ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

December 2018

ILLINOIS WATER AND CLIMATE SUMMARY

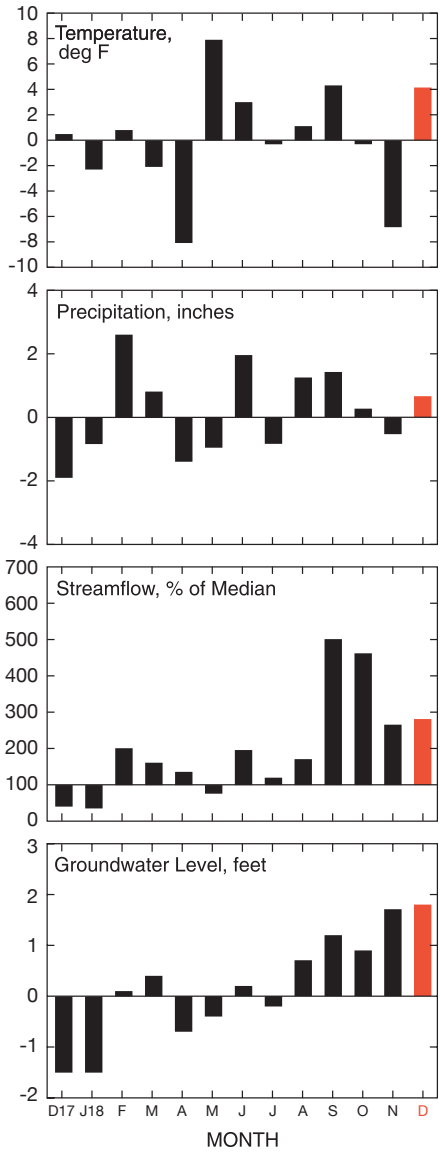

Figure 1. Statewide departures from normal

DECEMBER 2018 OVERVIEW

Temperatures and precipitation were above the long-term average in Illinois in December. Mean streamflow statewide was above the median for the month. Shallow groundwater levels were above the long-term depths.

Air temperatures averaged 34.0°F in December, 4.1° above the long-term average (Figure 1). The southeast crop reporting district (CRD) was the warmest with an average of 39.1°F. The lowest regional temperature was 30.2°, reported by the northwest CRD.

Precipitation averaged 3.35 inches, 0.66 inches above the long-term average (Figure 1). The southeast district was the wettest with an average of 5.48 inches. The driest was the west CRD with 2.22 inches.

Mean provisional streamflow aggregated statewide was above the long-term median flow for December, about 280% of median (Figure 1). Monthly mean discharge values ranged from normal to much above normal for December. The Ohio River peaked above flood stage at Cairo in December, as did the Illinois River at LaSalle, Havana, and Beardstown.

Water surface levels at the end of December were below the full pool or target level at 4 of 26 reporting reservoirs. At the end of December, Lake Shelbyville was 7.4 feet above the January 1 target level, Carlyle Lake was 3.9 feet above the January 1 target level, and Rend Lake was 3.9 feet above the spillway level. The Lake Michigan mean level was above its long-term mean for the month.

Shallow groundwater levels statewide were above normal this month with an average departure of 1.8 feet (Figure 1). An increase of 0.1 foot in departures was observed from the deviation in normal groundwater levels between November and December. Levels averaged 1.5 feet above November levels and were 3.7 feet above December levels of last year.

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Weather/Climate Information

— BRIAN KERSCHNER

The following description of temperatures, growing degree days, precipitation, severe weather, and drought comes from data compiled by a number of networks that report to the National Oceanic and Atmospheric Administration (NOAA). These data are provisional and may change slightly over time.

Illinois was warm in December. **Temperatures** averaged 40°F, 4.1° higher than the long-term average (Table 1a, Figure 2). Station highs were generally in the upper 40s to upper 60s. The highest temperature for December was 71° at the Kaskaskia River Navigation Lock (Randolph County) on December 2.

Table 1a. Temperature and Precipitation for December 2018

	Temp. (°F)	Departure from long-term avg. (1981–2010)	Precip. (in)	Departure from long-term avg. (1981–2010)
Illinois	34.0	+4.1	3.35	+0.66
CRD 1 (northwest)	30.2	+4.9	2.32	+0.27
CRD 2 (northeast)	31.2	+4.6	2.41	+0.22
CRD 3 (west)	32.5	+4.0	2.22	-0.04
CRD 4 (central)	32.5	+4.0	2.85	+0.37
CRD 5 (east)	33.1	+4.5	2.71	+0.20
CRD 6 (west southwest)	34.7	+3.3	3.63	+0.95
CRD 7 (east southeast)	36.2	+4.3	4.01	+0.96
CRD 8 (southwest)	38.3	+3.6	5.19	+1.68
CRD 9 (southeast)	39.1	+4.3	5.48	+1.67

Table 1b. Temperature and Precipitation for 2018

	Temp. (°F)	Departure from long-term avg. (1981–2010)	Precip. (in)	Departure from long-term avg. (1981–2010)
Illinois	52.5	+0.2	45.75	+5.79
CRD 1 (northwest)	48.9	-0.3	45.40	+8.47
CRD 2 (northeast)	49.2	-0.2	41.06	+4.23
CRD 3 (west)	51.8	0.0	41.69	+3.04
CRD 4 (central)	51.7	+0.2	40.72	+2.60
CRD 5 (east)	51.4	+0.2	40.42	+1.86
CRD 6 (west southwest)	53.8	+0.1	41.87	+2.22
CRD 7 (east southeast)	54.1	+0.4	51.33	+9.13
CRD 8 (southwest)	56.3	+0.4	55.17	+10.69
CRD 9 (southeast)	56.3	+0.5	57.12	+11.00

Data from NOAA's National Centers for Environmental Information for January–November 2018, accessed 1/7/2019. Provisional data from MRCC's cli-MATE for December 2018, accessed 1/7/2019.

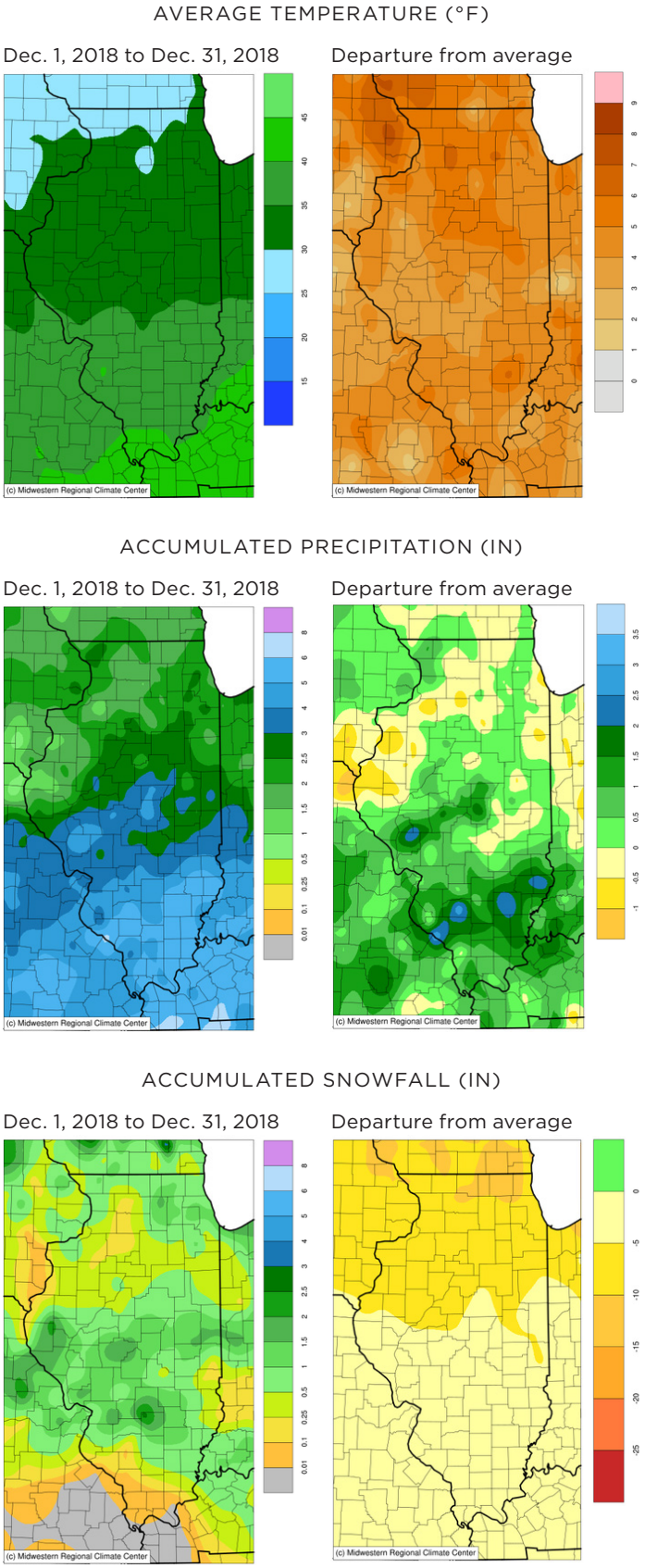


Figure 2. Illinois temperature, precipitation, and their departures from average for December 2018
Source: cli-MATE, Midwestern Regional Climate Center. http://mrcc.illinois.edu/CLIMATE, accessed on Jan. 7, 2019.

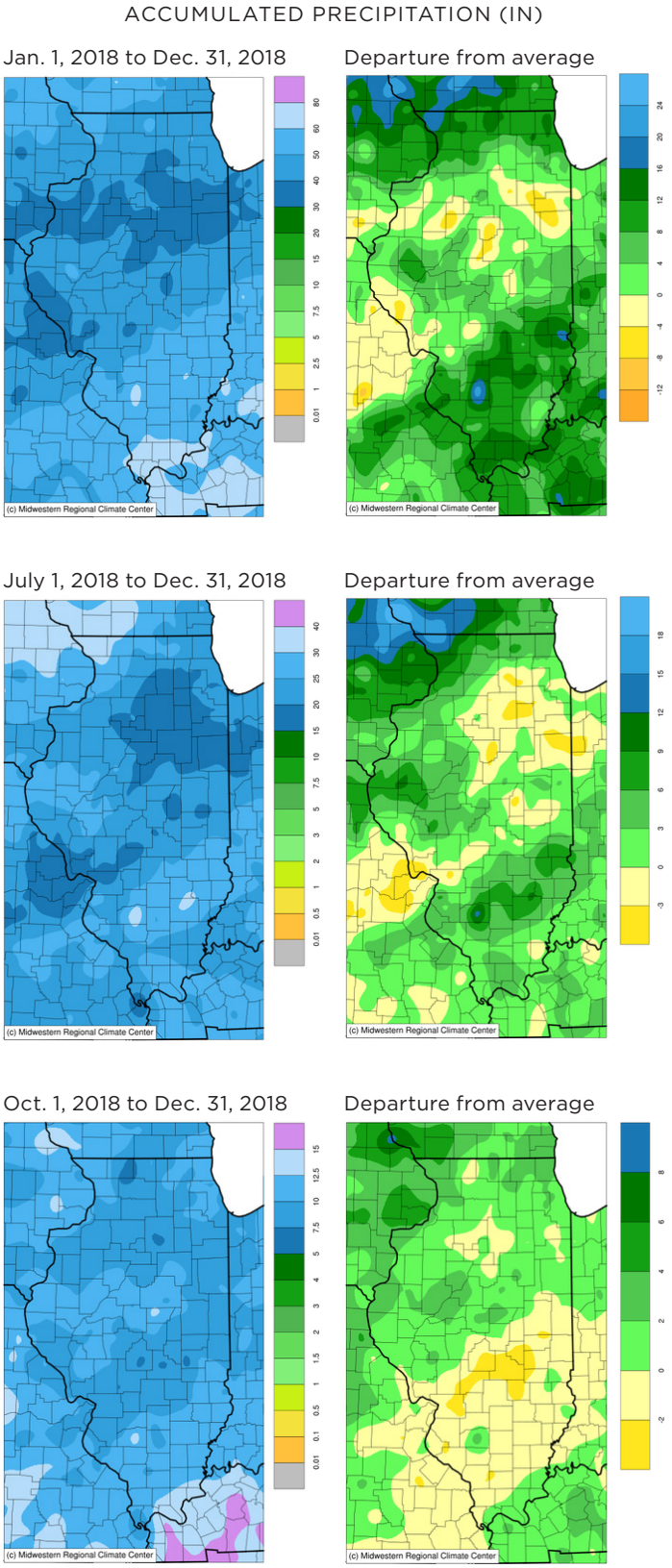


Figure 3. Illinois precipitation and precipitation departure from average for year to date (top), last 6 months (middle), and last 3 months (bottom) Source: cli-MATE, Midwestern Regional Climate Center. http://mrcc.illinois.edu/CLIMATE, accessed on Jan. 7, 2019.

Despite the general warmth, the state did experience some cooler temperatures. Two stations reported lows below 5° on the morning of December 7, Champaign (Champaign County) with 4° and Sidell (Vermilion County) with 1°.

Precipitation was above normal for the month, averaging 3.35 inches or 0.66 inches above the long-term average (Table 1, Figures 2, 3). The largest totals fell in southern Illinois, where seven stations measured 6 or more inches. The highest total was reported from a station near Chester (Randolph County) with 6.47 inches for the month.

Snow accumulations for December were minimal. Accumulations of several inches were focused mainly along the central portion of the state and in the extreme northeast and northwest regions. Patoka (Marion County) had the month's largest reported total with only 3.1 inches, 3.0 inches of which was recorded on December 5.

The year **2018** was wetter and slightly warmer than the long-term average. Temperatures averaged 52.5°F for the year, 0.2° above the long-term average. The year consisted of several dramatic temperature swings from month to month, and ended with six months of above average temperatures and six months of below average temperatures. April was the second coldest on record and May was the warmest on record.

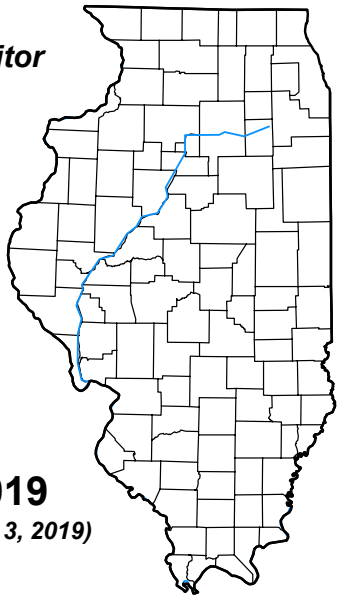
The annual precipitation averaged 45.75 inches, 5.79 inches above the long-term average. February was the wettest on record, and June was the 15th wettest on record. In parts of the state, significant precipitation events occurred, such as the heavy June rains in northern Illinois, leading to the wettest month on record for the Rockford Airport (Winnebago County), and the remnants of Tropical Storm Gordon brought flooding to central and southern Illinois in early September.

The NOAA Storm Prediction Center recorded 52 **severe weather** reports in December, 34 for tornadoes, 11 for hail, and 7 for wind. (Several reports can be generated for a single event.)

Illinois remained **drought** free (Figure 4). The U.S. Drought Monitor's January 1 map had no part of the state listed as in drought or as abnormally dry.

U.S. Drought Monitor

Illinois



January 1, 2019

(Released Thursday, Jan. 3, 2019)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week *12-25-2018*	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago *10-02-2018*	94.93	5.07	0.00	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year *09-25-2018*	96.92	3.08	0.00	0.00	0.00	0.00
One Year Ago *01-02-2018*	51.40	32.41	15.01	1.18	0.00	0.00

Intensity:

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

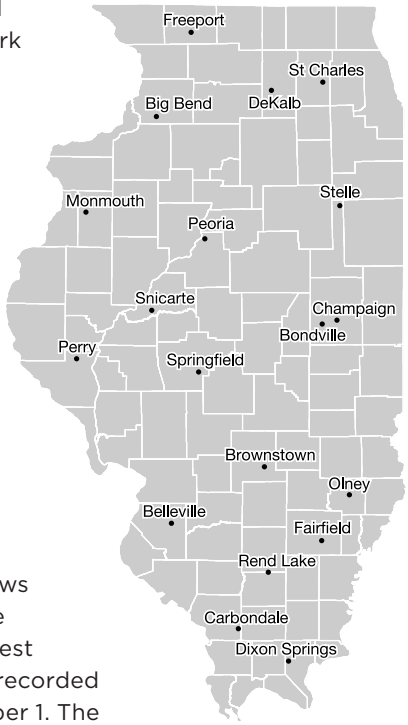
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Figure 4. U.S. Drought Monitor report for Illinois Source: U.S. Drought Monitor. Author: David Miskus, NOAA/NWS/NCEP/CPC. http://droughtmonitor.unl.edu, accessed on Jan. 7, 2019.

Illinois Climate Network (ICN)

— JENNIE ATKINS

The Illinois Climate Network (ICN) consists of 19 stations across the state that collect hourly weather and soil information. ICN data for December are presented in Table 2.



Wind speeds averaged 7.0 mph across the network in December, 0.8 mph lower than the long-term average. ICN Bondville had the month's highest average at 10.7 mph. The highest wind gust was 55.1 mph, measured at the Stelle station on December 27.

Air temperatures were warmer than normal with an average of 35.0°F for the month, 3.7° higher than the long-term average. Highs reached the 50s and 60s for most stations, while lows fell to the teens and single digits. The network's highest temperature was 68.0°F, recorded at Carbondale on December 1. The lowest was 2.4°F, measured at the Bondville station on December 7.

Soil temperatures decreased 3° to 5°F from November to monthly averages in the mid- to high 30s. Temperatures were up to 1° above the long-term average. Under bare soil, temperatures ranged from 19.3° to 61.1° at depths of 2 inches and 25.9° to 58.3°F at 4 inches. Temperatures under sod ranged from 29.3° to 58.3° at 4 inches and 32.0° to 57.1° at 8 inches.

Precipitation was higher than normal at all ICN stations in December. Overall, precipitation averaged 4.49 inches for the month, 2.07 inches higher than the long-term average. The largest totals were in southern Illinois where ICN Dixon Springs recorded 6.83 inches, the highest for the month. The lowest was 2.68 inches from the Monmouth station.

Soil moisture information will return to the IWCS in spring 2019.

Table 2. Data from the Illinois Climate Network (ICN), December 2018

Station	Wind			Air Temperature (°F)			Total Solar Radiation (MJ/m²)
	Avg. Speed (mph)	Avg. Direction (°)	Max. Gust (mph)	Max.	Min.	Avg.	
Belleville	7.1	192.5	33.9	67.4	17.5	38.5	195.4
Big Bend	7.0	211.8	42.6	52.7	12.3	31.7	177.1
Bondville	10.7	199.5	41.5	59.1	2.4	32.5	190.6
Brownstown	7.0	191.9	35.9	64.1	14.8	36.8	185.1
Carbondale	6.8	202.1	43.7	68.0	16.2	39.7	203.8
Champaign	4.9	203.7	28.4	58.8	11.3	34.0	176.8
DeKalb	8.3	213.2	35.9	51.2M	9.3M	30.3M	175.7
Dixon Springs	4.6	180.9	29.4	65.4	17.7	41.7	179.6
Fairfield	6.8	181.6	44.5	62.1M	17.8	38.5	196.7
Freeport	5.2	216.6	28.4	49.6	11.1	30.1	132.0
Monmouth	9.9	207.6	40.3	51.6	9.6	31.3	196.8
Olney	5.7	179.6	36.9	61.4	16.2	38.2	192.4
Peoria	7.2	201.6	39.5	58.0	11.8	34.1	193.1
Perry	6.3	223.2	33.6	62.7	9.3	34.7	201.6
Rend Lake	5.2	192.9	37.3	65.2	19.7	39.5	191.2
Snicarte	9.0	197.9	37.8	62.0	12.2	34.3	202.9
Springfield	5.8	196.2	35.2	63.0	13.9	35.8	197.3
St. Charles	6.1	199.3	30.6	51.9	9.7	31.2	168.4
Stelle	10.2	208.5	55.1	53.2	11.3	32.1	181.0

Table 2. continued

Station	Average Relative Humidity (%)	Total Precip. (in)	Average Dew Point (°F)	Total Potential Evapotranspiration (in)	Average Soil Temperature (°F) at			
					4" under Sod	8" under Sod	2" under Bare Soil	4" under Bare Soil
Belleville	84.5	4.91	33.9	1.1	41.6	42.3	40.7	37.2
Big Bend	85.9	2.89	27.8	0.8	35.5	35.0	35.1	33.7
Bondville	88.0	4.68	29.2	0.9	36.4	40.9	36.2	37.1
Brownstown	81.3	5.09	31.3	1.1	43.3	42.5	37.8	38.5
Carbondale	81.6	5.48	34.1	1.2	44.5	43.4	40.7	41.5
Champaign	84.2	4.54	29.6	0.9	38.8	40.2	37.0	37.6
DeKalb	90.1	3.15	27.7M	0.65M	36.9	36.8	34.5	36.6
Dixon Springs	79.0	6.83	35.2	1.1	43.4	44.5	38.9	41.5
Fairfield	80.3	6.40	32.7	1.1	42.8	43.5	41.8	39.6
Freeport	88.0	3.20	26.8	0.6	36.8	35.3	31.4	31.7
Monmouth	86.6	2.68	27.5	0.9	35.1	35.3	32.9	34.1
Olney	81.0	6.65	32.6	1.1	40.5	41.3	40.5	41.1
Peoria	79.7	4.40	28.2	1.0	38.2	35.2	34.9	34.4
Perry	83.3	3.49	29.7	1.0	38.0	39.2	36.8	37.3
Rend Lake	80.5	5.60	33.7	1.1	41.4	42.3	41.9	42.7
Snicarte	78.9	3.32	28.2	1.1	36.3	37.2	36.4	35.3
Springfield	82.4	5.26	30.7	1.0	39.3	38.9	36.5	37.0
St. Charles	84.9	3.18	26.9	0.8	36.3	37.3	33.5	35.0
Stelle	85.3	3.52	28.1	0.9	36.8	37.1	32.1	33.6

M = Missing data.

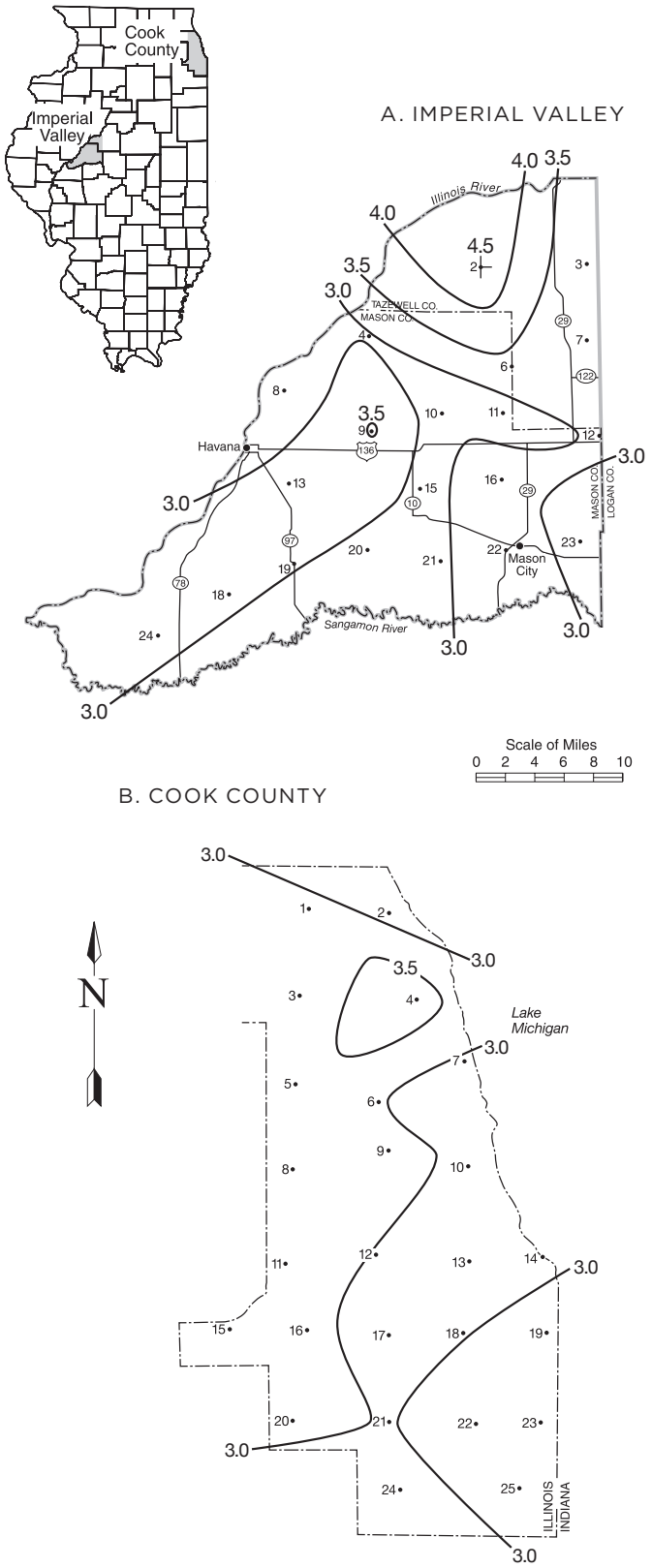


Figure 5. Precipitation totals (inches) for (a) Imperial Valley Water Authority and (b) Cook County raingage networks December 2018

Other Precipitation Networks

— ERIN BAUER

Imperial Valley. The average network precipitation for December 2018 was 3.12 inches, which is above the previous 26-year network average (Figure 5a). The largest monthly gage total was in the northern portion of the network. Monthly gage totals varied 1.89 inches across the network, from 2.61 inches at site #8, north of Havana, to 4.50 inches at site #2, north of Manito. Without site #2, the network precipitation variation would be 0.91 inches. The 1981–2010 30-year average precipitation amounts for December at Havana and Mason City are 2.76 and 2.33 inches, respectively. The December 2018 network average of 3.12 inches is 160 percent of the 26-year (1992–2017) IVWA December network average of 1.95 inches. The Imperial Valley Water Authority funds this 20-station precipitation network operated by the Illinois State Water Survey.

Cook County. During December 2018, precipitation in Cook County was above average (Figure 5b). Gage precipitation amounts were highest in the Skokie area. The lowest region of precipitation was a south-southwest band from Chinatown to Alsip. Precipitation values ranged from 2.66 inches at site #13 (Chicago, near S. Halsted St. and W. 79th St.) to 3.78 inches at site #4 (Skokie, near Howard St. and Hamlin Ave.). Across the network, precipitation varied 0.63 inches. The network average of 3.08 inches is about 149 percent of the 28-year (1990–2017) December network average of 2.07 inches. The Illinois State Water Survey operates this 25-station precipitation network funded by the U.S. Army Corps of Engineers.

Surface Water Information

— BILL SAYLOR

River and stream discharge and stage data are obtained from gaging stations operated by the U.S. Geological Survey (USGS) or the U.S. Army Corps of Engineers (USACE). The USGS gaging station network is supported, in part, by the Illinois Department of Natural Resources Office of Water Resources, the Illinois State Water Survey (ISWS), and the USACE. Provisional discharge data are obtained from the USGS.

Table 3 lists the provisional peak stage for the current month compared to flood stage at selected streamgaging stations located on the Illinois, Mississippi, and Ohio Rivers. Peak stage is represented here by morning readings posted daily by the USACE or the National Weather Service. Flood stage is defined locally for each gage location.

The Ohio River peaked above flood stage at Cairo in December. The Illinois River also reached local flood stages at LaSalle, Havana, and Beardstown.

Provisional monthly mean flows for 26 streamgaging

stations located throughout Illinois are shown in Table 4. Mean values posted by the USGS are listed if available; otherwise, daily mean discharge data posted by the USGS are used to estimate the mean flow for the month. Long-term mean flows for each month are published by the USGS. The month's median flow for each station listed in Table 4 was determined by ranking the December mean flow for each year of record, and selecting the middle value, 50 percent exceedence probability.

The statewide percent of historical mean flow and percent of historical median flow are calculated by dividing the sum of the average flows this month at stations in Table 4 by the sum of the historical mean and median flows calculated for the month, respectively, at the same stations. This method is intended to weight individual observations proportionately in the aggregate comparison. (The Illinois River and Rock River stations are excluded from the statewide calculation because other rivers listed in Table 4 contribute to their flow.)

Mean provisional flow aggregated statewide, using the available monthly mean data shown this month in Table 4,

Table 3. Peak Stages for Major Rivers during December 2018

River	Station	River mile*	Flood stage (feet)*	Peak stage (feet)**	Date
Illinois	Morris	263.1	16	11.5	03
	La Salle	224.7	20	20.4	04
	Peoria	164.6	18	16.3	07-08
	Havana	119.6	14	15.5	08
	Beardstown	88.6	14	15.2	07
	Hardin	21.5	25	23.8	06
Mississippi	Dubuque	579.9	17	10.0	06, 31
	Keokuk	364.2	16	11.4	03
	Quincy	327.9	17	15.2	04
	Grafton	218.0	18	17.9	06
	St. Louis	180.0	30	25.5	06
	Chester	109.9	27	26.8	07
	Thebes	43.7	33	31.2	08
Ohio	Cairo	2.0	40	42.6	08

Notes:
* River mile and flood stage from *River Stages in Illinois: Flood and Damage Data*, Illinois Department of Natural Resources, Office of Water Resources, August 2004 (and Addendum, February 2007).
** Peak stage based on daily a.m. readings, not instantaneous peak. Stage data obtained from U.S. Army Corps of Engineers.

Table 4. Provisional Mean Flows, December 2018

Station	Drainage area (sq mi)	Years of record	2018 mean flow (cfs)	Long-term flows Mean* (cfs)	Long-term flows Median (cfs)	Flow condition	Percent chance of exceedence	Days of data this month
Rock River at Rockton	6363	82	8,061	3,509	3,196	much above normal	6	31
Rock River near Joslin	9549	74	12,874	5,432	4,925	much above normal	4	31
Pecatonica River at Freeport	1326	98	1,752	722	612	much above normal	4	31
Green River near Geneseo	1003	79	1,385	520	403	above normal	11	30
Edwards River near New Boston	445	79	772	202	119	much above normal	7	31
Kankakee River at Momence	2294	100	3,193	2,069	1,764	above normal	19	31
Iroquois River near Chebanse	2091	93	2,274	1,650	1,090	above normal	29	31
Fox River at Dayton	2642	98	3,832	1,611	1,284	much above normal	6	31
Vermilion River at Pontiac	579	73	638	400	170	above normal	25	31
Spoon River at Seville	1636	100	2,193	739	401	much above normal	7	31
LaMoine River at Ripley	1293	94	1,934	550	240	much above normal	7	31
Bear Creek near Marceline	349	73	477	164	36	above normal	15	31
Mackinaw River near Congerville	767	68	670	477	226	above normal	26	31
Salt Creek near Greenview	1804	75	1,927	1,132	533	above normal	21	31
Sangamon River at Monticello	550	105	655	380	184	above normal	21	31
South Fork Sangamon near Rochester	867	68	668	593	139	normal	34	31
Illinois River at Valley City	26,743	78	33,029	18,590	15,396	above normal	15	31
Macoupin Creek near Kane	868	88	405	531	155	normal	36	31
Vermilion River near Danville	1290	95	1,773	993	564	above normal	25	31
Kaskaskia River at Vandalia	1940	47	1,627	2,076	1,677	normal	51	31
Shoal Creek near Breese	735	73	491	628	195	normal	36	31
Embarras River at Ste. Marie	1516	103	1,753	1,337	833	above normal	27	31
Skillet Fork at Wayne City	464	97	1,269	468	255	much above normal	10	31
Little Wabash below Clay City	1131	102	1,934	1,112	533	above normal	21	31
Big Muddy at Plumfield	794	46	1,179	713	337	above normal	27	31
Cache River at Forman	244	93	622	363	215	above normal	23	31

Notes:
Source streamflow data are obtained from the U.S. Geological Survey.
N/A = not available (due to ice or equipment problems).
*As reported in U.S. Geological Survey (USGS) Water Resources Data, Illinois, Water Year 2016.

Much below normal flow = 90-100% chance of exceedence.
Below normal flow = 70-90% chance of exceedence.
Normal flow = 30-70% chance of exceedence.
Above normal flow = 10-30% chance of exceedence.
Much above normal flow = 0-10% chance of exceedence.

was above the median value for December (approximately 280 percent of the median) and above the mean for December (approximately 170 percent of the mean). Monthly mean discharge values ranged from normal to much above normal for December.

Water-Supply Lakes and Major Reservoirs. Table 5 lists reservoirs in Illinois, their normal pool or target water surface elevation, and other data related to observed variations in water surface elevations. Reservoir levels are obtained from a network of cooperating reservoir operators who are contacted each month by ISWS staff for the current water levels. Reservoir levels are reported in terms of their difference from normal pool (or target level). The average of the month-end readings for the period of record is reported in terms of the difference from normal pool or target level (column 6 of Table 5), and the number of years of record for each reservoir also is given (column 7). Most reservoirs serve as public water supplies, with the exceptions noted in the last column.

Compared to end-of-November water levels at 24 reservoirs for which levels were reported last month and this month, reported end-of-December water levels were lower at 2 reservoirs, higher at 17 reservoirs, and about the same as at the end of last month at 5 reservoirs. For the 26 reservoirs with measurements reported at the end of December, water levels were below normal target pool or spillway level at 4 reservoirs, above normal target pool or spillway level at 14 reservoirs, and at about full pool level at 8 reservoirs.

Major Reservoirs. Compared to water levels at the end of November, at the end of December the water level at Lake Shelbyville was 1.1 feet higher, Carlyle Lake was 1.3 feet higher, and Rend Lake was 2.0 feet higher. At the end of December, Lake Shelbyville was 7.4 feet above the January

Table 5. Reservoir Levels in Illinois, December 2018

Reservoir	County	Normal pool or target level (feet)	Current level difference from normal or target (feet)	Monthly change (feet)	Average difference from normal or target (feet)	Years of record	November reported pumpage (million gallons)
Altamont	Effingham	582.0	+0.4	+0.2	-2.1	35	5.5
Bloomington	McLean	719.5	+0.3	+0.1	-3.3	32	N/A
Carlinville	Macoupin	571.1	0.0	0.0	-0.9	32	22.4
Carlyle[1]	Clinton	443.0	+3.9	+1.3	+2.4	40	N/A
Decatur[1,3]	Macon	612.5	+1.0	-0.9	+0.2	35	964.9
Evergreen[4]	Woodford	720.0	-0.5	+2.5	-2.9	28	N/A
Glenn Shoals[2]	Montgomery	590.0	N/A	N/A	-0.3	23	w/Hillsboro
Highland	Madison	500.0	+0.3	+0.3	-0.1	30	28.5
Hillsboro[2]	Montgomery	589.0	N/A	N/A	0.0	23	27.4
Jacksonville[2]	Morgan	644.0	0.0	N/A	-0.5	9	w/Mauvaise Terre
Kinkaid	Jackson	420.0	-0.6	+1.4	-0.5	30	60.4
Lake of Egypt	Williamson	500.0	+0.4	+0.4	-0.5	24	N/A
Mattoon	Coles	632.0	0.0	0.0	-0.6	22	w/Paradise
Mauvaise Terre[2]	Morgan	588.5	0.0	N/A	0.0	14	no meter
Mt. Olive (new)	Macoupin	600.0	N/A	N/A	-0.2	11	w/Mt. Olive (old)
Mt. Olive (old)	Macoupin	654.0	0.0	+1.5	-0.7	21	5.7
Pana	Christian	641.6	+0.2	+0.2	-1.2	33	N/A
Paradise	Coles	685.0	0.0	0.0	-0.2	26	56.6
Paris (east)	Edgar	660.0	+0.3	+2.8	-0.4	33	Not PWS
Paris (west)	Edgar	660.1	+0.3	+0.2	+0.2	23	w/Paris (east)
Raccoon[1]	Marion	477.0	+0.4	+0.3	N/A	N/A	87.2
Rend	Franklin	405.0	+3.9	+2.0	+1.6	40	N/A
Salem[3]	Marion	546.5	+0.1	0.0	-0.8	22	21.3
Shelbyville[1]	Shelby	594.0	+7.4	+1.1	+6.5	40	Not PWS
Sparta[3]	Randolph	497.0	-0.2	+0.4	-0.8	19	N/A
Spring[3,4]	McDonough	654.0	0.0	0.0	-0.6	34	43.4
Springfield[1,3]	Sangamon	559.6	+0.2	+0.2	-1.5	35	572.7
Taylorville	Christian	590.0	-0.1	+0.1	-0.7	25	52.2
Vermilion[4]	Vermilion	581.7	0.0	-0.1	-0.5	33	189.6

Notes:
Normal pool and target level datum is NGVD 1929.
Current levels reported represent water surface levels at the end of the month, not the monthly average.
Average difference from normal or target level is the arithmetic average of reported month-end values for the period of record indicated.
Years of record = total number of monthly readings included in month-end average. Total period of record may be longer.
Not PWS = not a public water supply.
N/A = not available.
[1] Target operating level may vary. Seasonal target levels this month represent January 1 values.
[2] Instrumentation not available to measure height of water elevation above spillway.
[3] Natural inflow can be supplemented by other sources.
[4] Normal pool elevations have changed during period of record reported.

Table 6. Month-End Shallow Groundwater Level Data Sites, December 2018

No.	Well name	County	Well depth (feet)	This month's reading (depth to water, feet)	Deviation from 15-year avg. level (feet)	Deviation from Period of record avg. (feet)	Deviation from Previous month (feet)	Deviation from Previous year (feet)
1	Galena	JoDaviess	25.00	17.76	+2.91	+3.63	-0.56	+3.60
2	Mt. Morris	Ogle	55.00	NA	NA	NA	NA	NA
3	Crystal Lake	McHenry	18.00	3.54	+1.30	+1.83	+0.05	+0.30
4	Fermi Lab	DuPage	17.00	3.61	+2.32	+2.95	+1.78	+4.23
5	Good Hope	McDonough	30.00	3.81	+2.86	+4.41	+1.11	+6.96
6	Snicarte	Mason	42.00	37.43	-0.67	+0.03	-0.54	-3.03
7	Coffman	Pike	28.00	16.43	-4.64	-4.17	+0.24	NA
8	Greenfield	Greene	20.70	15.31	-1.52	-2.50	+1.97	+3.64
9	Janesville	Coles	11.00	2.67	+1.81	+2.17	+2.25	+3.19
10	St. Peter	Fayette	15.00	NA	NA	NA	NA	NA
11	SWS #2	St. Clair	80.00	NA	NA	NA	NA	NA
12	Boyleston	Wayne	23.00	NA	NA	NA	NA	NA
13	Sparta	Randolph	27.00	1.19	+4.80	+6.78	+2.86	+8.33
14	SE College	Saline	11.00	1.66	+2.50	+2.47	+4.26	+6.63
15	Bondville	Champaign	21.00	2.32	+1.78	+1.86	+2.78	+3.18
				Averages	**+1.22**	**+1.77**	**+1.47**	**+3.70**

Notes: N/A = Data not available.

1 target level, Carlyle Lake was 3.9 feet above the January 1 target level, and Rend Lake was 3.9 feet above the spillway level. (Target operating levels at Lake Shelbyville and Carlyle Lake decrease from December to January.)

Great Lakes. Current month mean and end-of-month values are provisional and are relative to International Great Lakes Datum 1985. The December 2018 mean level for Lake Michigan was 580.2 feet. The monthly mean level one year ago (December 2017) was 580.0 feet. The long-term average lake level for December is 578.5 feet, based on 1918-2017 data. In this period of record, the lowest mean level for Lake Michigan for December occurred in 2012 at 576.2 feet, and the highest level for December occurred in 1986 at 581.6 feet. The month-end level of Lake Michigan was 580.1 feet. All values are provided by the U.S. Army Corps of Engineers Detroit District.

Groundwater Information

— KEN HLINKA

Comparison to Average Levels. Shallow groundwater levels in 11 observation wells, which are remote from pumping centers, were above normal for the month of December. Levels averaged 1.8 feet above normal and ranged from 4.2 feet below to 6.8 feet above normal levels (Table 6).

Comparison to Previous Month. Shallow groundwater levels were above those of the previous month. Levels averaged 1.5 feet above and ranged from 0.6 feet below to 4.3 feet above November levels.

Comparison to Same Month, Previous Year. Shallow groundwater levels in December were above levels measured one year ago. Levels averaged 3.7 feet above this month and ranged from 3.0 feet below to 8.3 feet above levels of December 2017.

Data sources for this publication include the following:

CPC - Climate Prediction Center, http://www.cpc.ncep.noaa.gov/index.php
ISWS - Illinois State Water Survey, http://www.isws.illinois.edu
MRCC - Midwestern Regional Climate Center, http://mrcc.illinois.edu
NCDC - National Climatic Data Center, http://www.ncdc.noaa.gov
NWS - National Weather Service, http://www.nws.noaa.gov
USACE - U.S. Army Corps of Engineers, http://rivergages.com, https://www.lre.usace.army.mil
USGS - U.S. Geological Survey, http://waterdata.usgs.gov/il/nwis
WARM - Water and Atmospheric Resources Monitoring Program, http://www.isws.illinois.edu/warm

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