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Indiana State Climate Office

Monthly Weather Report

http://www.iclimate.org

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January 2010 Climate Summary

Summary

The classic January thaw doesn't occur every year in Indiana, but it did this time around. After a brutal cold start to 2010, milder air melted away our snow cover, just in time for another round of winter weather. Unlike last month with its rapid cycles of above and below normal temperatures, cold and warm spells alternated in a slow steady pattern of 12 to 13 days duration each. But the colder than normal days were more numerous and intense. Overall for January the statewide average temperature was 23.6° which is 2.4° below normal. This average ranks January 2010 as the 27th coldest among all Januarys in Indiana since 1895. This is not as cold as January last year which ranked as 13th coldest with an average temperature of 21.2°. Another cold January was in 2003 at 21.9° in 19th place. But how can one forget the coldest January on record in 1977 with its average temperature of just 10.8° !

Colder months usually mean fluffy snowfalls with less water content, that is, less than normal precipitation. Precipitation for the month averaged about 1.10 inch in northern Indiana, 1.35 inch in central, and 2.10 inches in the south. Average statewide total precipitation was 1.51 inches, about two thirds the normal amount of 2.44 inches. This ranks the month as the 23rd driest in 115 years of statewide records. The most recent January that was drier was in 2003 at 1.41 inches total precipitation which ranks in 20th place. Even drier Januarys occurred in 2001 with 1.08 inch in 11th place and the driest of all in 1981 with a skimpy 0.44 inch total. January total snowfall was extremely variable across the state, generally ranging from 2 to 16 inches away from Lake Michigan and between 11 and 40 inches in the lake effect snow belt.

Slippery roads due to wind blown snow and freezing rain caused vehicle slide offs in many counties this month but no reports of fatalities have been received. Some schools in at least 7 counties were closed or start times delayed during the freezing rain event on January 21st. The early month cold had an impact on energy and agricultural sectors of the economy. Energy prices had rallied as the demand for heating oil and fuel increased with the cold weather. Minor flooding was noted on the Eel River in Wabash county on January 25th. The Wabash River also had minor flooding for a few days in six counties in west central Indiana.

January 1st – 10th

An arctic air mass gripped Indiana and the Midwest at the dawn of this new year and would not let go. Bitter cold persisted throughout these first ten days of 2010 with temperatures well below normal each day. On January 2nd statewide averaged temperatures hit bottom at 18° below normal

and warmed slowly, to 10° below normal by January 5th and to 8° below normal on January 8th. Cold air reinforcements arrived from Canada the next day as temperatures again dipped to 12° below normal. Overall for the interval temperature departures averaged 12° below normal. Typically at the start of a new year daily maximum temperatures should range from 31° to 39° north to south across our state. Daily minimums would be expected to vary from about 19° in far northern Indiana to 25° in the far south.

Precipitation the first five days of the year was light but persistent in northern Indiana. The lake effect 'machine' generated near constant snowfalls in counties where a slow moving Canadian high pressure center pumped cold north winds across Lake Michigan. Central and southern Indiana remained dry during this time. By January 6th the narrow high pressure ridge extended from Canada into Texas but then was split across the middle by a storm building in Oklahoma and moving northeast towards Indiana. This storm developed into the first major snowstorm of the winter season in Indiana, collecting lots of moisture from the Gulf of Mexico on its way to dumping several inches of snow across the state on January 7th. The storm raced eastward to New England, but leftover moisture continued to add snow to the ground the next day. A couple of dry days followed the storm's departure. An Alberta clipper approached Indiana at the close of the ten day interval but this system was rather dry.

Snowfall totals for the ten days generally ranged from 2 to 4 inches across southern Indiana and 4 to 7 inches in central Indiana. In northern Indiana 7 to 10 inches was common but up to 36 inches fell near Lake Michigan. The heaviest one day snowfall reported was 10.8 inches at Laporte on January 2nd. The liquid equivalent of all this snowfall is reported as precipitation. For the ten day interval precipitation averaged about 0.45 inch in northern Indiana, and around a quarter inch in central and southern Indiana. These totals are actually far below the normal precipitation expected for this ten day interval, which is near 0.70 inch in northern Indiana, about 0.75 inch in central, and 1.05 inch in southern Indiana. The largest single day precipitation amount reported was 0.65 inch on January 8th at Valparaiso.

The cold and snow had the usual expected impacts on highway travel. While interstates were generally in good shape overall, scattered slick spots caused by icing of highways as snow blew across roads were causing several slide offs and crashes.

The persistent cold is having an impact on energy and agricultural sectors of the economy. Energy prices have rallied as the demand for heating oil and fuel has increased with the cold weather. Home heating oil is running 50 cents a gallon higher than last winter at this time and retail gas prices have soared to over $2.70 a gallon, the highest cost since October 2008. Natural gas prices are still below last winter but have risen sharply from decade low prices just a few months ago. Demand for animal feed has risen but truck and rail deliveries have slowed in the frigid conditions, delaying movement of livestock to market.

January 11th – 17th

Nearly two weeks of unseasonable cold in Indiana finally gave way to normal, even much above normal, temperatures as a mid-January thaw arrived. A major shift in the wind patterns high in the atmosphere opened the door to warmer temperatures from our south. On January 14th a marked

split in the jet stream caused one branch to bottle up arctic cold in Canada while a southern branch routed storms from Arizona to southeastern states. This pattern is more typical of El Nino in winter, leaving Indiana drier and warmer than normal, beyond the reach of the main storm track.

The cold spell was already relenting as this week began. Statewide average temperature departures were 8° below normal on January 11th, then moderated to just 1° below normal over the next two days. Then came January 14th at 5° above normal, the first day this year with a warmer than normal state average temperature. The thermometer bounced to 10° above normal the next two days, the warmest of the week. Most of the energy carried in the warmer air was being used to melt old snow cover and less to warm the air. Ground fog was becoming more common as the snow cover refrigerated the warm air flow and released its moisture, blocking any sunshine warmth. Daily temperatures responded in part to these factors and dropped to about 4° above normal as the week came to a close. Overall for the week statewide temperatures averaged 3° above the usual normal for this time of year. Normal daily maximum temperatures range from 30° in far northern Indiana to 34° in central and 39° in the extreme south. Typical daily minimums would vary from 16° to 22° north to south across our state.

The principal storm tracks moved away from Indiana this week. This is reflected in precipitation totals which averaged just 0.03 inch in southern Indiana while northern and central sections were dry or nearly dry. Precipitation fell at the start and end of the week with dry days sandwiched between. Typically this week in January we would expect precipitation to total near 0.40 inch in northern and central Indiana and right about a half inch in the south. Only northern Indiana received significant snowfall. About 1 to 3 inches of snow fell in counties near Lake Michigan while less than an inch fell generally elsewhere across northern Indiana. Only a dusting or no snow was reported in central and southern parts of the state.

January 18th – 24th

The January thaw continued through a second week as state average temperatures held above normal every day. A trough of low pressure south of Alaska early in the week swelled south and eastward into a huge upper atmospheric pressure wave, forcing in response an atmospheric ridge to form over eastern states. Indiana found itself on the backside of this ridge by January 23rd , a perfect position to enhance the transport of warm air from the Gulf of Mexico and cause local air temperatures to rise even higher as the week came to an end.

From January 18th until the 23rd, state average temperatures remained about 7° above the daily normal. Then with the enhanced atmospheric ridge in place, the daily temperature mean peaked at 17° above normal on January 24th. Overall for the week temperatures averaged 9° above normal for this time of year. Typically daily maximum temperatures should range from 33° in northern Indiana, to 36° in central, and 41° in the far southwest. Daily minimums would be expected to vary from 18° in northern, to 20° in central, and 24° in far southern Indiana.

The first two days of the week were mostly dry. A southern storm system moving northeast to Indiana produced two days of rain and freezing rain on January 20th and 21st as warmer air slid above cold air still hugging the ground. Precipitation amounts generally ranged from a few tenths in northern Indiana to nearly an inch in the south. The heaviest one day amount was 1.19 inch on

January 22nd, reported by the CoCoRaHS observers in Huntingburg and Boonville. After a short one day break another storm brought about a quarter inch of rain to northern and central Indiana and a third inch to the south at the end of the week. Overall for the week precipitation totaled near 0.45 inch in northern Indiana, 0.80 inch in central, and 1.45 inch in southern Indiana. New Albany reported the highest weekly total at 2.14 inches. Typically for this week in January about 0.50 inch of precipitation is expected in the north, about 0.60 inch in central, and 0.85 inch in southern Indiana. With the warmer temperatures snowfall was scarce in Indiana this week. Only about 0.1 inch fell in the Lake Michigan effect region but it was snowless elsewhere across the state.

Freezing rain was especially a problem in the northern half of Indiana on the morning of January 21st. Many schools were cancelled or delayed. Benton county issued a Level 2 travel advisory, requesting local residents to limit trips to essential travel only. Delaware County officials reported 24 slide-offs and accidents after 6 am. Randolph County was under a travel advisory Thursday morning, reporting more than 15 slide offs and accidents. No serious injuries were reported in these crashes. Schools were closed in Delaware, Henry, Jay, Blackford, and other counties. While roadways improved as the morning went on, sidewalks and parking lots remained ice covered until noon. Injuries due to slip and falls by pedestrians in these areas were common.

January 25th – 31st

The January thaw lasted for 12 days. Cold air arrived behind a new Canadian front on January 26th and below normal temperatures returned to finish out the month. Reinforcements arrived two days later as another surge of cold air poured into Indiana on January 28th and forced precipitation eastward out of our state. A high pressure system quickly took hold and fortunately just in time. A number of massive winter storms have crossed the nation this winter and yet another formed in Oklahoma and Arkansas this week. The high pressure system resident over Indiana blocked movement of this storm northward. The storm with its heavy snow and wintry mix rode the southern branch of the jet stream eastward to Georgia and the Carolinas, brushing Indiana's far southern counties with a few inches of snow. The rest of our state was largely untouched, a now familiar story this winter. By the close of the month the storm was gone and another fair weather system had arrived to greet the new month of February.

As the January thaw vanished temperatures slid downward this week. The week began overall at 4° above normal but fell to 4° below normal the next day. By January 29th it was a much colder 11° below normal. The month exited at 8° below normal. Overall for the week the statewide average temperature was 5° below the normal for the final week of January. Typically daily maximum temperatures the final week of January range from 32° in far northern Indiana to 35° in central and 40° in the south. Daily minimums usually vary from 17° north to 18° central and 23° in extreme southwest Indiana.

As the week became colder more precipitation fell as snow and with less water content. A few hundreths inch of moisture was common each day with almost no precipitation by week's end. For the week precipitation totaled about 0.20 inch in northern Indiana, 0.30 inch in central, and about 0.40 inch in the south. Normally about 0.40 inch should fall in the north, 0.55 inch in central, and 0.65 inch in southern Indiana this final week. Due to the winter storm passage south of Indiana the snowfall pattern this week seemed backwards. The heaviest weekly snow total was 8.2 inches in

Evansville! Generally this week 3 to 8 inches covered southern Indiana, while 2 to 3 inches fell in central, and up to 2 inches fell across northern Indiana. Near Lake Michigan 1 to 2 inches of snow fell for the week.

Rainfall last week caused minor flooding this week of the Eel River in Wabash county on January 25th. The Wabash River also had minor flooding for a few days in Carroll, Clinton, Fountain, Montgomery, Tippecanoe, Warren and other counties to the south. Winter weather advisories were posted on January 26th for west central Indiana counties due to blowing snow but no significant traffic incidents were reported.

January Summary

Temperature

Region	Temperature	Normal	Deviation
Northwest	20.9	23.0	-2.1
North Central	21.9	23.2	-1.3
Northeast	22.5	23.1	-0.6
West Central	22.1	25.1	-3.0
Central	23.1	25.3	-2.2
East Central	22.6	24.7	-2.1
Southwest	26.7	29.9	-3.2
South Central	26.3	29.9	-3.6
Southeast	26.2	29.1	-2.9
State	23.6	26.0	-2.4

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	1.22	1.88	-0.66	65
North Central	1.18	2.05	-0.87	58
Northeast	0.88	1.98	-1.10	44
West Central	1.33	2.28	-0.95	58
Central	1.40	2.34	-0.94	60
East Central	1.34	2.29	-0.95	58
Southwest	2.03	3.00	-0.97	68
South Central	2.19	3.10	-0.91	71
Southeast	2.04	3.00	-0.97	68
State	1.51	2.44	-0.92	62

Winter to date (December - January)

Temperature

Region	Temperature	Normal	Deviation
Northwest	24.4	25.8	-1.4
North Central	24.9	25.9	-1.0
Northeast	25.1	25.9	-0.7
West Central	25.8	27.8	-1.9
Central	26.4	28.0	-1.6
East Central	26.1	27.4	-1.3
Southwest	30.1	32.2	-2.1
South Central	29.4	32.2	-2.8
Southeast	29.2	31.6	-2.4
State	26.9	28.6	-1.7

Precipitation

Region	Precipitation	Normal	Deviation	Percent of Normal
Northwest	3.97	4.53	-0.57	87
North Central	4.02	4.84	-0.82	83
Northeast	3.95	4.67	-0.71	85
West Central	5.00	5.25	-0.25	95
Central	4.83	5.33	-0.49	91
East Central	4.35	5.16	-0.81	84
Southwest	6.14	6.53	-0.39	94
South Central	5.46	6.66	-1.20	82
Southeast	5.21	6.41	-1.20	81
State	4.82	5.49	-0.67	88

2010 Annual (same as January)

Temperature

Region	Temperature	Normal	Deviation
Northwest	20.9	23.0	-2.1
North Central	21.9	23.2	-1.3
Northeast	22.5	23.1	-0.6
West Central	22.1	25.1	-3.0
Central	23.1	25.3	-2.2
East Central	22.6	24.7	-2.1
Southwest	26.7	29.9	-3.2
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Precipitation

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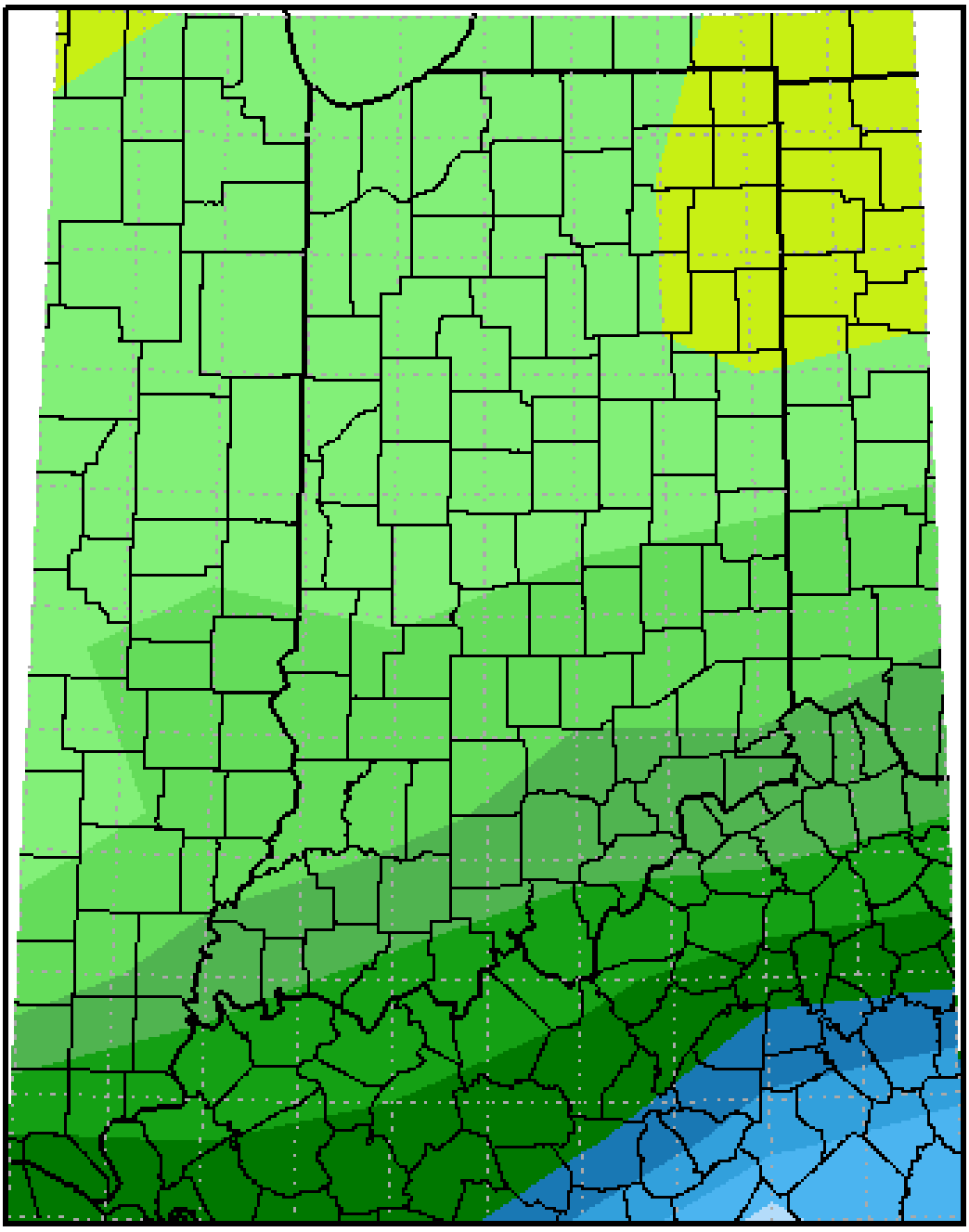
State	1.51	2.44	-0.92	62

Total Precipitation in Inches
January 1, 2010 to January 31, 2010



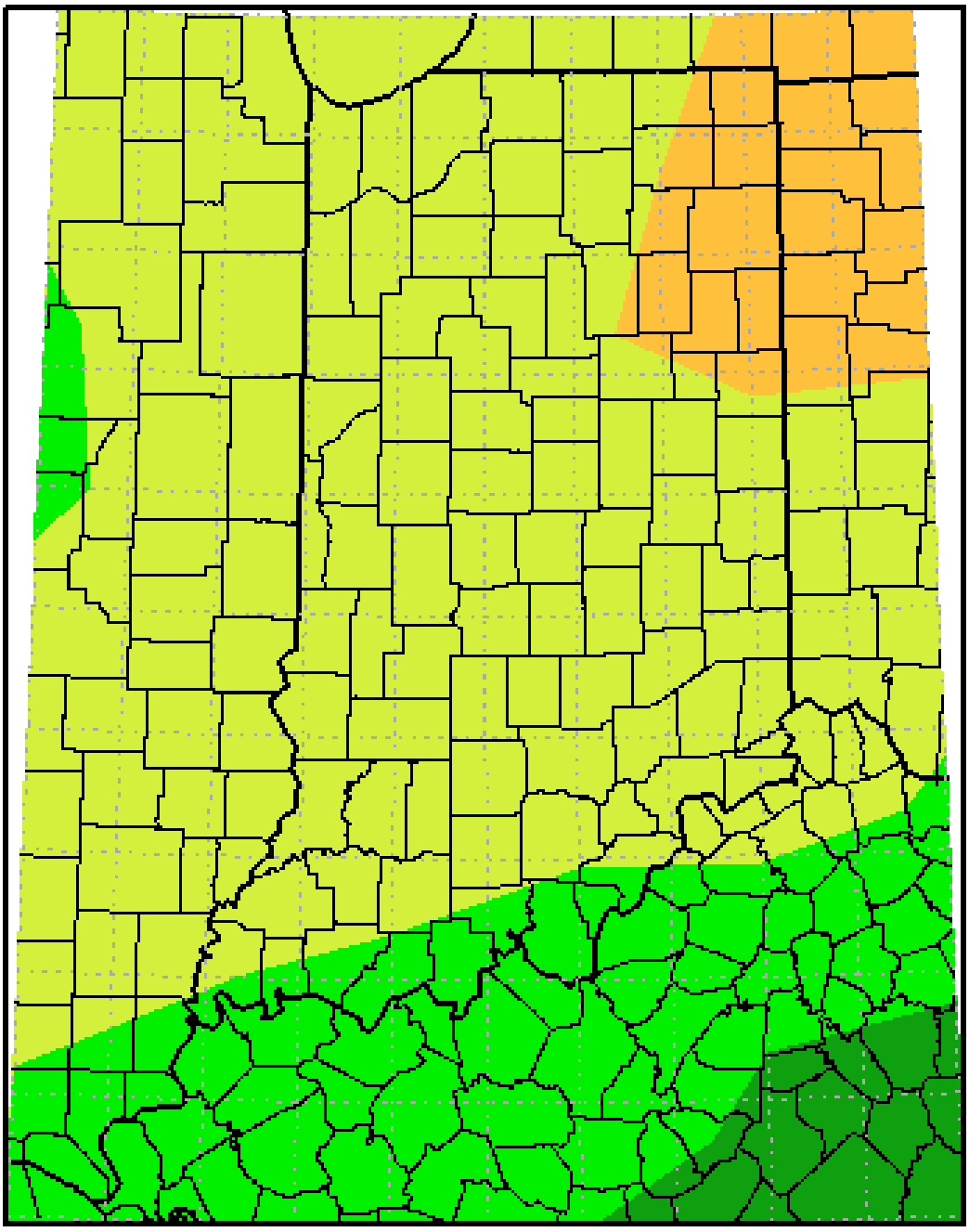
0.01 0.1 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6

NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Total Precipitation Percent of Mean
January 1, 2010 to January 31, 2010



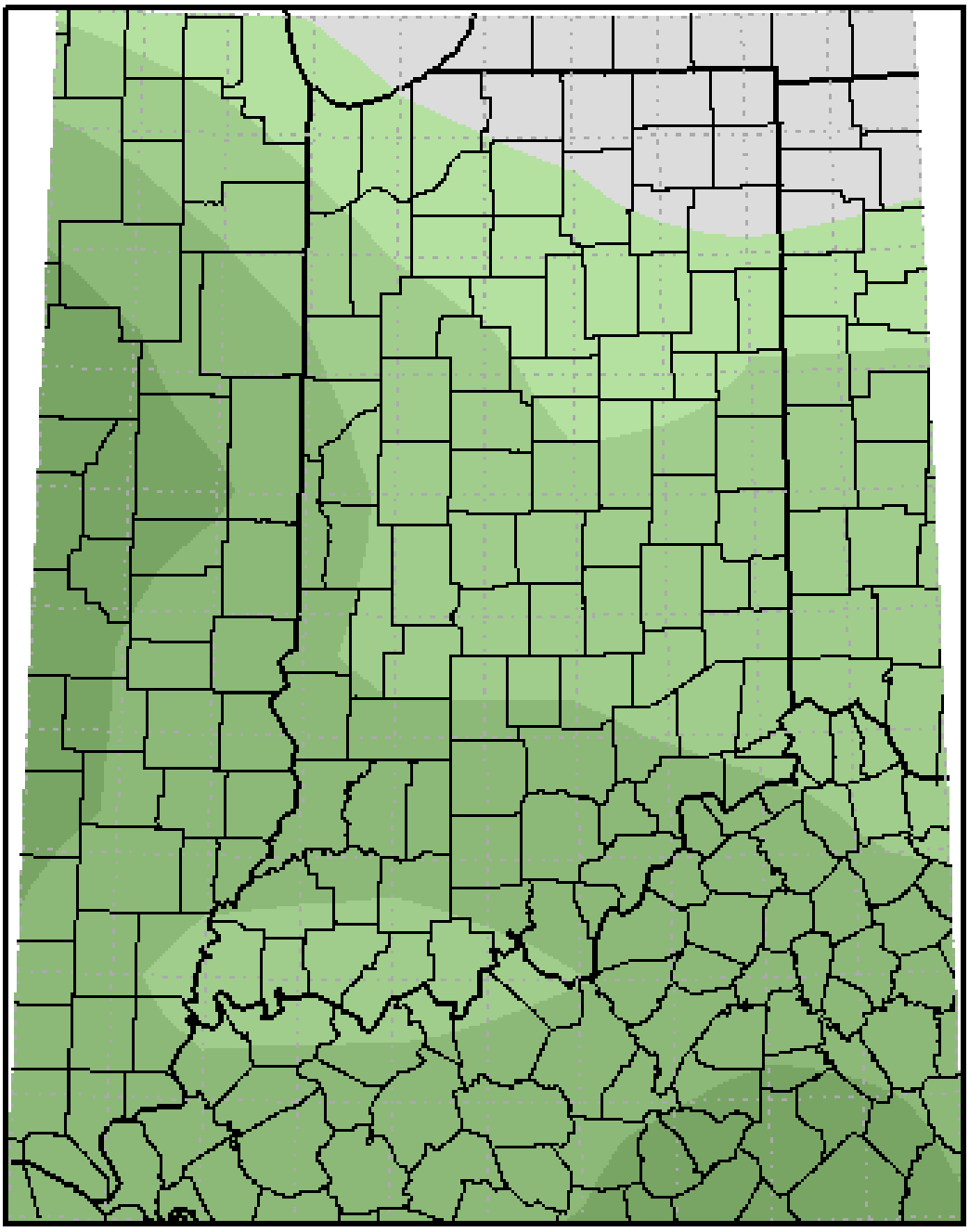
0 2 5 10 25 50 75 100 125 150 175 200

NOAA Midwestern Regional Climate Center

Illinois State Water Survey

Champaign, Illinois

Average Temperature Departure from Mean in Degrees F
January 1, 2010 to January 31, 2010



−6 −5 −4 −3 −2 −1

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, January 5th 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.

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
01/26/10	100.00	0.00	0.00	0.00	0.00	0.00
01/19/10	100.00	0.00	0.00	0.00	0.00	0.00
01/12/10	100.00	0.00	0.00	0.00	0.00	0.00
01/05/10	100.00	0.00	0.00	0.00	0.00	0.00
12/29/09	100.00	0.00	0.00	0.00	0.00	0.00

December 29th Drought Summary

January 5th Drought Summary

January 12th Drought Summary

January 19th Drought Summary

January 26th Drought Summary