ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

July 2019

ILLINOIS WATER AND CLIMATE SUMMARY

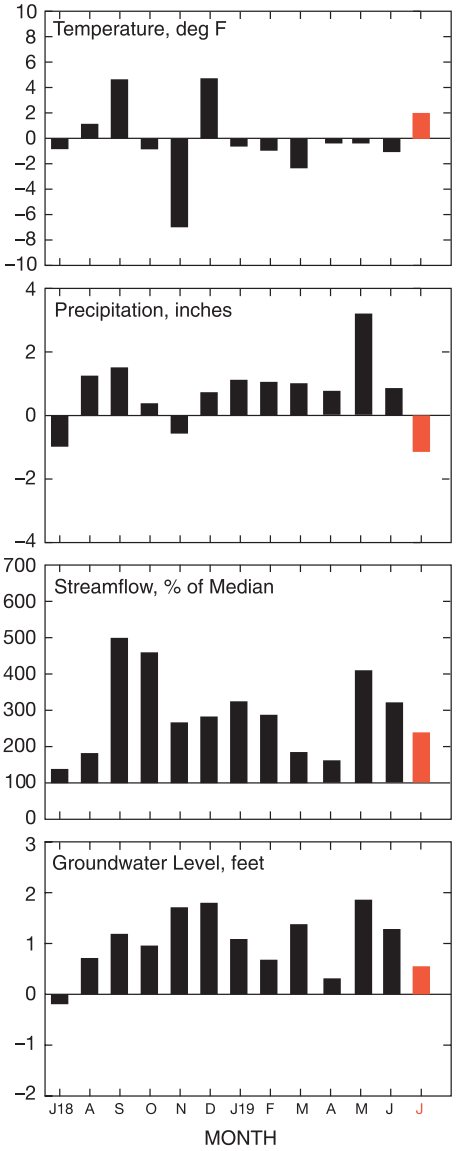


Figure 1. Statewide departures from normal.

JULY 2019 OVERVIEW

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

Air temperatures averaged 77.4°F in July, 2.0° above the long-term average (Figure 1). The southwest crop reporting district (CRD) was the warmest with an average of 78.7°F. The lowest regional temperature was 76.1°F, reported by the northeast CRD (Table 1).

Precipitation averaged 3.05 inches, 1.03 inches below the long-term average (Figure 1). The southwest CRD was the wettest with an average of 4.42 inches. The driest was the west CRD with 1.56 inches (Table 1).

Soil moisture declined in July, falling 31% at depths of 2 inches during the month. Similar declines occurred at 4 and 8 inches, and moisture levels remained high at depths of 39 inches and below.

Mean provisional streamflow aggregated statewide was above the long-term median flow for July, about 235% of median (Figure 1). Monthly mean discharge values ranged from normal to much above normal for July. The lower Illinois River, the lower Mississippi River along the Illinois border, and the Ohio River at Cairo were above the local flood stages at the beginning of July. Some reaches of the Mississippi River below St. Louis remained above the local flood stages throughout July.

Water surface levels at the end of July were below the full pool or target level at 13 of 24 reporting reservoirs. At the end of July, Lake Shelbyville was 5.5 feet above the summer target level, Carlyle Lake was 3.3 feet above the summer target level, and Rend Lake was 2.7 feet above the spillway level. Lake Michigan's 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 0.48 feet from the period of record. A decrease of 0.70 feet in departures was observed from the deviation in normal groundwater levels between June and July (Figure 1). Levels averaged 1.60 feet below those in June 2019 and 0.69 feet above July 2018 levels.

Contact Jennie R. Atkins
(217) 333-4966
jatkins@illinois.edu

Weather/Climate Information

— KEVIN GRADY

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.

July in Illinois was hotter and drier than average, in stark contrast to the cool, incredibly wet conditions the state saw in the first six months of the year.

Temperatures averaged 77.4°F, 2.0° above the long-term average, with larger departures from average in the northern part of the state (Table 1, Figure 2a). Monthly highs were generally in the 90s, with many locations topping out in the mid- to upper-90s. The warmest reading of the month, 98°F, occurred twice: once near Flora (Clay County) on July 11 and again near Palestine (Crawford County) on July 21. Monthly station minimum temperatures were generally in the 50s, with a few 60s in the southern part of the state. The lowest July temperature of 51°F also occurred twice: once near Champaign (Champaign County) on July 23 and again near Paxton (Ford County) on July 25.

A strong heat wave affected the entire state in the middle of July, with daily high temperatures often reaching into the mid-90s during this period. This, combined with muggy dew points in the 70s approaching 80°F, resulted in heat indices well over 100°F being common, with some even approaching 110°-115°. This led the National Weather Service to issue Excessive Heat Warnings for all or part of the state from the afternoon of July 17 through the evening of July 21. The heat wave also led to some record warm lows. Rockford tied its all-time record for warmest daily minimum temperature on July 19, with a low of only 80°F. The previous record was set on Aug. 6, 1918. Records for

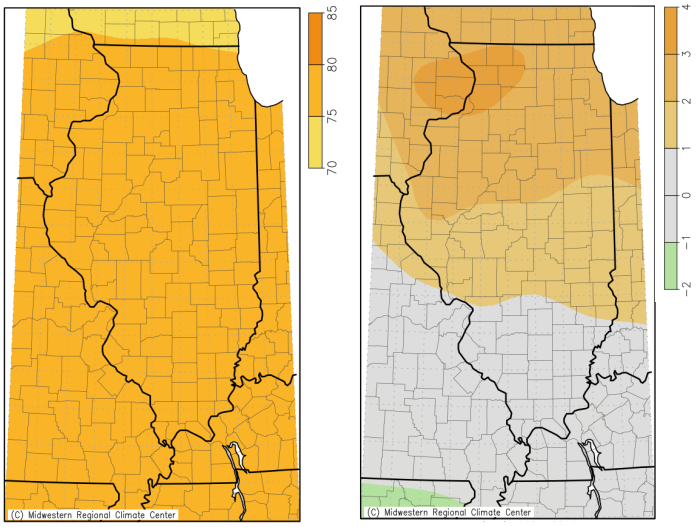
Table 1. Temperature and Precipitation for July 2019

	Temp. (°F)	Departure from long-term avg. (1981–2010)	Precip. (in)	Departure from long-term avg. (1981–2010)
Illinois	77.4	+2.0	3.05	–1.03
CRD 1 (northwest)	76.5	+3.1	2.62	–1.42
CRD 2 (northeast)	76.1	+2.7	4.24	+0.25
CRD 3 (west)	78.0	+2.5	1.56	–2.68
CRD 4 (central)	77.5	+2.7	2.06	–2.05
CRD 5 (east)	76.7	+2.5	2.80	–1.54
CRD 6 (west southwest)	77.9	+1.5	2.98	–1.01
CRD 7 (east southeast)	77.4	+1.2	3.17	–1.00
CRD 8 (southwest)	78.7	+0.9	4.42	+0.55
CRD 9 (southeast)	78.3	+0.8	3.87	–0.09

Data from NOAA's National Centers for Environmental Information, accessed 8/8/2019.

AVERAGE TEMPERATURE (°F)

July 1, 2019 to July 31, 2019 | Departure from average



ACCUMULATED PRECIPITATION (IN)

July 1, 2019 to July 31, 2019 | Departure from average

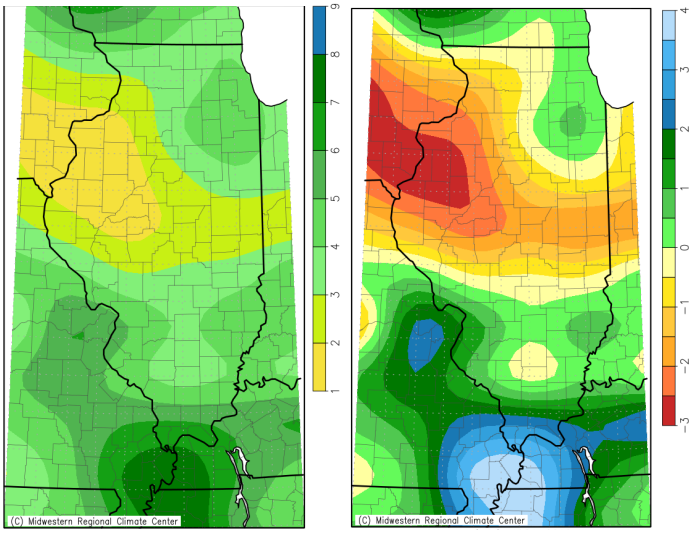


Figure 2a. Illinois temperature, precipitation, and their departures from average for July 2019.
Source: cli-MATE, Midwestern Regional Climate Center. http://mrcc.illinois.edu/CLIMATE, accessed on August 8, 2019.

Rockford extend back to 1905.

Growing degree days (DD, base 50°, from April 1) ranged from around 1600 in northern Illinois to above 2400 in far southern Illinois (Figure 2b). The northern half of the state was below the long-term average by up to 100 DD, while the southern half of the state was above the long-term average by up to 100 DD.

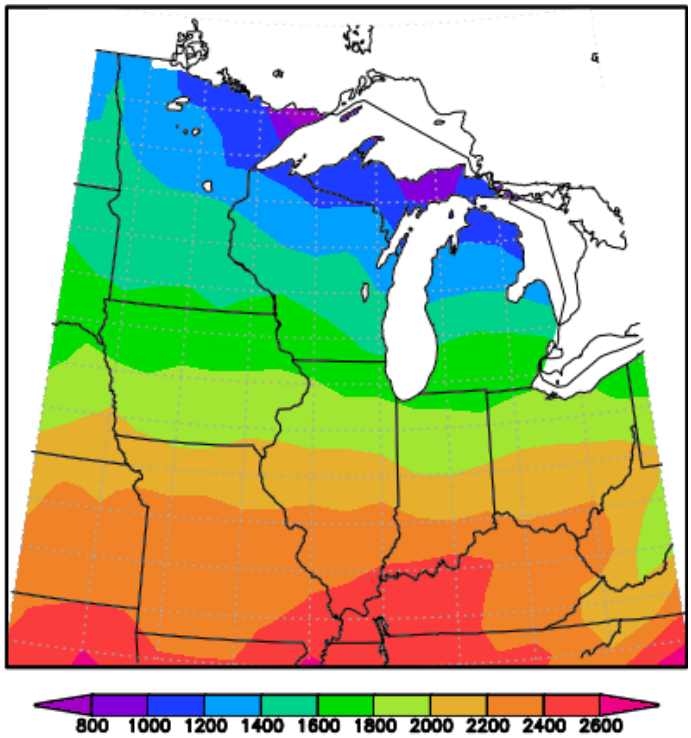
Precipitation averaged 3.05 inches in July, 1.03 inches below the long-term average (Table 1, Figure 2a). July's dryness is remarkable when compared to the wetness of the first six months of the year, which set a new record for statewide average precipitation. The central and northwest parts of Illinois were particularly dry, with some of these areas being 2-3 inches below normal for the month. This left some sections with as little as 25% of their normal July precipitation. Springfield recorded only 0.52 inches of rain for the month, its fifth driest July on record (going back to 1879).

However, there were some parts of the state that still saw near to above normal precipitation, including the northeast, southeast, and southwest CRDs. In fact, the far southern portions of the state saw some July precipitation totals more than 2 inches above normal. The highest total of 9.02 inches was recorded near Highland (Madison County).

Severe weather: The NOAA Storm Prediction Center recorded 48 severe weather reports for the month in Illinois, 0 for tornadoes, 3 for hail, and 45 for wind. (Multiple reports can be generated for a single event.)

Drought: While Illinois remained drought free throughout July, the below normal precipitation led the U.S. Drought Monitor to classify parts of central and northwest Illinois as abnormally dry by the end of the month. This is the first time since October 2018 that any part of the state has received this designation. The July 30 map listed 18% of the state as abnormally dry (Figure 4).

TOTAL MGDD FROM 4/1/2019 TO 7/31/2019



MGDD DEPARTURE FROM 4/1/2019 TO 7/31/2019

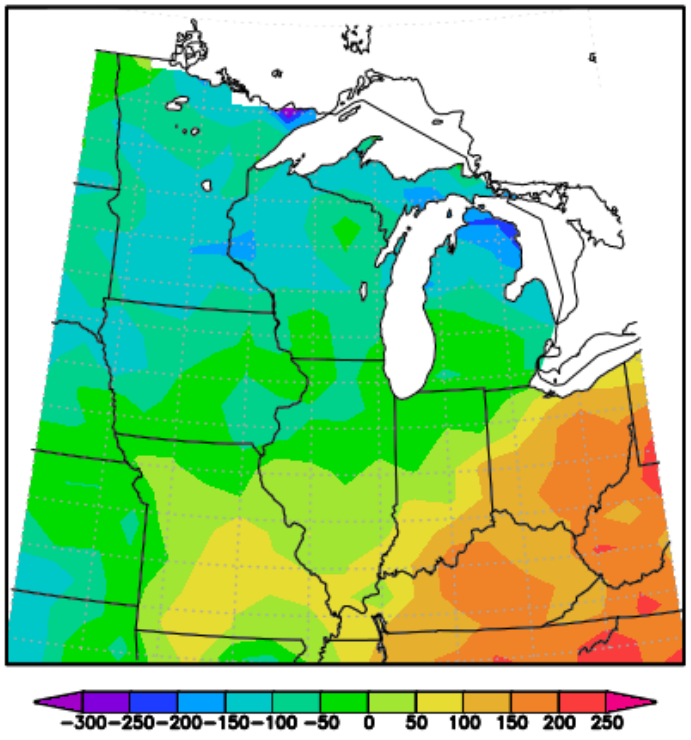


Figure 2b. Illinois growing degree days and departure from average through the end of July. Source: Midwestern Regional Climate Center. http://mrcc.illinois.edu, accessed on August 1, 2019.

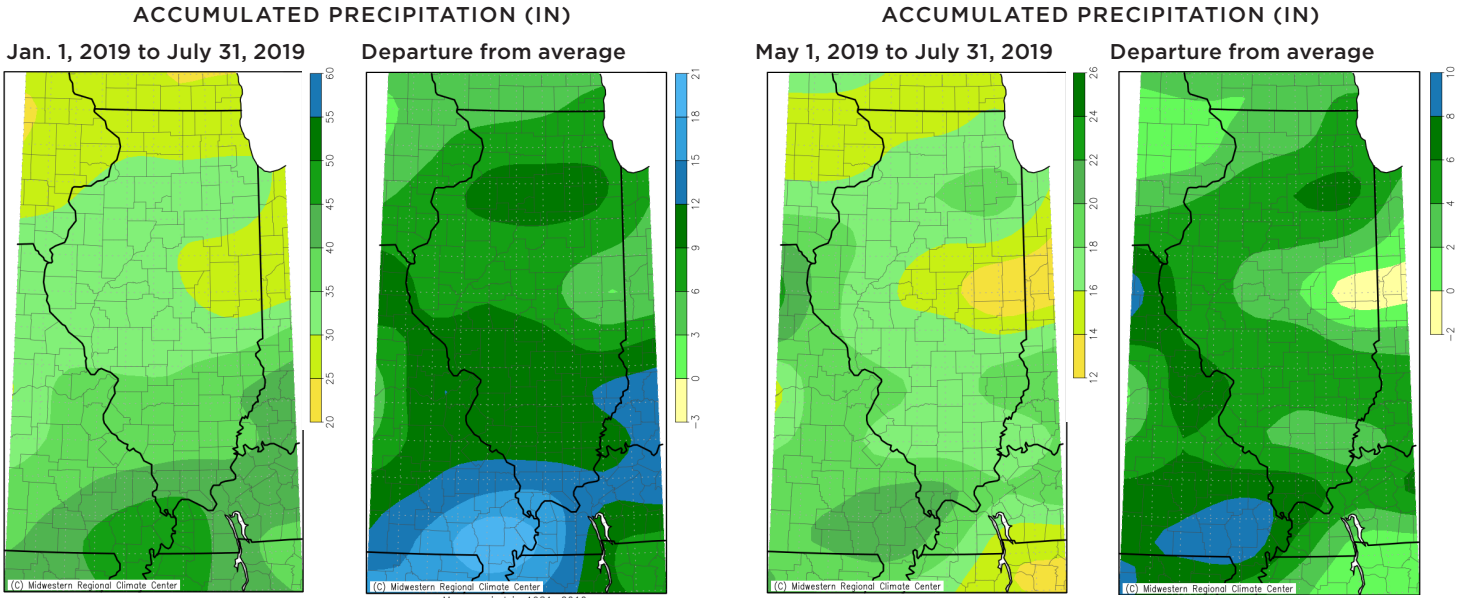
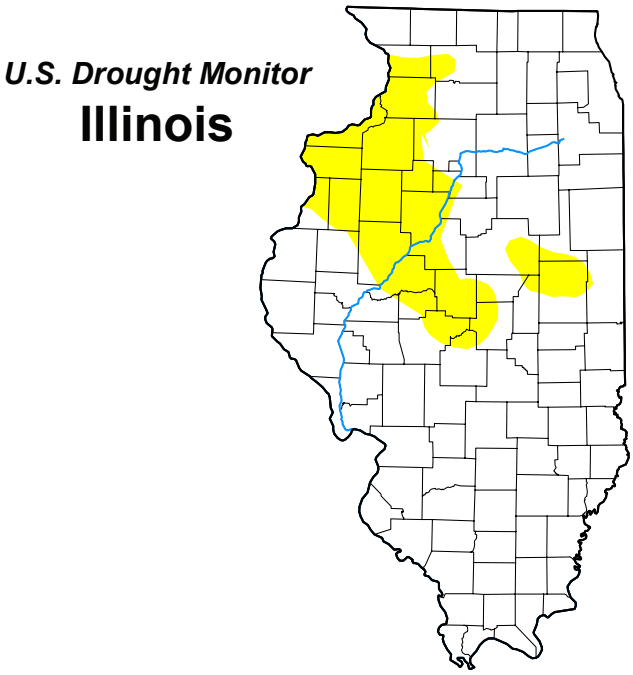


Figure 3. Illinois precipitation and precipitation departure from average for year to date (top left), last 3 months (top right), and last 6 months (bottom). Source: cli-MATE, Midwestern Regional Climate Center. http://mrcc.illinois.edu/CLIMATE, accessed on August 8, 2019.



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	81.86	18.14	0.00	0.00	0.00	0.00
Last Week *07-23-2019*	88.48	11.52	0.00	0.00	0.00	0.00
3 Months Ago *04-30-2019*	100.00	0.00	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 *07-31-2018*	83.97	16.03	3.35	0.00	0.00	0.00

Intensity:

- None
- 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.

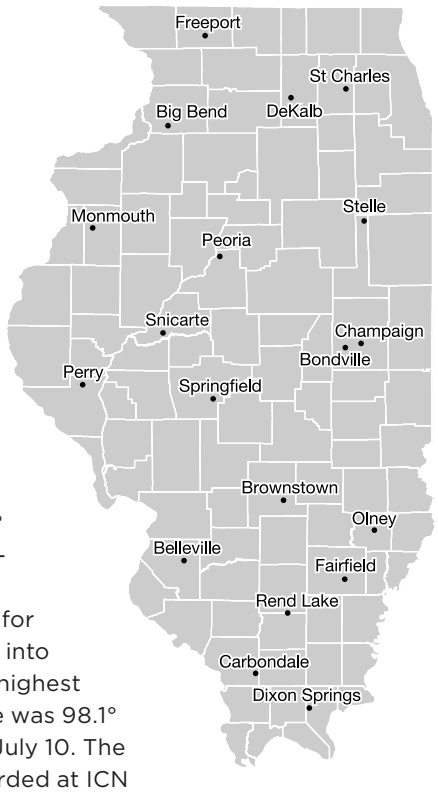
Author:
Curtis Riganti
National Drought Mitigation Center

Figure 4. U.S. Drought Monitor report for Illinois. Source: U.S. Drought Monitor. Author: Curtis Riganti, National Drought Mitigation Center http://droughtmonitor.unl.edu, accessed on August 8, 2019.

Illinois Climate Network (ICN)

— JENNIE ATKINS

The Illinois Climate Network (ICN) collects hourly weather and soil information from 19 stations across the state. ICN data for July are presented in Table 2.



Wind speeds averaged 4.9 mph in July, equal to the network's long-term average for July. ICN Monmouth had the windiest month with an average wind speed of 7.3 mph. The highest recorded wind gust was 48.0 mph, reported at ICN Fairfield on July 4.

Air temperatures were 5.7° warmer than in June, averaging 71.2° or 1.8° warmer than the long-term average. Station highs were in the 90s for the month as lows fell into the 50s. The month's highest recorded temperature was 98.1° at ICN Rend Lake on July 10. The lowest was 51.0° recorded at ICN Bondville on July 23.

Soil temperatures rose to averages from 78.6° at depths of 8 inches under sod to 84.1° at 2 inches under bare soil. Temperatures increased 7 to 9° from June and were 2 to 3° warmer than the long-term averages. Temperatures under bare soil ranged from 60.4 to 117.8° at 2 inches and 65.5 to 104° at 4 inches. Under sod, temperatures ranged from 63.8 to 101.0° at 4 inches and 62.9 to 102.6° at 8 inches.

Precipitation overall was lower than normal, averaging 2.83 inches across the network or 0.53 inches drier than the long-term average. Two stations in western Illinois, ICN Big Bend and ICN Monmouth, reported less than 1 inch for the month. However, several stations recorded totals that were higher than average. ICN Stelle in northern Ford County had the highest precipitation with a total of 4.50 inches or 1.23 inches more than the long-term average.

Soil moisture declined in July, especially in the upper layers. Moisture levels fell 31% at depths of 2 inches to a network average of 0.23 water fraction by volume (wfv). Levels in southern Illinois were 30% higher than the network average, and stations in the rest of the state were drier.

Similar declines occurred at the 4- and 8-inch depths, and moisture at 20 inches showed a smaller decrease with a 15% average decline. Levels at 39 and 59 inches remained high, showing no significant changes during the month.

Table 2. Data from the Illinois Climate Network (ICN), July 2019

Station	Wind			Air Temperature (°F)			Total Solar Radiation (MJ/m²)
	Avg. Speed (mph)	Avg. Direction (°)	Max. Gust (mph)	Max.	Min.	Avg.	
Belleville	4.6	179.2	30.8	95.7	58.9	78.1	774.2
Big Bend	5.8	189.4	28.5	95.8	53.4	76.7	795.5
Bondville	7.1	185.3	37.3	92.5	51.0	75.6	838.3
Brownstown	4.3	180.1	26.4	95.0	55.7	77.0	771.4
Carbondale	4.4	197.3	37.1	95.9	58.1	77.8	774.6
Champaign	2.8	179.7	28.9	94.6	57.6	77.3	774.0
DeKalb	7.1	184.3	38.7	93.1	53.0	75.3	797.7
Dixon Springs	2.4	175.1	28.3	92.9	56.8	76.2	746.1
Fairfield	4.8	164.8	48.0	94.9	56.8	77.5	769.8
Freeport	3.7	192.5	24.9	93.3	55.6	75.5	798.6
Monmouth	7.3M	196.4M	27.2M	93.3M	52.3M	76.9M	820.1M
Olney	4.2	177.3	30.7	95.0	57.1	77.3	764.6
Peoria	5.3	187.6	27.2	94.0	58.2	78.1	790.9
Perry	4.2	206.0	43.0	92.6	57.4	77.2	695.1
Rend Lake	3.4	182.0	34.1	98.1	59.5	78.5	753.6
Snicarte	5.9	200.1	40.8	94.6	57.0	78.0	793.5
Springfield	4.4	190.0	31.4	94.3	57.3	78.1	765.5
St. Charles	5.2	171.0	33.0	93.1	55.3	74.8	755.1
Stelle	7.0	185.5	31.4	93.5	54.2	75.7	767.6

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	78.2	4.09	69.9	6.7	77.7	77.2	81.0	86.3
Big Bend	76.0	0.25	67.7	6.9	81.9	79.8	86.5	88.9
Bondville	78.4	2.89	67.8	7.1	78.9	79.2	83.1	84.1
Brownstown	79.0	3.63	69.4	6.5	77.1	75.9	80.4	81.0
Carbondale	83.9	4.12	71.9	6.6	81.1	78.7	81.1	81.5
Champaign	72.9	2.29	67.2	6.7	81.3	80.4	84.3	85.5
DeKalb	73.2	2.77	65.3	6.9	75.6	74.4	79.8	79.8
Dixon Springs	79.6	3.65	68.8	6.3	80.3	79.0	82.3	84.6
Fairfield	77.7	3.13	69.3	6.6	79.5	78.9	87.1	84.9
Freeport	76.7	1.95	67.0	6.7	79.5	76.7	81.7	81.5
Monmouth	76.6	0.23M	68.4M	7.09M	79.0M	77.6M	85.3M	85.8M
Olney	76.9	3.53	68.7	6.5	81.2	80.7	82.1	81.9
Peoria	69.5	1.40	66.6	7.0	81.5	76.9	81.7	82.6
Perry	80.5	3.15	70.0	6.0	79.9	78.4	83.0	84.8
Rend Lake	73.6	2.11	68.6	6.6	86.2	85.1	84.5	85.3
Snicarte	73.0	3.55	68.0	7.0	86.4	84.6	86.1	89.2
Springfield	72.7	3.05	68.0	6.7	82.0	79.9	83.6	84.6
St. Charles	72.4	3.40	64.5	6.5	78.2	75.6	81.0	80.9
Stelle	74.4	4.50	66.3	6.7	76.4	74.6	82.8	83.8

M = Missing data.

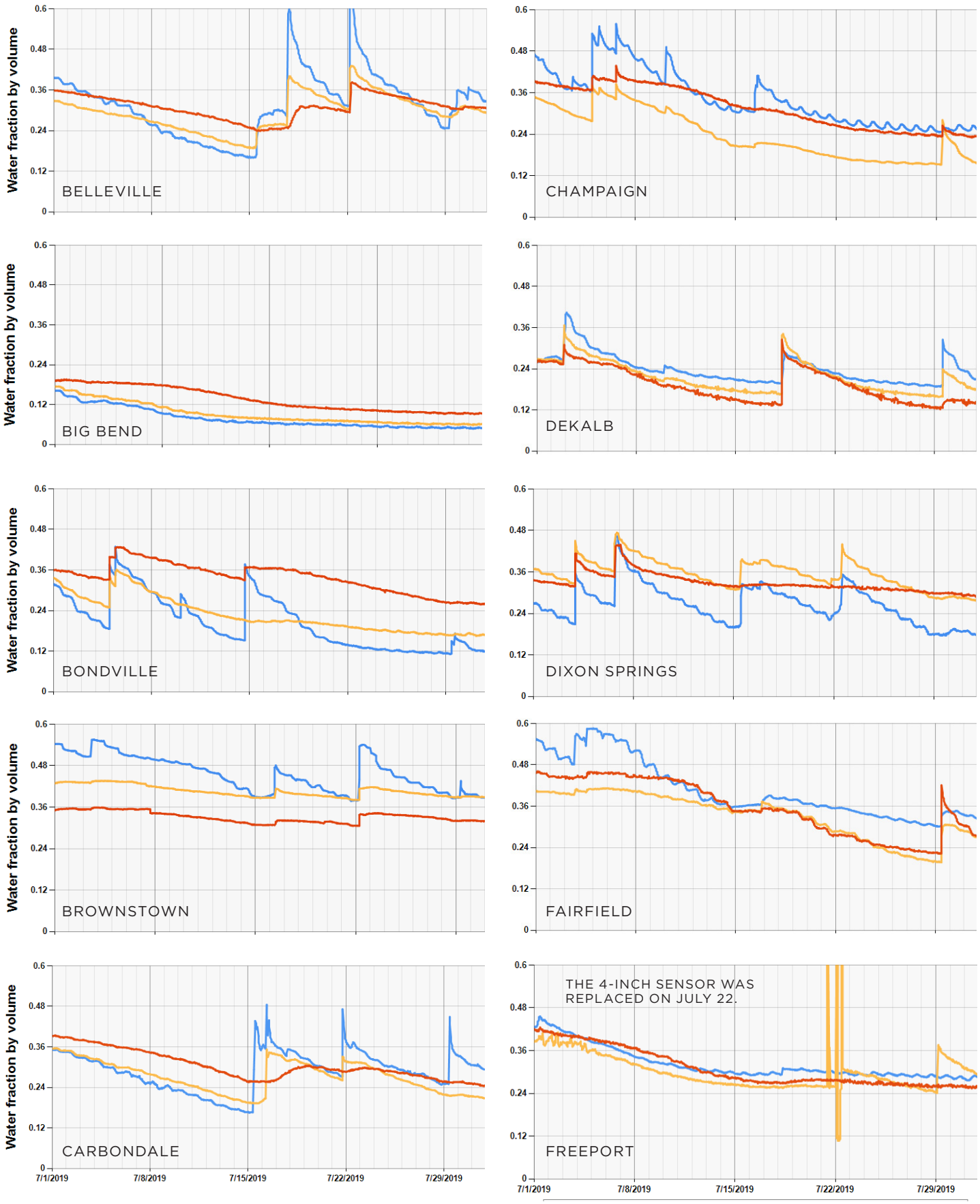


Figure 5. July soil moisture levels at ICN stations: 2 in, 4 in, and 8 in

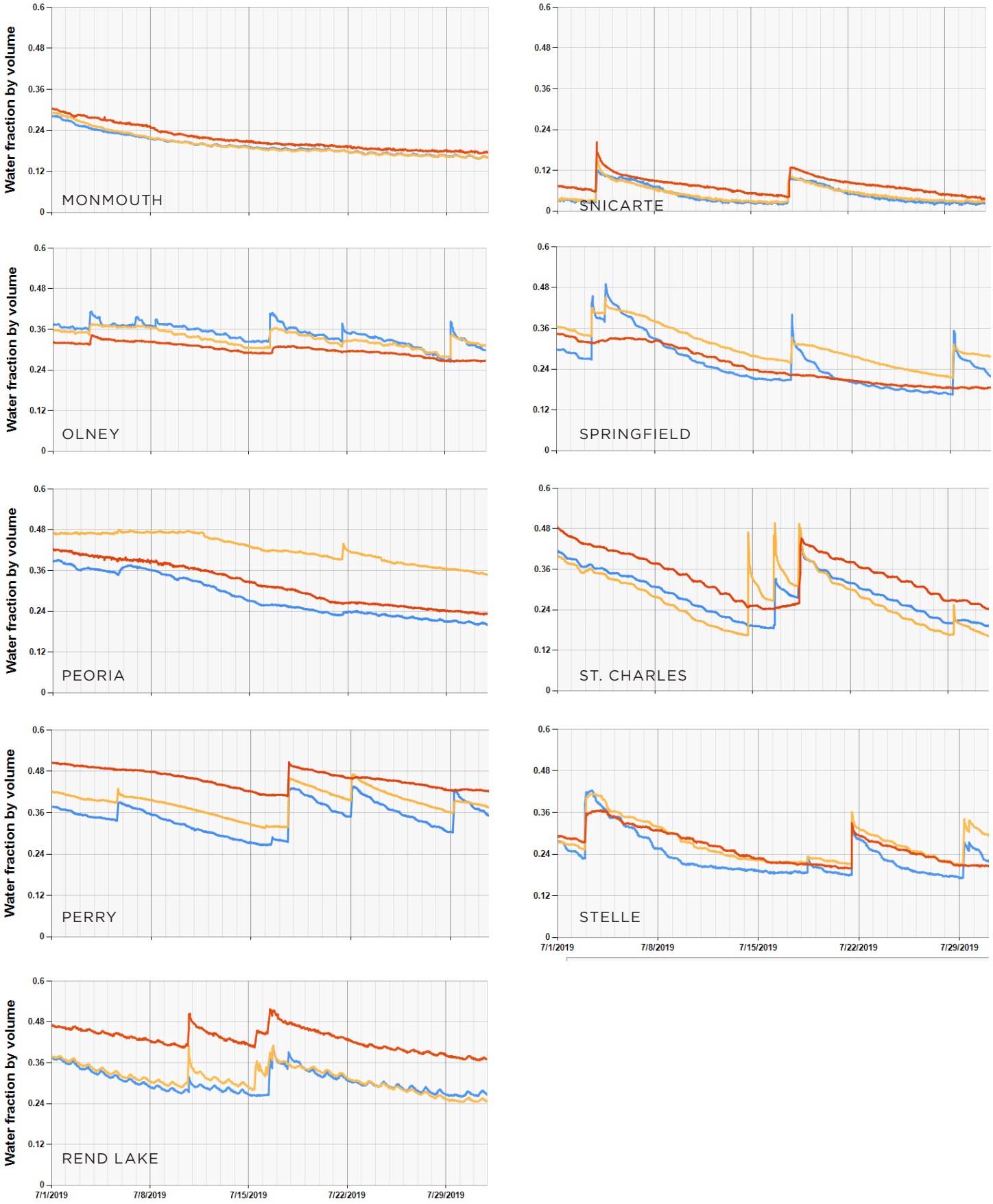


Figure 5. July soil moisture levels at ICN stations: 2 in, 4 in, and 8 in

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 Station. Flood stage is defined locally for each gage location.

Based on data posted by the USACE, Illinois River water levels at most stations below the Fox River were above the local flood stages at the start of July and receded to below flood stages during the month. The lower Mississippi River along the Illinois border and the Ohio River at Cairo were also above the local flood stages at the beginning of July. Some reaches of the Mississippi River below St. Louis remained above the local flood stages throughout the month.

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 July mean flow for each year of record and selecting the middle value, the 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, was above the median value for July (approximately 235 percent of the median) and above the mean for July (approximately 155 percent of the mean). Monthly mean discharge values ranged from normal to much above normal for July.

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 the ISWS staff for the current water levels. Reservoir levels are reported in terms of their difference from the 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-June water levels at 24 reservoirs for which levels were reported last month and this month, reported end-of-July water levels were lower at 21 reservoirs, higher at 2 reservoirs, and about the same as at the end of last month at 1 reservoir. For the 24 reservoirs with measurements reported at the end of July, water levels were below the normal target pool or spillway level at 13 reservoirs, above the normal target pool or spillway level at 5 reservoirs, and at about the full pool level at 6 reservoirs.

Table 3. Peak Stages for Major Rivers during July 2019

River	Station	River mile*	Flood stage (feet)*	Peak stage (feet)**	Date
Illinois	Morris	263.1	16	11.5	04
	La Salle	224.7	20	21.9	05
	Peoria	164.6	18	19.6	06
	Havana	119.6	14	20.2	01
	Beardstown	88.6	14	22.8	01
	Hardin	21.5	25	32.9	01
Mississippi	Dubuque	579.9	17	16.0	29
	Keokuk	364.2	16	13.8	08, 10
	Quincy	327.9	17	17.3	08
	Grafton	218.0	18	27.0	01
	St. Louis	180.0	30	38.1	01
	Chester	109.9	27	39.6	01
	Thebes	43.7	33	40.5	01
Ohio	Cairo	2.0	40	51.2	01

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.

Major Reservoirs. Compared to water levels at the end of June, at the end of July the water level at Lake Shelbyville was 4.7 feet lower, Carlyle Lake was 4.1 feet lower, and Rend Lake was 1.8 feet lower. At the end of July, Lake Shelbyville was 5.5 feet above the summer target level, Carlyle Lake was 3.3 feet above the summer target level, and Rend Lake was 2.7 feet above the spillway level.

Great Lakes. Current month mean and end-of-month values are provisional and are relative to International Great Lakes Datum, 1985. The July 2019 mean level for Lake Michigan was 581.9 feet. The monthly mean level one year ago (July 2018) was 580.7 feet. The long-term average lake level for July is 579.3 feet, based on 1918-2018 data. In this period of record, the lowest mean level for Lake Michigan for July occurred in 1964 at 576.7 feet, and the highest mean level for July occurred in 1986 at 582.0 feet. The month-end level of Lake Michigan was 581.9 feet. All values are provided by the U.S. Army Corps of Engineers Detroit District.

Table 4. Provisional Mean Flows, July 2019

Station	Drainage area (sq mi)	Years of record	2019 mean flow (cfs)	Long-term flows		Flow condition	Percent chance of exceedence	Days of data this month
				Mean* (cfs)	Median (cfs)			
Rock River at Rockton	6363	82	7,652	4,113	3,026	above normal	12	31
Rock River near Joslin	9549	74	11,241	6,474	4,985	above normal	16	31
Pecatonica River at Freeport	1326	98	1,844	957	728	much above normal	9	31
Green River near Geneseo	1003	79	1,233	605	425	above normal	11	31
Edwards River near New Boston	445	79	470	317	173	above normal	19	31
Kankakee River at Momence	2294	100	3,079	1,555	1,382	much above normal	6	31
Iroquois River near Chebanse	2091	93	2,340	1,370	738	above normal	18	31
Fox River at Dayton	2642	98	3,880	1,369	966	much above normal	6	31
Vermilion River at Pontiac	579	73	383	341	174	above normal	29	31
Spoon River at Seville	1636	100	1,547	1,049	663	above normal	19	31
LaMoine River at Ripley	1293	94	769	821	358	above normal	26	31
Bear Creek near Marceline	349	73	32	263	80	normal	65	31
Mackinaw River near Congerville	767	72	484	385	233	above normal	22	31
Salt Creek near Greenview	1804	75	1,290	1,273	891	normal	31	31
Sangamon River at Monticello	550	105	140	307	175	normal	57	31
South Fork Sangamon near Rochester	867	67	495	378	206	above normal	22	31
Illinois River at Valley City	26,743	78	48,271	22,960	19,589	much above normal	8	31
Macoupin Creek near Kane	868	88	106	353	131	normal	58	22
Vermilion River near Danville	1290	95	796	793	519	normal	32	31
Kaskaskia River at Vandalia	1940	47	1,970	1,356	1,188	normal	33	31
Shoal Creek near Breese	735	73	331	329	121	normal	31	31
Embarras River at Ste. Marie	1516	103	1,265	781	505	above normal	22	31
Skillet Fork at Wayne City	464	97	334	176	68	above normal	18	31
Little Wabash below Clay City	1131	102	814	512	230	above normal	18	31
Big Muddy at Plumfield	794	46	768	503	417	above normal	17	31
Cache River at Forman	244	93	220	104	39	above normal	11	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.

Table 5. Reservoir Levels in Illinois, July 2019

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	June reported pumpage (million gallons)
Altamont	Effingham	582.0	-0.6	–0.6	–1.4	32	7.0
Bloomington	McLean	719.5	0.0	–0.3	–1.1	31	N/A
Carlinville	Macoupin	571.1	-1.2	–1.2	–0.8	32	27.7
Carlyle[1]	Clinton	445.0	+3.3	–4.1	+1.3	40	N/A
Decatur[1,3]	Macon	614.3	0.0	–0.2	–0.3	34	1,052.2
Evergreen[4]	Woodford	720.0	-0.9	–1.1	–1.6	28	N/A
Glenn Shoals[2]	Montgomery	590.0	0.0	–2.0	–0.7	22	w/Hillsboro
Highland	Madison	500.0	-0.1	–0.2	–0.3	29	31.1
Hillsboro[2]	Montgomery	589.0	N/A	N/A	–0.3	23	37.4
Jacksonville[2]	Morgan	644.0	N/A	N/A	–0.4	20	w/Mauvaise Terre
Kinkaid	Jackson	420.0	-0.3	–0.4	–0.2	29	36.9
Lake of Egypt	Williamson	500.0	N/A	N/A	–0.5	24	N/A
Mattoon	Coles	632.0	-0.5	–0.5	–0.4	24	w/Paradise
Mauvaise Terre[2]	Morgan	588.5	N/A	N/A	–0.2	21	no meter
Mt. Olive (new)	Macoupin	600.0	N/A	N/A	–0.4	6	w/Mt. Olive (old)
Mt. Olive (old)	Macoupin	654.0	-0.7	–0.5	–1.0	21	4.9
Pana	Christian	641.6	-0.2	–0.4	–0.8	34	N/A
Paradise	Coles	685.0	0.0	0.0	–0.5	27	63.1
Paris (east)	Edgar	660.0	0.0	–0.2	–0.3	33	Not PWS
Paris (west)	Edgar	660.1	0.0	–0.2	0.0	23	w/Paris (east)
Raccoon[1]	Marion	477.0	+0.6	+0.2	N/A	N/A	87.5
Rend	Franklin	405.0	+2.7	–1.8	+1.8	40	N/A
Salem[3]	Marion	546.5	-0.7	–0.7	–0.8	23	21.4
Shelbyville[1]	Shelby	599.7	+5.5	–4.7	+3.2	40	Not PWS
Sparta[3]	Randolph	497.0	-0.7	+0.8	–1.4	20	N/A
Spring[3,4]	McDonough	654.0	-0.1	–0.2	–0.4	34	46.4
Springfield[1,3]	Sangamon	560.0	-0.2	–0.6	–0.6	34	610.3
Taylorville	Christian	590.0	+0.1	–0.1	–0.4	25	63.7
Vermilion[4]	Vermilion	581.7	+0.2	–0.2	–0.3	32	196.7

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 August 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.

Groundwater Information

— JENNIE ATKINS

Comparison to Period of Record. Shallow groundwater levels in 13 observation wells, which are remote from pumping centers, were above normal for the month of July. Levels averaged 0.48 feet above normal and ranged from 1.33 feet below to 2.73 feet above normal levels (Table 6).

Comparison to June 2019. Shallow groundwater levels were below those of the previous month. Levels averaged 1.60 feet below and ranged from 4.54 feet below to 1.53 feet above June levels.

Comparison to July 2018. Shallow groundwater levels in July were above levels from one year ago. Levels averaged 0.69 feet above and ranged from 3.19 feet below to 5.48 feet above July 2018 levels.

Table 6. Month-End Shallow Groundwater Level Data Sites, July 2019

No.	Well name	County	Well depth (feet)	This month's reading (depth to water, feet)	Deviation from			
					15-year avg. level (feet)	Period of record avg. (feet)	Previous month (feet)	Previous year (feet)
1	Galena	JoDaviess	25.00	18.53	0.38	1.88	–1.06	1.92
2	Mt. Morris	Ogle	55.00	14.59	1.70	2.73	–3.50	N/A
3	Crystal Lake	McHenry	18.00	3.55	0.49	1.26	–0.46	–0.10
4	Fermi Lab	DuPage	15.00	7.59	-0.43	–0.22	–0.42	0.25
5	Good Hope	McDonough	30.00	5.17	0.67	1.72	–1.16	2.80
6	Snicarte	Mason	42.00	37.71	-0.82	–1.11	1.53	–3.19
7	Coffman	Pike	28.00	12.50	-0.81	–0.19	–4.54	5.48
8	Greenfield	Greene	20.70	11.89	0.75	0.14	–3.20	3.13
9	Janesville	Coles	11.00	5.78	0.08	0.11	–1.11	–1.15
10	St. Peter	Fayette	15.00	NA	NA	N/A	N/A	N/A
11	SWS #2	St. Clair	80.00	12.30	0.84	2.07	–0.90	0.32
12	Boyleston	Wayne	23.00	6.78	-1.67	–1.33	–1.32	0.07
13	Sparta	Randolph	27.00	NA	NA	N/A	N/A	N/A
14	SE College	Saline	11.00	6.25	0.32	0.28	–3.55	0.56
15	Bondville	Champaign	21.00	5.88	-0.60	–1.12	–1.09	–1.82
				Averages	**0.07**	**0.48**	**–1.60**	**0.69**

Notes: N/A = Data not available.

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

ILLINOIS STATE WATER SURVEY
WWW.ISWS.ILLINOIS.EDU
2204 Griffith Drive
Champaign, IL 61820
(217) 333-2210