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and
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Indiana State Climate Office

Monthly Weather Report

Mar 7, 2012



<http://www.iclimat.org>

February 2012 Climate Summary

Month Summary

The mild winter continued as February lengthened the span of above normal temperatures in Indiana to four consecutive months. The wet pattern this season did not continue however. February finished with below normal precipitation, breaking a five month wet cycle that began last September. February almost squeaked by as a rather quiet weather month in Indiana until that extra day on our leap year calendar. The highlight of this month was an EF-1 tornado on Leap Day which touched down in Warrick county. Fortunately there were no injuries or deaths. It is interesting that this Leap Day extended February just long enough to record its first tornado of the month and the 6th Indiana tornado of 2012. Recall that tornadoes also occurred on the final day of February 2011, which was of course, February 28th!

The state average February temperature of 35.1° F was 4.5° F above the month normal and ranks as the 20th warmest February since 1895. The most recent February that was warmer was the 35.5° F state average in 2002, ranking in 18th place overall. Another recent warm February occurred in 2000 with a 36.6° F average, good for 11th place. The warmest February on record came in 1954 when the average temperature was 39.5° F. The highest local daily temperature in February 2012 was 70° F, registered in 5 cities including at Boonville on February 23rd, Tell City on February 24th, and at Indianapolis, Boonville, and Evansville on February 29th. The coldest local temperature was 3° F on February 12th at Francesville and Knox. The day split for February 2012 was nearly identical to that for the previous two months with 8 days of below normal temperatures, no days at normal, and 21 days with above normal temperature. On 7 of these days temperatures were at least 10° F above normal. On one day temperatures were at least 20° F above normal and on another day at least 10° F below normal.

February 2012 was the 32nd driest February on record with a state average precipitation of 1.56 inch. It was a bit drier in February 1996 when the state average precipitation was 1.29 inch which ranks in 20th place overall. More recently the 0.93 inch amount in February 2004 falls into the 11th driest slot. The driest February since 1895 is 0.34 inch as recorded in 1947. The largest local single day amount in February 2012 was 1.60 inch which fell on February 12th at Huntington and again on February 15th at Graysville. On a percentage basis precipitation was near normal across northern Indiana, about 60% of normal in central areas and half of normal across the south. Generally precipitation fell on about 13 days across the state this month.

Snow days were far less common this month than in January. Widespread snow fell on about 4 days this month compared to 13 days last month. The highest snowfall total for February was 13.0 inches as measured by the CoCoRaHS observer in Laporte. Area snowfall totals in lake effect

counties ranged from about 7 to 13 inches and about 4 to 7 inches elsewhere across northern Indiana. Totals in central Indiana were about 1 to 4 inches while less than an inch was measured in southern counties. A February snowfall distribution map is shown later in this report.

Two severe weather events occurred this month. On February 28th one inch hail fell in Wadesville. No damage reports were received in this event. The next day this storm system produced an EF-1 tornado which touched down at Newburgh in Warrick county. Damage related to this tornado is described in the last weekly narrative which follows below.

February is still a winter month despite the intervention of spring storms. Very localized heavy snow surprised residents of northeast Indiana on February 4th. Freezing fog on roadways this same week caused some minor traffic problems. A week later on February 11th a very narrow band of heavy lake effect snow impacted northwest counties. Lighter snowfalls came around February 25th. Despite such locally heavy snowfalls the warmer than normal temperatures this month meant snow cover was brief, completely melting within one to two days.

February 1st – 7th

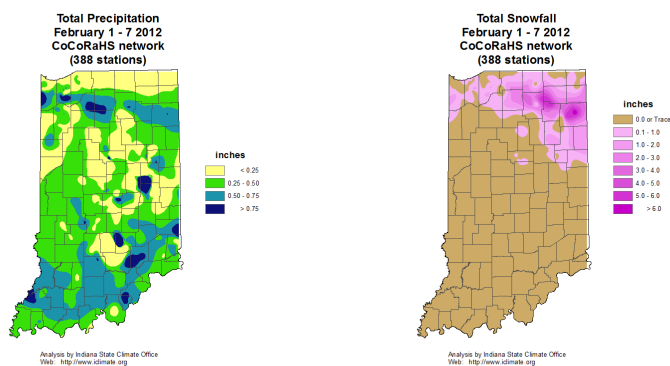
Temperatures soared this week despite the passage of two cold fronts through Indiana at the start and end of the 7 days. Daily state average temperatures kicked off the month at a lofty 21° above normal before falling to 13° above normal the next day after the first cold front pulled through. Then moisture in a storm system far to the south of Indiana overran a warm front, spilling rain and snow into our state on February 4th. The precipitation and cloud cover of this distant storm dropped Indiana temperatures a few more degrees to 11° above normal. After the storm the temperature rebounded a bit to 13° above normal again. As a new cold front approached Indiana at the close of the week, state average temperatures slid to their coolest point of the week at 9° above normal. It was for certain an unusually mild week overall with the state weekly average temperature at 13° above normal. Typically this first week of February daily maximum temperatures should range from 33° in extreme northern Indiana to 44° in the far southwest. Daily minimums normally vary from 19° to 26° north to south across the state.

There was little rain with the first cold front at the start of the month. But the moisture which ran up and over north of the advancing warm front generated 0.3 to 0.4 inch of precipitation in Indiana in the middle of the week. Total weekly precipitation was about 0.3 inch in north and central Indiana and 0.5 inch in the south. These totals are near 90% of normal in the northern third of the state, around 60% in central, and 70% of normal across the south. The heaviest rain and snow amounts were recorded by CoCoRaHS volunteers on the morning of February 4th. The observer in Lakes of the Four Seasons found 0.77 inch in the gage that day, while Warsaw measured 0.72 inch, and two reports of 0.70 inch and 0.68 inch came from Fort Wayne. The weekly highest total precipitation was 0.88 inch at Galena and 0.77 inch at Floyds Knobs and North Vernon.

Residents of northeast Indiana were surprised to see snowfall on February 4th. A very narrow band of locally heavy snowfall was limited to Kosciusko, Noble, Whitley, Dekalb, and Allen counties in Indiana. The snowfall was enhanced by a strong jet streak in the upper atmosphere and a strengthening storm system over Kansas. For much of this week a high amplitude pressure wave in the upper atmosphere over western states has split the jet stream into northern and southern branches of flow. These branches have tended to merge into a single stream as they approach

Indiana, favoring the travel of storms into our region although few have formed and done so. Some of the heavier snow totals on February 4th included reports of 6.8 inches and 5.7 inches from CoCoRaHS observers in Fort Wayne, and 5.5 inches in Columbia City. This was the only snowfall during the week so also represents the heaviest snowfall totals in the state over the 7 days. The snowfall map below illustrates this regional snowfall pattern.

The calming effect of high pressure and lack of storms in Indiana this week has led to several mornings of heavy fog, and where it is cold enough, freezing fog. The saturated soils along with clear skies has favored the development of radiation fog and freezing fog each morning. Despite the visibility problems and slickened highways in spots, no injuries or deaths related to the abundance of fog was noted this week.



February 8th – 14th

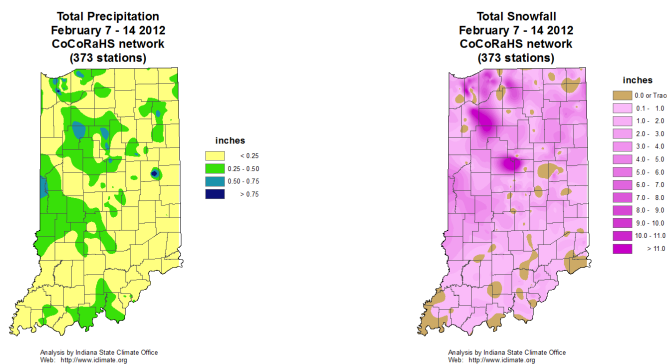
An arctic cold front over the weekend brought the coldest weather to Indiana in nearly 3 weeks. It has also been that long since daily statewide temperatures last averaged below normal. A heavy but narrow band of lake effect snowfall impacted communities in northwest Indiana as the cold wave rushed in on February 11th.

A cooling trend had already begun on February 5th as each successive day was cooler than the day before. From a peak that day of 13° above normal, the state average temperature had dropped to 8° above normal by February 8th. Two days later the 3° above normal reading would end the warm spell. The arctic cold front arrived, the only front to pass through Indiana this week, and temperatures dipped to 10° below normal the next day. The cold weather did not stay long. Temperatures moderated a few degrees each day, closing out the week just 1° below normal. The early warmth and late cold were equally offset over the 7 days. The weekly average temperature settled very nearly at normal. Typically for this week of February daily maximum temperatures should range from 35° in far northern Indiana to 45° in southwest counties. Daily minimums normally vary between 19° and 26° north to south across the state.

Precipitation, which includes rain and the water equivalent of snowfall, was light all week long. A few hundredths of an inch was recorded at the start of the week as a prior cold front departed the

area. The arctic front then moved through Indiana quickly and did not wait to tap into moisture from the Gulf of Mexico. It was cold air flowing over Lake Michigan behind the arctic front that triggered the lake effect snowfall in northwest Indiana. At the conclusion of this week a new storm was approaching Indiana which contributed to the weekly total. That weekly precipitation total averaged about 0.3 inch across northern Indiana and 0.2 inch in central and southern areas; just shy of normal in northern Indiana, half of normal in central counties, and about a third of normal across the south. The heaviest single day precipitation was recorded on February 11th in lake effect towns and cities. The CoCoRaHS observer in Lakes of the Four Seasons noted 0.68 inch while three Valparaiso volunteers measured 0.61 inch, 0.60 inch, and 0.51 inch in liquid equivalent. For the week the Lakes of the Four Seasons gage held 0.73 inch while Valparaiso had 0.69 inch. Muncie reported 0.66 inch for the week.

A light snow up to an inch fell across most of Indiana at the start of the week but with the warm temperatures quickly melted. Snowfall amounts of 6 to 10 inches fell in a narrow band about 10 miles wide in Lake and Porter counties on February 11th as northwest winds sweeping the length of Lake Michigan converged with northeast offshore winds from Michigan. Most areas outside the lake effect region received up to 4 inches during this storm. As a new cold front approached Indiana at the end of this week another 1 to 2 inch snowfall covered the state. The greatest snowfall total noted this week was 11.4 inches in Wheatfield with Lake of the Four Seasons close behind at 10.5 inches. A CoCoRaHS observer in Valparaiso measured 10.0 inches and Portage had 9.0 inches. Like previous snows this winter, snowfalls have tended to be frequent but light outside the lake effect region and melt within a few days. A map showing the total snowfall this week across the state is shown here.



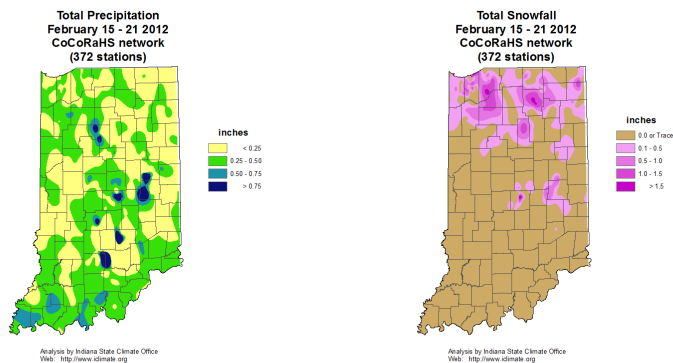
February 15th – 21st

A high amplitude pressure wave in the upper atmosphere last week set the stage for a single cold front to transport arctic air into Indiana, our biggest weather shift in 3 weeks. The intense pressure wave dissolved into several ripples of smaller waves as the atmosphere over our region gradually calmed down as this week progressed. The pace of fronts moving through Indiana increased with these pressure ripples, allowing little time to transfer significant moisture into our state from the surface of the Gulf of Mexico.

The week began on the warm side with the state average temperature at 6° to 8° above normal the first few days. An occluded front moved through Indiana on February 16th, cooling temperatures to 2° above normal the next day. A reinforcement of cold air arrived behind a cold front on February 18th, stepping our temperatures down still more into the subnormal category at 4° below normal the next day. The third front of the week, another occluded system, passed through Indiana at the end of the week with only minor temperature changes to 2° below normal. For the week overall state temperatures averaged about 2° above normal. Usually at this point in February daily maximum temperatures should range from 39° to 50° north to south across our state. Daily minimums normally vary from 24° in far northern counties to 31° in the far southwest.

Not only was it generally warm but also mostly dry. The occluded front at the start of the week produced about a quarter inch of precipitation. The cold front in mid week was a dry front with almost no precipitation reported in Indiana. Overall for the week precipitation totals were about 0.3 inch statewide, that is, barely more than half the normal amount. The largest single day precipitation reports included 0.55 inch at Westfield and 0.53 inch in Milford on the morning of February 16th. Then on February 21st two CoCoRaHS observers in Logansport each found 0.50 inch in their gages at dawn, the highest amount in the state that day. Two volunteers in Logansport noted the highest CoCoRaHS totals for the entire week with 0.69 inch and 0.64 inch.

The week was virtually snow free until the very end. On February 21st most areas in the northern third of Indiana received up to 1.6 inch of snow. Except for localized spots in east central Indiana no snow fell this week throughout the rest of the state. The communities of Hanna and Warsaw reported the maximum 1.6 inch snowfall on the morning of February 21st Other observers in Warsaw and Wanatah were close behind with 1.5 inch of new snow. As no other snow fell this week these numbers also represent the highest weekly snowfall in the state.



February 22nd – 29th

Winter or spring? The answer this week is “yes”. This is the final week of meteorological winter but nature mixed in ingredients of the old and new seasons for us. Residents of northern Indiana counties received a few inches of snow between February 22nd and 25th as two cold fronts in as many days moved quickly through the state. On Leap Day it seemed more like spring as an EF-1

tornado touched down in extreme southwest Indiana. Interestingly it was this leap year that extended February just long enough to record its first tornado of the month

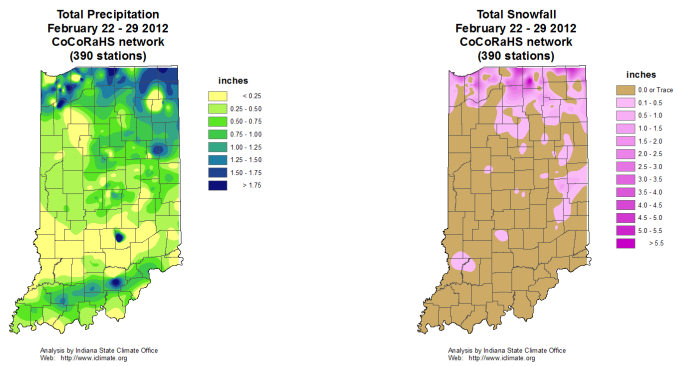
State average temperatures transitioned gradually each day with warm peaks at the start and end of the week and subnormal cold in the middle. Temperatures began nearly 6° above normal on February 22nd, cooling a few more degrees each day to 4° below normal by February 25th in response to the two cold fronts. The trend then reversed with each successive day a little warmer, reaching 11° above normal to close out the month. Over the entire week state temperatures averaged 3° above normal. Normal daily maximum temperatures this time of year should range from 40° in far northern Indiana to 51° in the extreme southwest. Daily minimums typically vary from 24° to 32° north to south across the state.

Daily precipitation was frequent but light until the very end of the week. It was dry statewide on only two days. The snowfall on February 25th and rain on February 29th contributed most to the weekly precipitation total. The liquid equivalent week totals were about 0.9 inch across northern Indiana, 0.5 inch in central areas, and 0.4 inch in the south. This represents about 160% of normal precipitation in northern counties, 70% of normal in central Indiana, and 50% of normal in the southern region. The heaviest single day precipitation readings during the week included 1.20 inch in Stendal, 1.13 inch at Paoli, and 1.09 inch in Fredericksburg. The largest weekly totals were 1.85 inch and 1.71 inch as measured by two CoCoRaHS observers in Angola. A few other heavier weekly precipitation totals were 1.68 inch in Laporte and 1.67 inch in Lagrange and Hamilton.

Snow fell primarily in the Michigan lake effect region the first few days then throughout the northern third of the state on February 25th. It was this last snow day that produced the heaviest single day amounts for the week. The CoCoRaHS observer in Granger recorded a 3.8 inch snowfall on the morning of February 25th. A Goshen volunteer had 2.3 inches in the gauge while 2.0 inches was noted in Angola. The highest weekly snowfall totals included 5.7 inches in Goshen, with 5.0 and 3.9 inches at two locations in Angola. Valparaiso recorded 3.1 inches and Wakarusa had 2.9 inches for the week. See the weekly precipitation and snowfall maps below for a summary view.

The wildest weather of the month was saved to the very end. A warm front tapped into unstable air from our south. One inch hail was observed at Wadesville on February 28th but the bulk of severe weather in Indiana would come the next day. An EF-1 tornado touched down at Newburgh in Warrick county at 6am on February 29th and traveled on the ground for 2 miles. Along the way a garage was destroyed and roofs were lifted off two homes. Two businesses and 20 homes suffered partial roof damage. High winds toppled trees which brought down a dozen phone poles. Fortunately no injuries or deaths resulted from this tornado.

High winds caused damage to the east all along the Ohio River. Downed trees in Switzerland county tore down power lines while a fallen tree in Jefferson county shut down a major highway. More roof damage was reported in Clark county.



February 2012

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	32.0	28.0	4.0
North Central	31.9	27.5	4.4
Northeast	31.9	27.0	4.9
West Central	34.9	30.2	4.7
Central	34.9	29.9	5.1
East Central	34.1	28.9	5.2
Southwest	39.1	35.0	4.1
South Central	38.5	34.7	3.8
Southeast	37.5	33.6	3.9
State	35.1	30.6	4.5

Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	1.60	1.71	-0.10	94
North Central	1.91	1.82	0.09	105
Northeast	2.22	1.79	0.43	124
West Central	1.31	2.17	-0.86	60
Central	1.34	2.27	-0.94	59
East Central	1.33	2.15	-0.82	62
Southwest	1.42	2.88	-1.46	49
South Central	1.56	2.93	-1.36	53
Southeast	1.49	2.81	-1.32	53
State	1.56	2.29	-0.73	68

Winter (Dec 2011 - Feb 2012)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	31.8	26.5	5.3
North Central	31.9	26.4	5.4
Northeast	31.8	26.2	5.6
West Central	34.2	28.5	5.6
Central	34.3	28.6	5.7
East Central	33.7	27.9	5.8
Southwest	38.3	33.1	5.2
South Central	37.8	33.0	4.9
Southeast	37.2	32.2	5.0
State	34.6	29.2	5.4

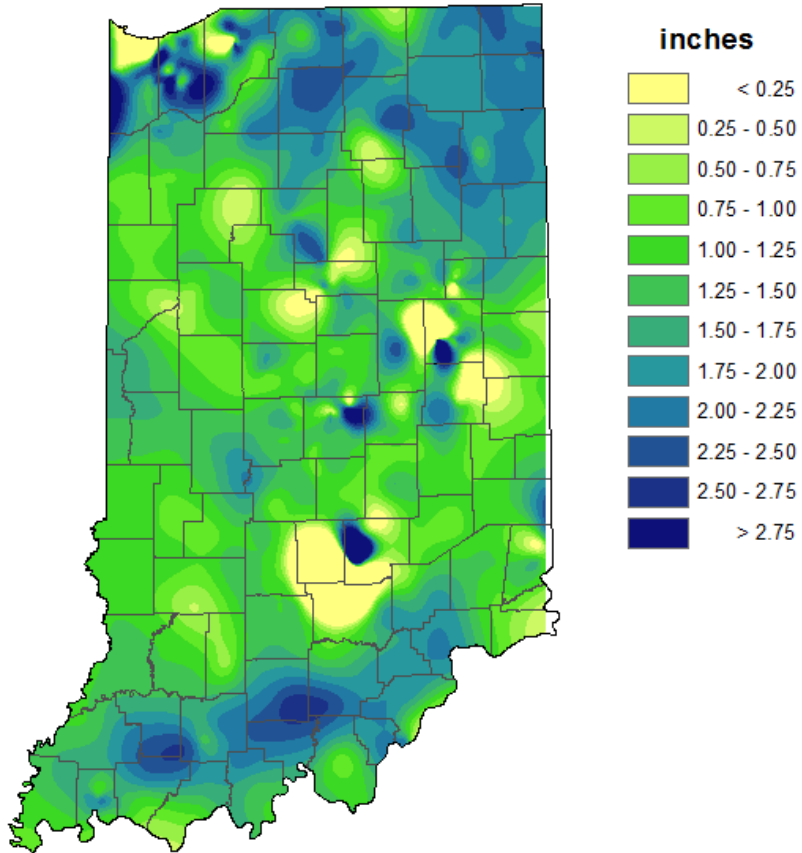
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	7.56	6.24	1.32	121
North Central	8.27	6.66	1.61	124
Northeast	8.13	6.46	1.67	126
West Central	8.84	7.41	1.42	119
Central	10.35	7.60	2.75	136
East Central	9.75	7.32	2.44	133
Southwest	10.63	9.41	1.22	113
South Central	11.57	9.59	1.99	121
Southeast	12.29	9.22	3.07	133
State	9.69	7.78	1.91	125

2012 Annual (through February)

Region	Temperature	Temperature	
		Normal	Deviation
Northwest	30.6	25.4	5.2
North Central	30.7	25.3	5.4
Northeast	30.7	25.0	5.7
West Central	33.3	27.6	5.7
Central	33.3	27.5	5.8
East Central	32.6	26.7	5.9
Southwest	37.6	32.3	5.2
South Central	37.1	32.2	4.9
Southeast	36.2	31.3	4.9
State	33.6	28.2	5.4

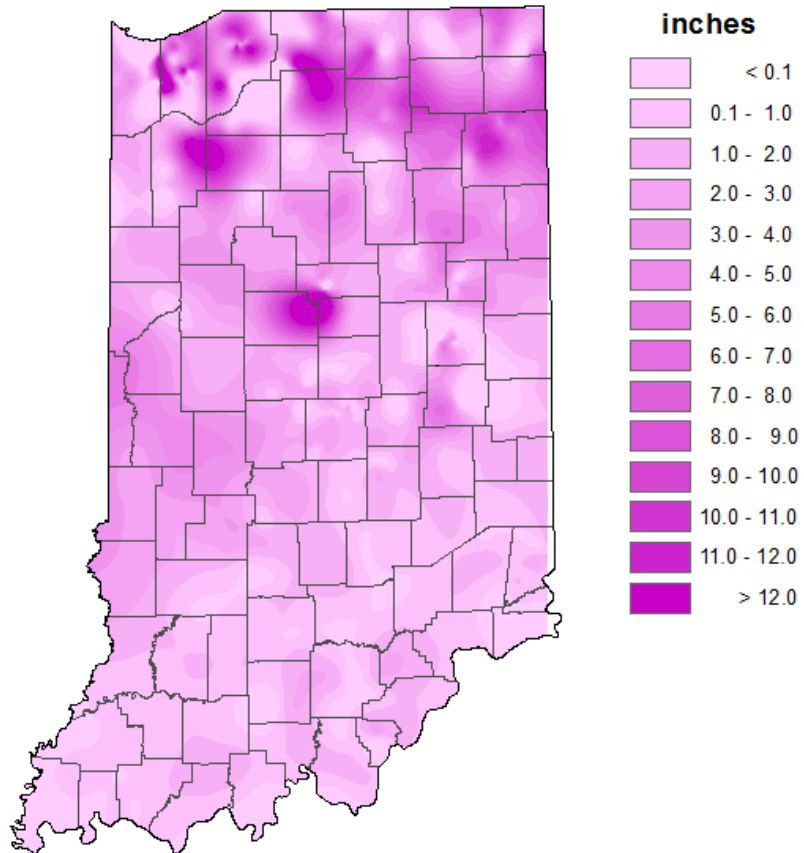
Region	Precipitation	Precipitation		
		Normal	Deviation	Percent of Normal
Northwest	4.20	3.58	0.62	117
North Central	4.81	3.87	0.94	124
Northeast	4.88	3.77	1.11	129
West Central	4.55	4.45	0.11	102
Central	4.85	4.62	0.24	105
East Central	4.79	4.44	0.34	108
Southwest	5.16	5.88	-0.72	88
South Central	5.66	6.03	-0.36	94
Southeast	6.00	5.81	0.19	103
State	4.96	4.72	0.23	105

**Total Precipitation
February 2012
CoCoRaHS network
(390 stations)**



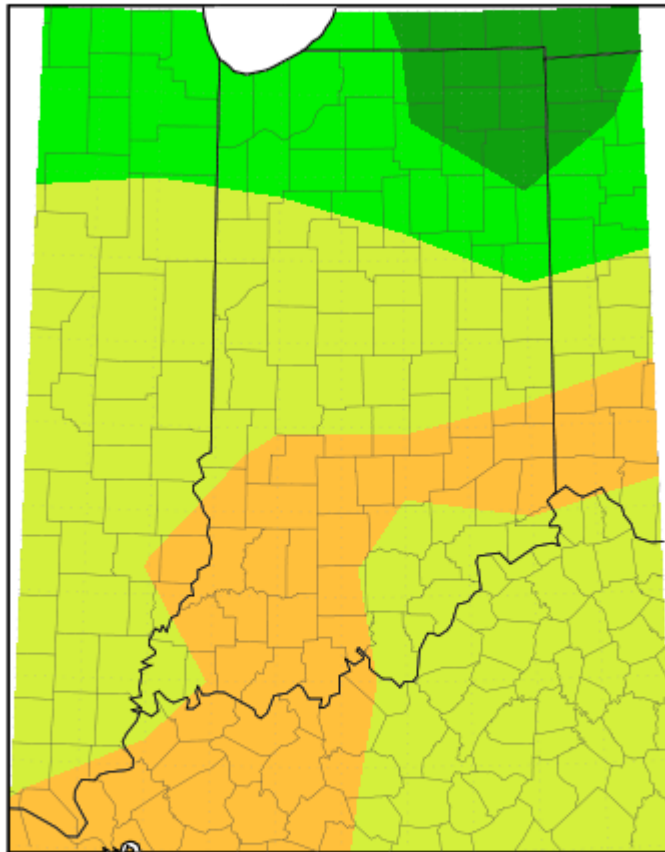
Analysis by Indiana State Climate Office
Web: <http://www.iclimat.org>

**Total Snowfall
February 2012
CoCoRaHS network
(390 stations)**



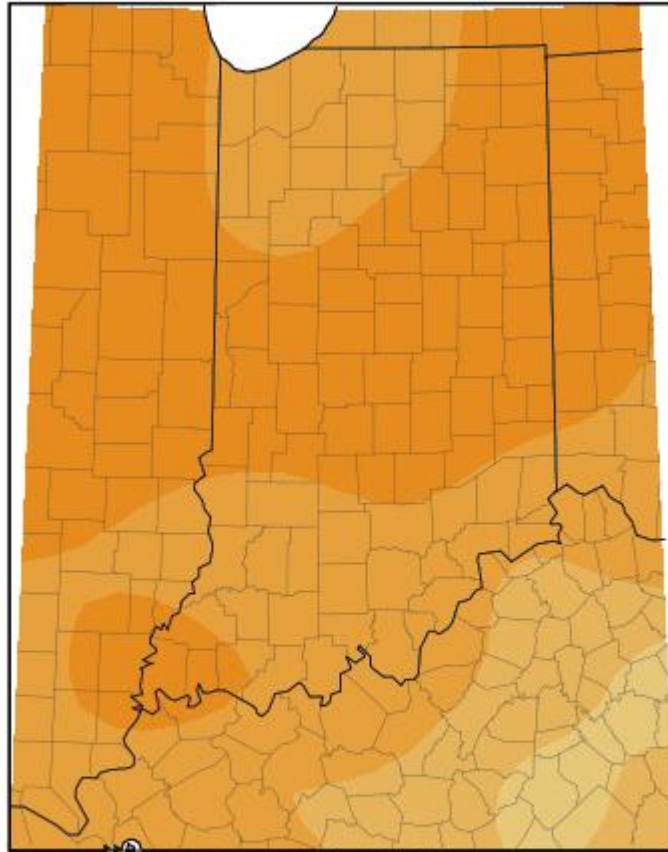
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Accumulated Precipitation: Percent of Mean
February 1, 2012 to February 29, 2012



Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

Average Temperature (°F): Departure from Mean
February 1, 2012 to February 29, 2012



Mean period is 1981-2010.

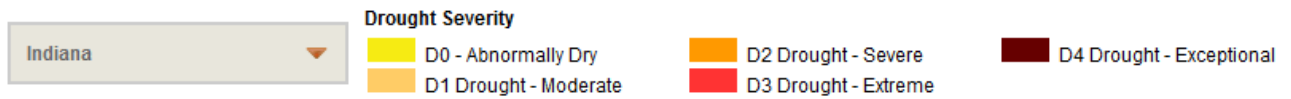


Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

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, February 7th has 0.0% of Indiana under at *least* D1-D4 drought status, 0.0% under at *least* D0 through D4 drought status, and 100.0% drought free. Subtracting the D1-D4 category (0.0%) from the D0-D4 category (0.0%), tells us that 0.0% of Indiana is in 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
February 28, 2012	100.00	0.00	0.00	0.00	0.00	0.00
February 21, 2012	100.00	0.00	0.00	0.00	0.00	0.00
February 14, 2012	100.00	0.00	0.00	0.00	0.00	0.00
February 7, 2012	100.00	0.00	0.00	0.00	0.00	0.00

February 7th Drought Summary



February 14th Drought Summary



February 21st Drought Summary



February 28th Drought Summary

