

Dan Bowman
(765) 494-6574

Indiana State Climate Office

Monthly Weather Report

Sep 3, 2007



<http://www.iclimete.org>

July 2007 Climate Summary

Summary

The month of July ended as a very unusual month. Many events occurred during the month of July that is not characteristic of July's regular trend patterns. July was much cooler than normal, with an overall temperature difference (across the state) of 2.4 degrees Fahrenheit cooler than average. It was also a somewhat dry month, with precipitation values of only 77% of the normal amount seen averaged across the state. Drought conditions worsened, but were inhibited by the lower overall temperatures. Al Shipe of the National Weather Service in Indianapolis, IN states that normally when precipitation values are low earlier in the year, July will be rather warm. Also, rainfall normally causes the lower temperatures, so the combination of cooler temperatures and low precipitation is very unusual. Overall, the month of July was relatively calm, with few major storm outbreaks and no major flooding. Temperatures were on average the 20th coolest recorded since recording began in 1895. Precipitation values were the 36th driest.

July 1st – 7th

July 1st through 7th started out relatively dry, with a high pressure ridge settling over the region. This ridge produced dry conditions for the next several days, with winds most prominently coming from the northeast until July 4th. Rainfall finally began moving into the area on July 4th, with July 5th's morning readings showing at least a tenth of an inch of rain. Reelsville, IN even recorded 1.81 inches of rainfall for the day.

The only storm reports for this week would occur on the 4th, with 0.75" hail occurring in Dillsboro and Santa Claus, while reports of wind damage were reported in Rising Sun, Austin, Bainbridge, and Salem. These winds felled trees and large branches. It would rain for the next day or so and finally dry up, with winds temporarily shifting the opposite direction and strengthening a bit as the trough passed through, producing the much-needed rainfall.

Winds shifted from the north and eventually ended the week calm. Temperatures started mostly in the high 70's at the beginning of the week, ending in the mid 80's in most cases. A few instances of 90's were recorded on the 7th. Lows dropped as low as the chilly high 40's at the beginning of the week, moving back up to the 50's and 60's by the end of the week across most of the state.

July 8th – 14th

The second week of July began dry. Rainfall was not recorded throughout the state on the 8th, and temperatures remained in the upper 80's and mid 90's. The 10th of July recorded the highest temperatures for most locations for this week. Winds were mild from the west, shifting to southwest with on and off clouds for the first few days.

On the 11th, a low pressure trough moved through the region from the west, producing rainfall throughout most of the state. Rainfall amounts varied between 1.95 inches of rainfall in Warsaw, IN on the 11th down to 0 inches of rainfall in South Bend on the 10th and 0 inches of rainfall for Remington on the 11th. East Chicago experienced 0.75" hail with wind gusts over 50 mph on the 10th, while Springville reported a fallen tree due to wind.

As the storm passed, winds shifted from the northwest, and eventually settled into westerly winds. Temperatures began to mellow out with many locations seeing high temperatures in the 70's on the 12th, a welcome relief from the previous month's scorching temperatures. Skies cleared for about a day as the jet stream shifted south and moved right over top of Indiana. As a result, rainfall could be seen mainly in central and southern Indiana, with anywhere from 0" of rainfall to 0.52" of rainfall recorded in Terre Haute.

Temperatures continued to remain cool for the month of July, dropping about a degree on average from the 13th to the 14th into the high 70's and low 80's for much of the state. The lowest and highest temperatures were both recorded in Wanatah, with a low of 49 on the 13th and a high of 94 on the 10th, before the passage of the cold front.

July 15th – 21st

July 15th – 21st saw a bit more rainfall than the previous two weeks. On the 15th at about 00UTC, a cold front began moving through, providing much needed rain for the increasingly dry Indiana. On the 16th, the low pressure trough that moved through became stationary in Kentucky and right outside Illinois. Temperatures moved from anywhere between one degree warmer and around five degrees cooler between the 15th and 16th. Rainfall values were generally small, with up to a quarter of an inch in Greencastle and Greensburg on the 15th and 16th, respectively.

On the 17th, the stationary front had slowly moved into Indiana, dumping large sums of rainfall that could be seen in the observation stations on the morning of the 18th. By the 18th, the stationary front came to a stop above northern Indiana and moved back south from nearby Canada, bringing with it chilly air that caused thunderstorms to rumble their way through the area on the 18th and 19th. Wind knocked down trees in Noble County, and a wind gust of 78 mph was recorded in La Porte, with over 3.5 inches of rainfall reported. Marshall, Porter, Jasper, and Grant counties also had strong wind

reports, with anything from power lines, trees, and semis reported blown over by high winds. Many locations throughout the state had rainfall totals of one to two inches or more. On the 19th, Johnson, Switzerland, and Harrison counties also reported wind damage with trees blown over.

By the 20th, the front finished moving through, and a very large, very dominant Canadian high-pressure ridge moved into the region. Temperatures dropped as much as ten degrees or more into the 70's across most of the state between the 20th and 21st as the high settled in. It was also around this time that a rare atmospheric phenomenon occurred. As the jet stream began to stretch down out of Canada, a large ridge formed to the west and a large trough formed to the east. As time passed, the low pressure system that formed in the trough began spiraling westward towards Indiana, which would eventually cause a large amount of rainfall to fall first in eastern Indiana and eventually throughout the entire state.

Wind patterns for the state began from the southwest on the 15th shifting to the northwest on the 16th, finally becoming calm for parts of the 17th. Wind then came from the northwest, shifting to northeast throughout the day on the 18th. By the 19th, wind came from the west-southwest shifting to north near the 20th, ending the week from the north-northeast.

July 22nd – 31st

The first few days of July 22nd -31st started off dry, as the high-pressure ridge from Canada lingered over Indiana. The jet stream that dipped into the United States from Canada separated this high from a predominant low to the east, and over the course of the next few days, the motions of the jet stream caused the low out to the east to continue to rotate and move towards the west. This is a rare atmospheric phenomenon called a "retrograding low," and as it moved in towards Indiana, very large amounts of rainfall began to fall across most of the state. Locations like Knox, IN recorded 4.27 inches of rainfall in their rain gauge on the morning of July 26th, whereas other locations throughout Indiana (mainly to the west) did not receive any rainfall. Most locations received at least some rainfall between the 26th and the 28th, however.

For the final three days, conditions remained rather dry. Thanks to the extremely dry soil conditions that existed before the rainfall, streams and rivers did not swell to high levels; however they did raise a small amount.

Winds during this time period were from the northeast and relatively mild until the 25th. For the next few days, winds shifted directions multiple times a day, finally becoming more uniform on the 28th. Winds were prominently northeast for most of the rest of the month. Temperatures were between the mid 70's and high 80's for all data points within Indiana, with the exception of the slightly warmer 31st where temperatures got to the 90's in Kendallville, Mount Vernon, and Vincennes.

The Storm Prediction Center's storm archives showed a wind damage report in Rome City, IN on the 25th. On the 26th, many reports of hail and wind damage took place throughout the state. Hail up to 1.25" fell in Jefferson and Steuben counties, while 0.75" hail fell in Grant County. Blackford, Grant, and Steuben counties also had extensive wind damage, with multiple trees and power lines down. Steuben County recorded a 75 mph wind gust, causing damage to businesses and buildings from the intense straight line winds.

By the end of the month, drought conditions were still worsening, and stream and river flow was still below their normal values.

July Summary

Temperature

Region	Temperature	Normal	Deviation
Northwest	71.2	73.6	-2.4
North Central	71	73.1	-2.1
Northeast	71.1	72.8	-1.7
West Central	72	74.8	-2.9
Central	71.8	74.3	-2.5
East Central	71.1	73.5	-2.4
Southwest	74.7	77.1	-2.4
South Central	73.7	76.3	-2.5
Southeast	73.2	75.5	-2.3
State	72.3	74.6	-2.4

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	4.06	3.86	0.2	105
North Central	3.87	3.8	0.08	102
Northeast	3.13	3.66	-0.53	86
West Central	3.06	4.39	-1.32	70
Central	2.54	4.26	-1.72	60
East Central	2.31	4.1	-1.79	56
Southwest	3.01	4.26	-1.26	71
South Central	3.1	4.32	-1.22	72
Southeast	3.68	4.12	-0.44	89
State	3.17	4.1	-0.93	77

Summer-to-Date

Temperature

Region	Temperature	Normal	Deviation
Northwest	71.2	71.9	-0.7
North Central	70.9	71.3	-0.4
Northeast	71.1	71	0.1
West Central	72.1	73.1	-1
Central	72	72.5	-0.5
East Central	71.3	71.7	-0.4
Southwest	74.6	75.2	-0.6
South Central	73.6	74.4	-0.8
Southeast	72.9	73.5	-0.6
State	72.3	72.8	-0.6

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	7.42	8.2	-0.77	91
North Central	6.95	8.1	-1.15	86
Northeast	5.43	7.74	-2.31	70
West Central	6.84	8.72	-1.88	78
Central	5.7	8.36	-2.66	68
East Central	5.06	8.33	-3.28	61
Southwest	7.08	8.37	-1.29	85
South Central	6.67	8.41	-1.74	79
Southeast	6.64	8.34	-1.69	80
State	6.46	8.3	-1.84	78

Annual-to-Date

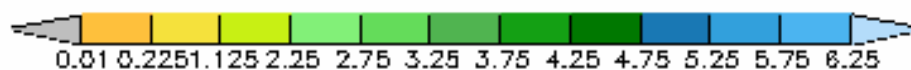
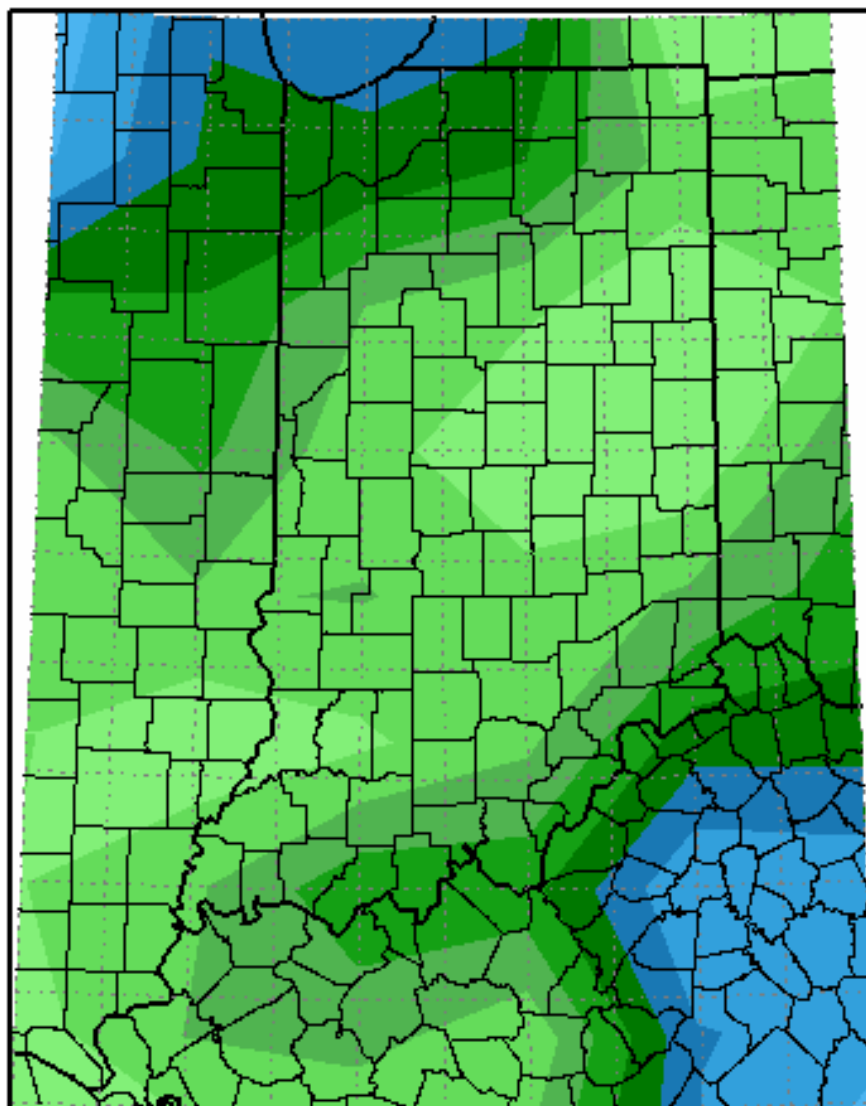
Temperature

Region	Temperature	Normal	Deviation
Northwest	49.5	49.2	0.3
North Central	49.1	48.8	0.3
Northeast	49	48.4	0.5
West Central	51.4	51	0.4
Central	51.2	50.6	0.6
East Central	50.4	49.7	0.6
Southwest	55.3	54.4	1
South Central	54.4	53.8	0.6
Southeast	53.2	52.9	0.3
State	51.6	51.1	0.5

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	22.71	22.25	0.46	102
North Central	21.34	22.17	-0.83	96
Northeast	18.88	21.46	-2.58	88
West Central	22.96	24.78	-1.81	93
Central	24.41	24.56	-0.15	99
East Central	23.84	23.93	-0.09	100
Southwest	24.29	27.91	-3.61	87
South Central	23.85	28.02	-4.16	85
Southeast	23.66	27.15	-3.49	87
State	23	24.75	-1.75	93

**Total Precipitation in Inches
July 1, 2007 to July 31, 2007**

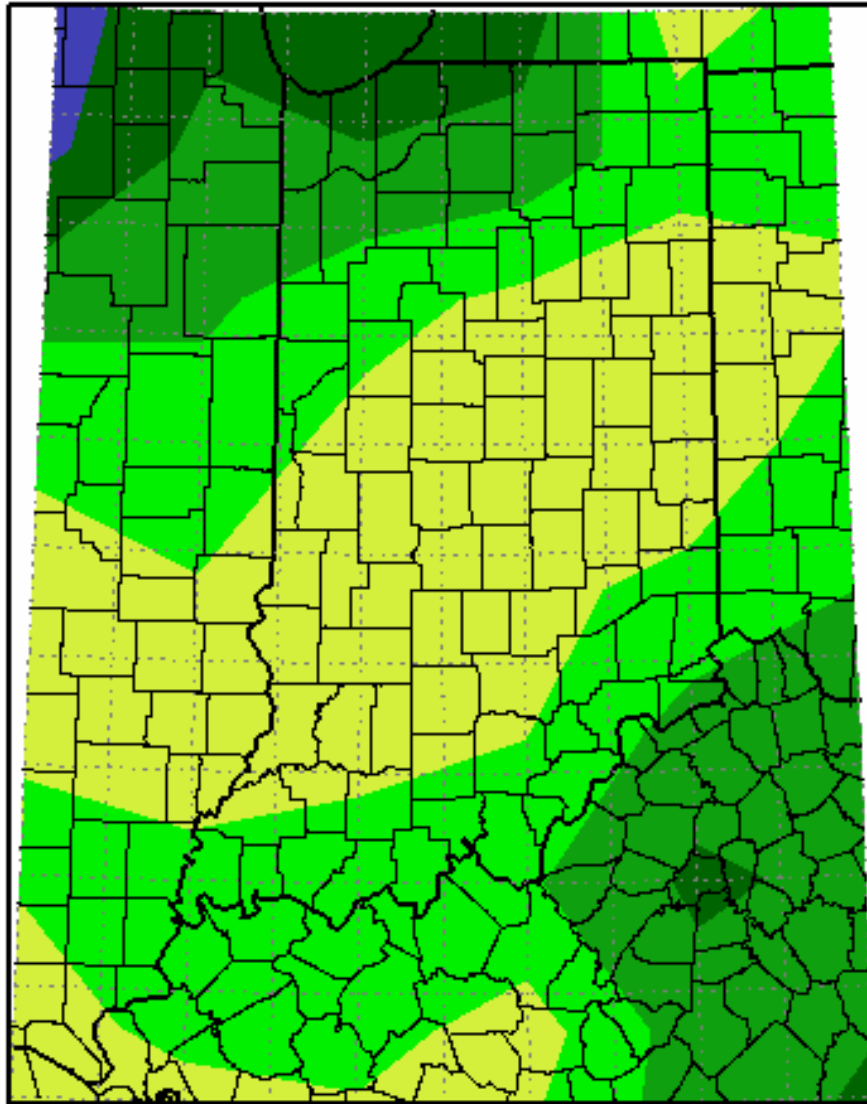


Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

**Total Precipitation Percent of Mean
July 1, 2007 to July 31, 2007**

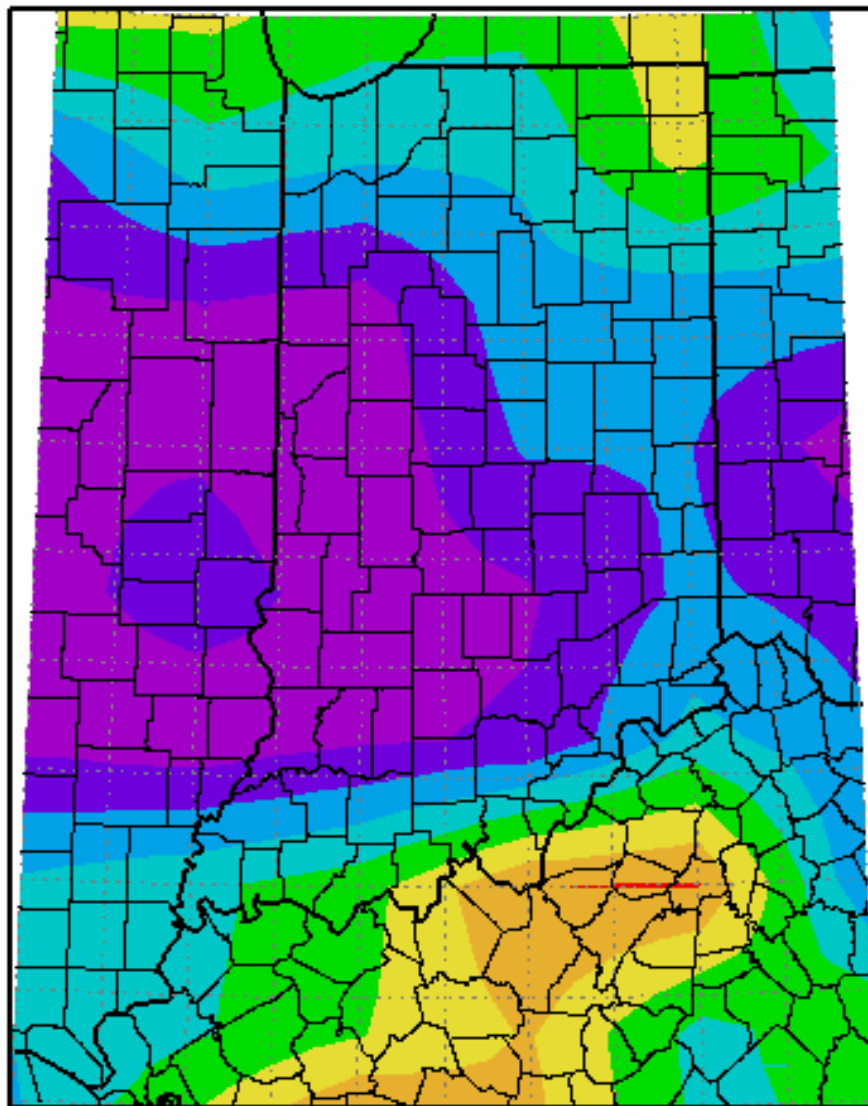


Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Average Temperature Departure from Mean in Degrees F
July 1, 2007 to July 31, 2007



Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Drought Summary from the U.S. Drought Monitor

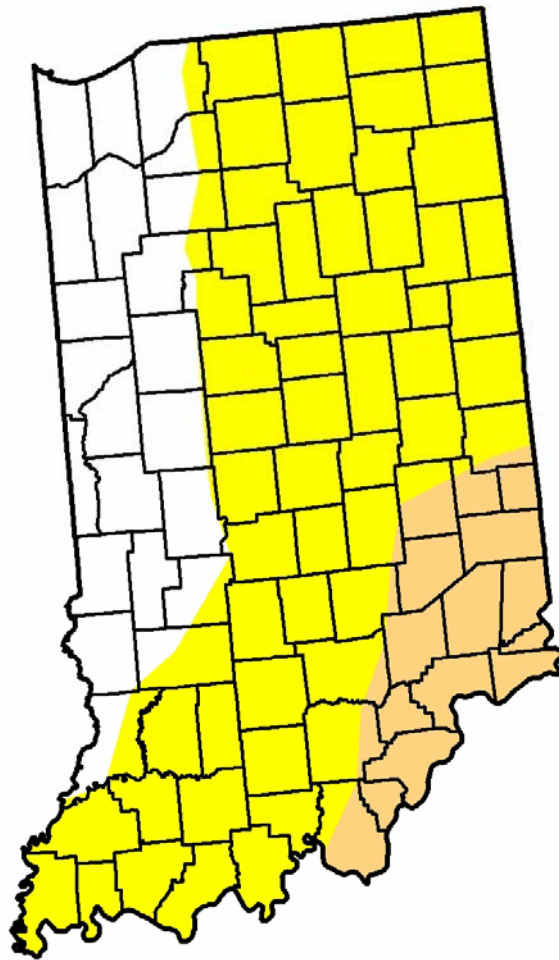
Below is a drought summary for the state of Indiana from the U.S. drought monitor. Areas in white are not experiencing any drought. Yellow areas are abnormally dry, but not entirely considered a drought. Drought begins when the moisture levels become more severe, with beige, orange, red, and brown indicating 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, June July 31st has 18.01% of Indiana under no drought, and 81.99% of Indiana under at *least* D0 through D4 drought status. This is followed by 51.31% 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 estimation and reports throughout the state, so use this information as a general view rather than for specifics.

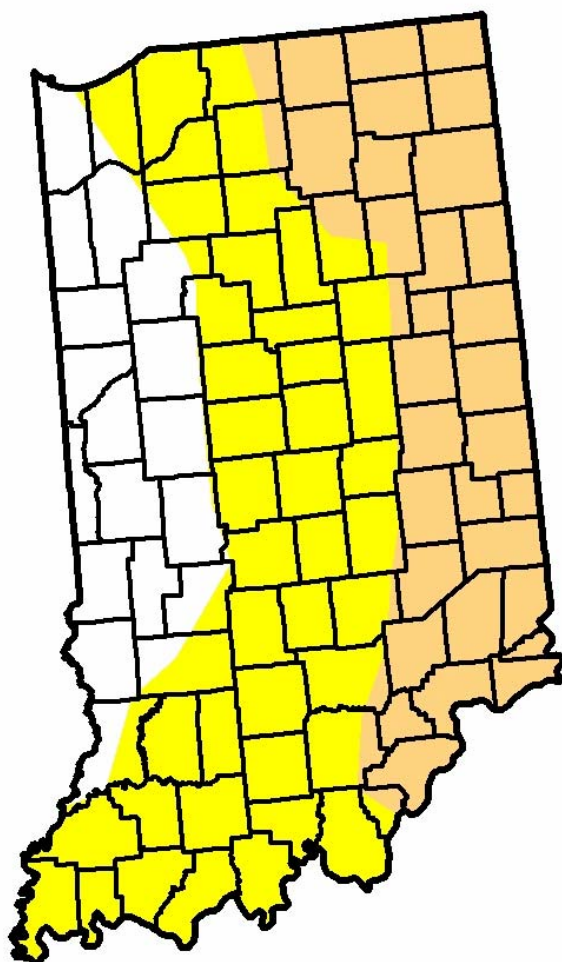
D0 Abnormally Dry
 D1 Drought - Moderate
 D2 Drought - Severe
 D3 Drought - Extreme
 D4 Drought - Exceptional

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
07/31/07	18.01	81.99	51.31	18.75	0.00	0.00
07/24/07	19.16	80.84	39.75	6.62	0.00	0.00
07/17/07	15.52	84.48	35.32	0.00	0.00	0.00
07/10/07	20.06	79.94	32.31	0.00	0.00	0.00
07/03/07	23.49	76.51	12.72	0.00	0.00	0.00

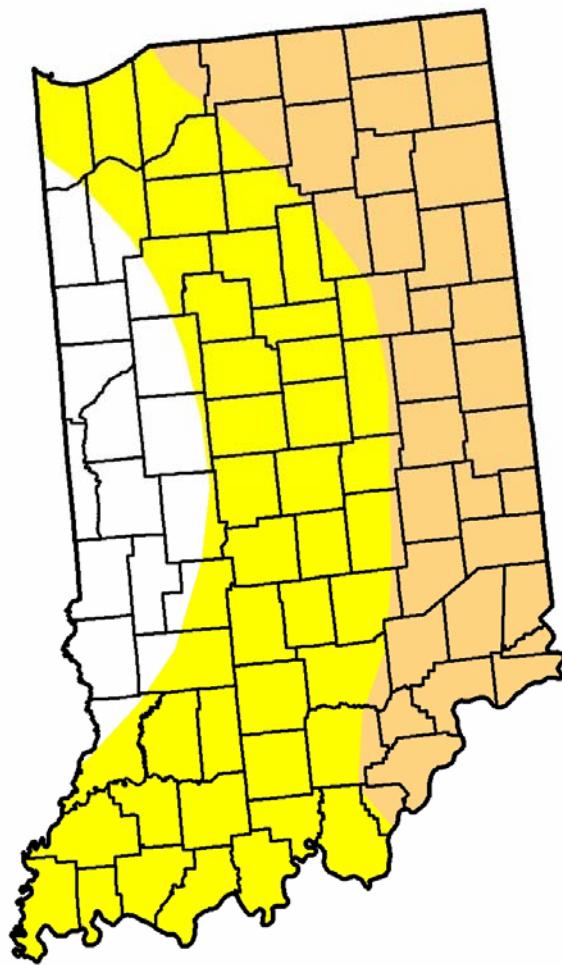
July 3rd Drought Summary



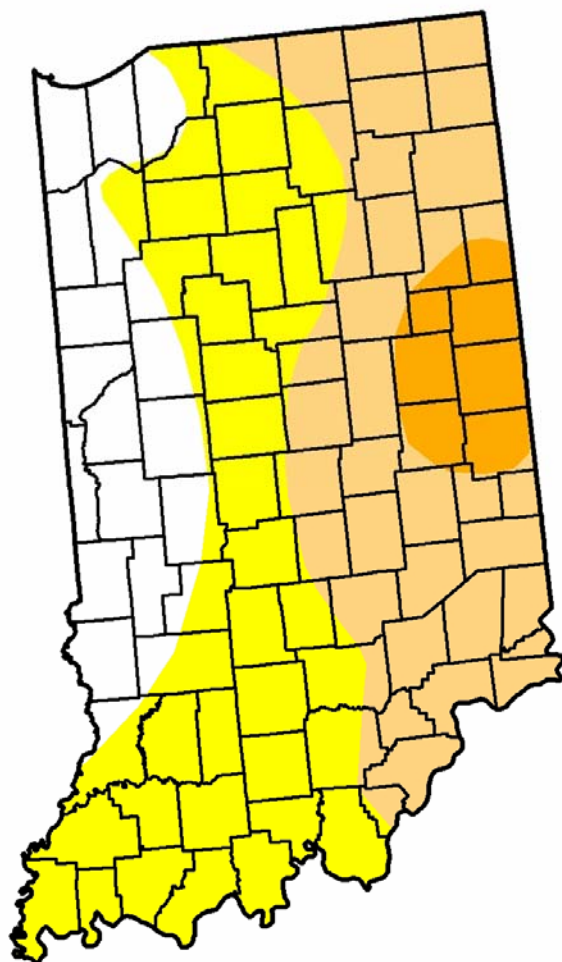
July 10th Drought Summary



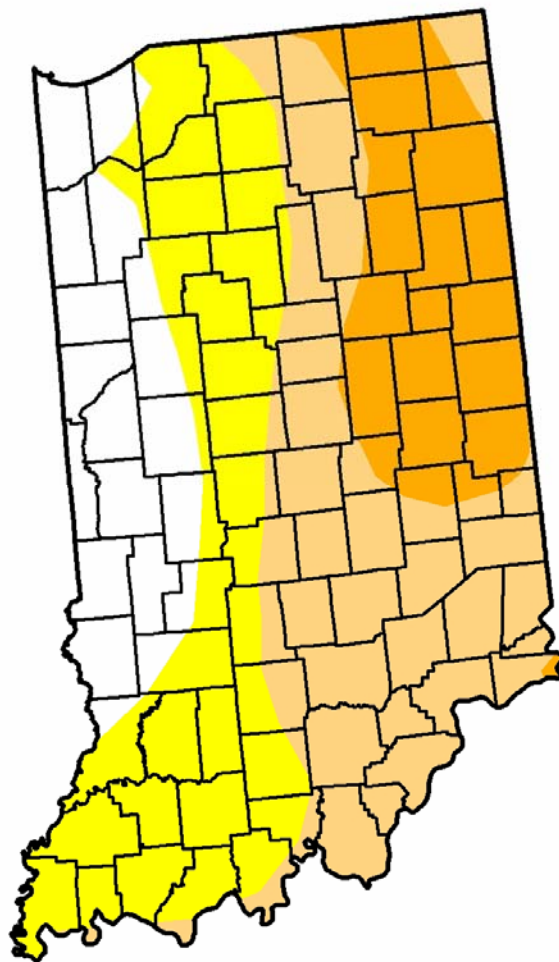
July 17th Drought Summary



July 24th Drought Summary



July 31st Drought Summary



*Contributions Provided by Al Shipe of the Indianapolis NWS
Office*