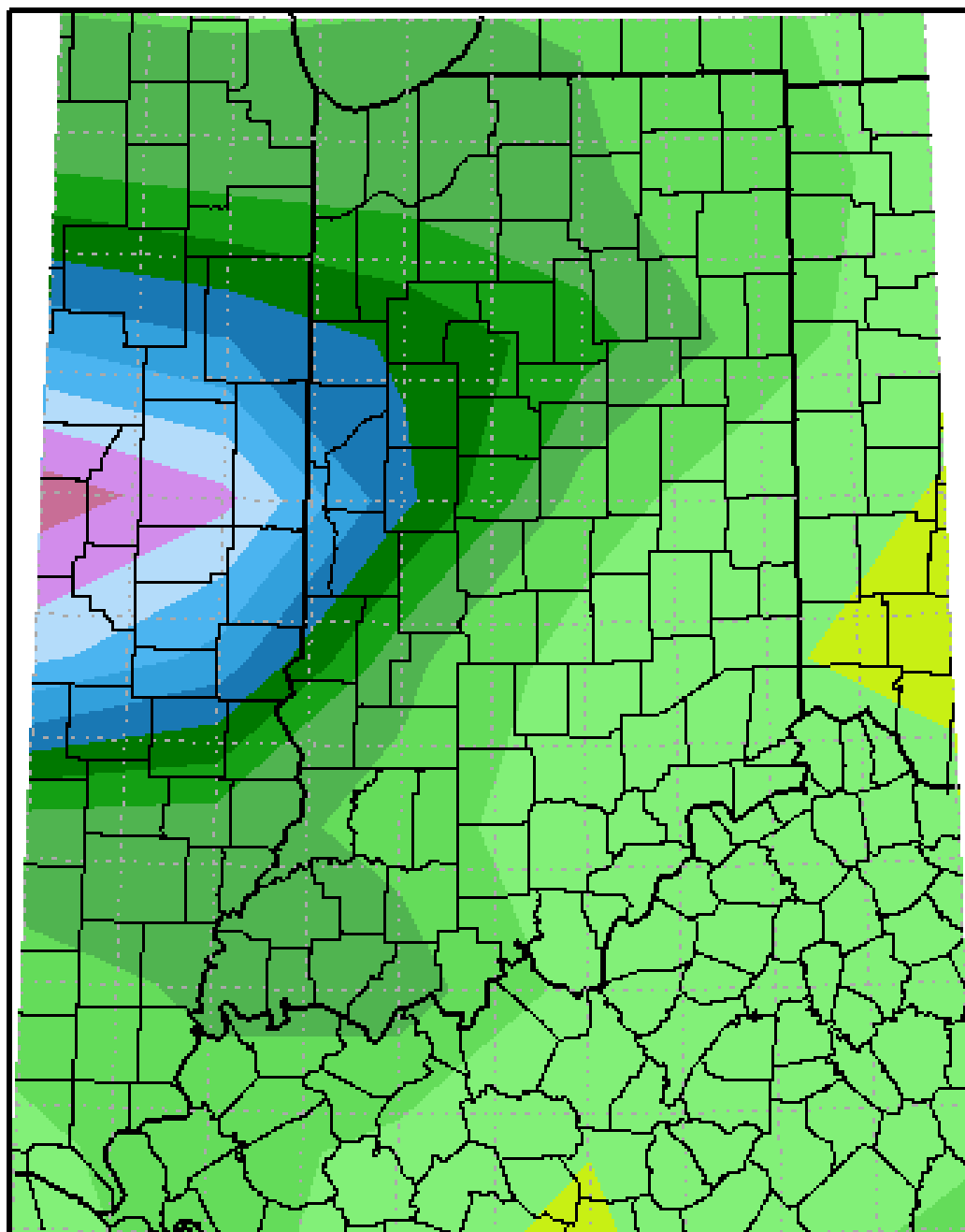
Temperature

Region	Temperature	Normal	Deviation
Northwest	51.2	52.2	-1.0
North Central	50.9	51.8	-0.8
Northeast	50.8	51.4	-0.6
West Central	53.3	53.8	-0.5
Central	52.9	53.4	-0.4
East Central	52.4	52.6	-0.2
Southwest	56.7	57.0	-0.2
South Central	55.4	56.4	-1.0
Southeast	54.9	55.5	-0.7
State	53.3	53.9	-0.6

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	40.61	35.36	5.25	115
North Central	39.70	35.40	4.30	112
Northeast	38.28	34.06	4.22	112
West Central	44.98	38.27	6.72	118
Central	42.11	37.75	4.35	112
East Central	34.19	36.36	-2.18	94
Southwest	50.59	42.02	8.56	120
South Central	51.37	42.14	9.23	122
Southeast	46.20	40.71	5.49	113
State	43.56	38.12	5.44	114

Total Precipitation in Inches November 1, 2009 to November 30, 2009

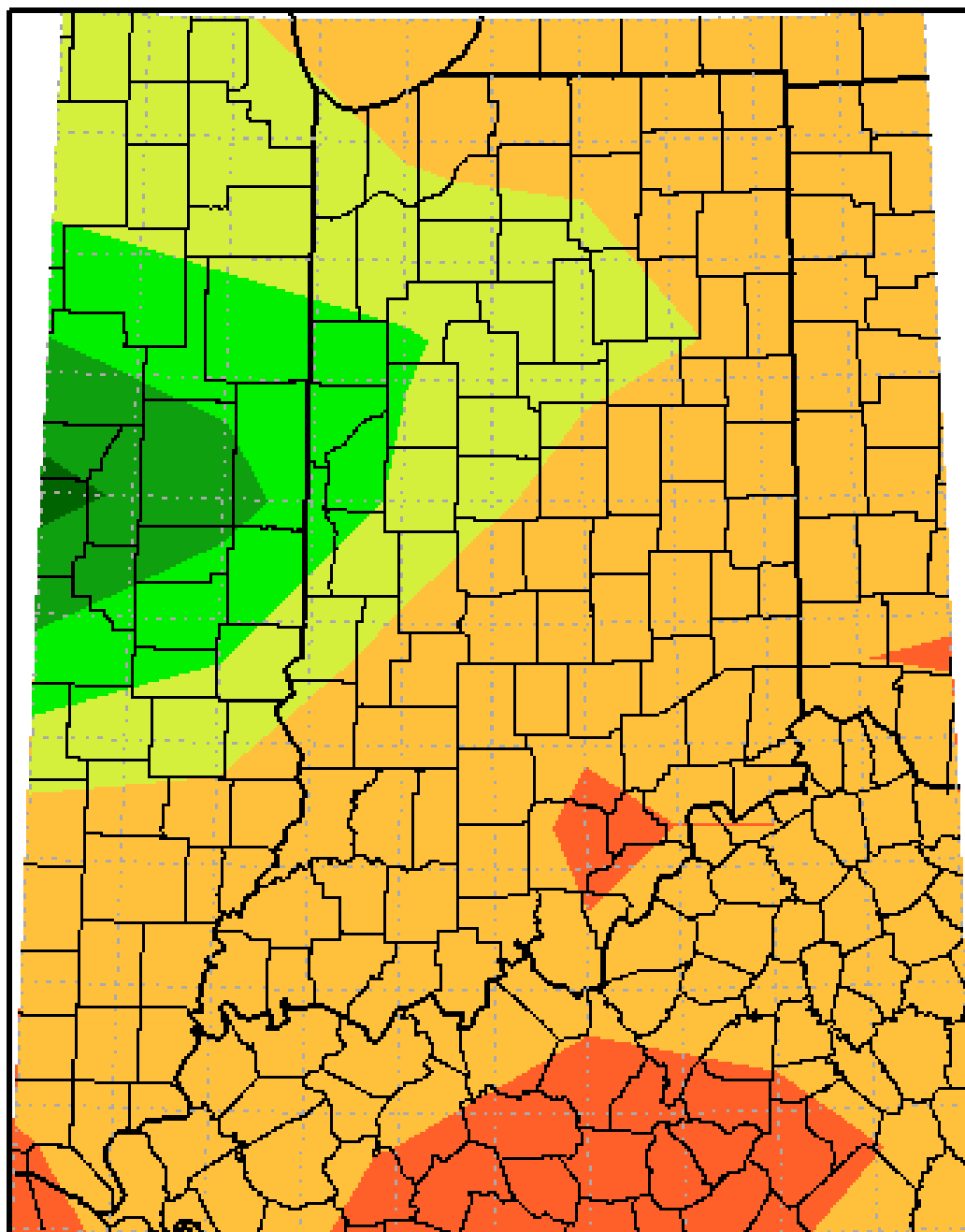


NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

**Total Precipitation Percent of Mean
November 1, 2009 to November 30, 2009**

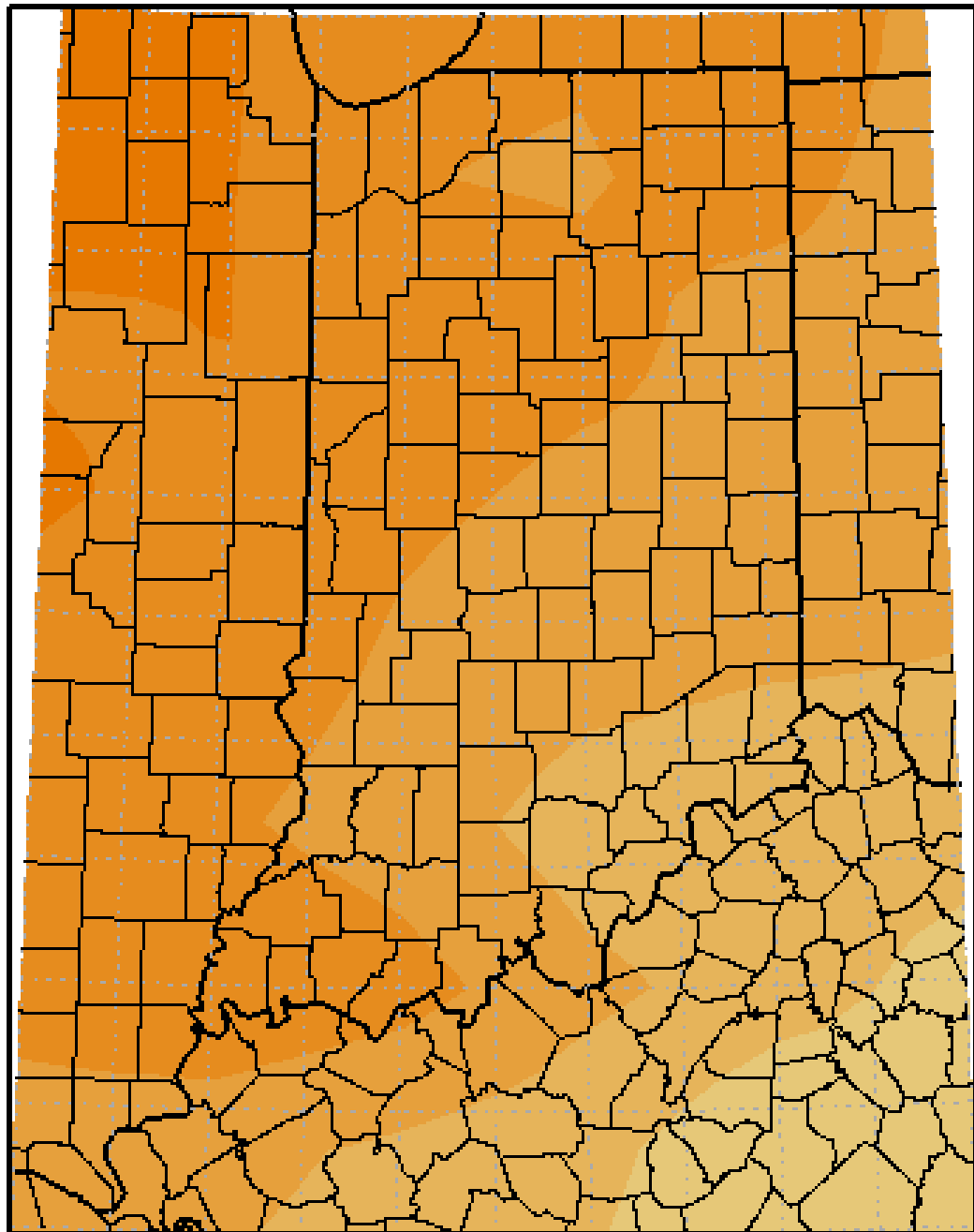


NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Average Temperature Departure from Mean in Degrees F November 1, 2009 to November 30, 2009



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 1st has 100.0% of Indiana under no drought, and 0.0% of Indiana under at *least* D0 through D4 drought status. This is followed by 0.0% 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 (0.0%). 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.

Intensity:



Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
12/01/09	100.00	0.00	0.00	0.00	0.00	0.00
11/24/09	100.00	0.00	0.00	0.00	0.00	0.00
11/17/09	100.00	0.00	0.00	0.00	0.00	0.00
11/10/09	100.00	0.00	0.00	0.00	0.00	0.00
11/03/09	100.00	0.00	0.00	0.00	0.00	0.00

November 3rd Drought Summary



November 10th Drought Summary



November 17th Drought Summary



November 24th Drought Summary

