

ILLINOIS WATER AND CLIMATE SUMMARY

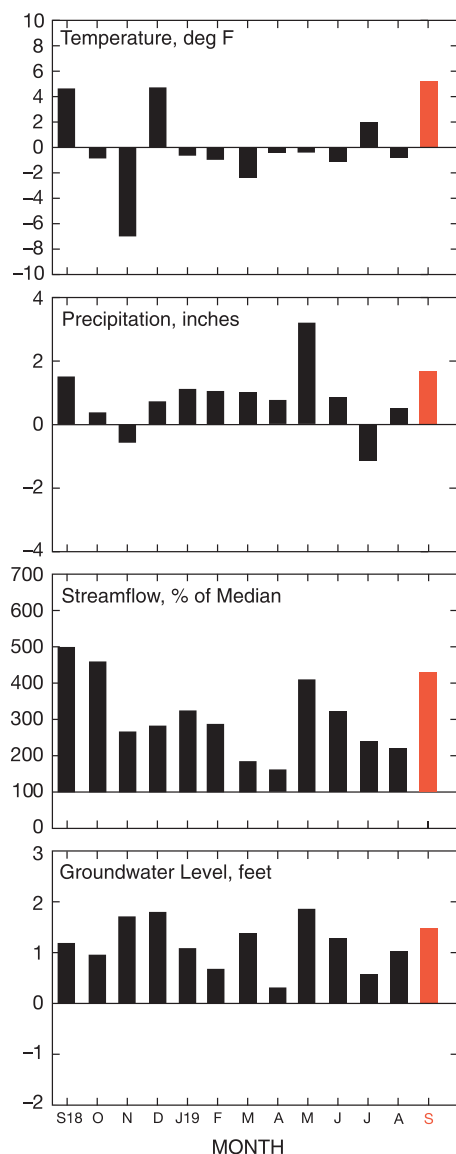


Figure 1. Statewide departures from normal.

SEPTEMBER 2019 OVERVIEW

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

Air temperatures averaged 71.6°F in September, 5.4° above the long-term average (Figure 1). The southwest crop reporting district (CRD) was the warmest with an average of 75.5°. The lowest regional temperature was 68.1°, reported by the northeast CRD.

Precipitation averaged 4.77 inches, 1.54 inches above the long-term average (Figure 1). The northwest CRD was the wettest with an average of 9.75 inches. The driest was the southeast CRD with 0.61 inches.

Soil moisture at the 2- to 20-inch depths increased 20 to 50% in central and northern Illinois while declining 10% or more in the south. Moisture levels remained steady at the deeper depths in the south and central locations, but in the north, average levels increased 19% at 39 inches and 14% at 59 inches.

Mean provisional streamflow aggregated statewide was above the long-term median flow for September, about 435% of median (Figure 1). Monthly mean discharge values ranged primarily from normal to much above normal for September. Middle reaches of the Illinois and Mississippi Rivers rose to the local flood stage levels at the end of the month at some locations.

Water surface levels at the end of September were below the full pool or target level at 19 of 25 reporting reservoirs. At the end of September, Lake Shelbyville was 0.1 foot above the seasonal target level, Carlyle Lake was 0.4 feet above the seasonal target level, and Rend Lake was 0.7 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 1.49 feet from the period of record. An increase of 0.38 feet in departures was observed from the deviation in normal groundwater levels between August and September. Levels averaged 0.05 feet above August 2019 and 0.41 feet above September 2018 levels (Figure 1).

Weather/Climate Information

— KEVIN GRADY

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

September in Illinois was much warmer than average statewide. Precipitation varied immensely across the state. The northern half of Illinois was much wetter and the southern half was much drier than average.

Temperatures averaged 71.6°F, 5.4° above the long-term average (Table 1, Figure 2a). This year was the 4th warmest September on record for Illinois (back to 1895) and the warmest since 1933. Average temperatures for the month ranged from over 3° above average in the northeastern part of the state to as much as 7° above average in the southwest. Monthly highs were generally in the lower to mid-90s with some upper 80s in the northern part of the state. The warmest reading of the month, 97°F, occurred on September 16 at two stations in Alexander and Pope Counties. Station minimum temperatures ranged from the mid-40s to the upper 50s, with the lowest temperature in September of 45°F occurring near Stockton (Jo Daviess County) on September 5. Many stations set record warm daily minimum temperatures during some very warm nights in September, including one near Rock Island (Rock Island County), where the low of 77°F on September 10 broke the previous daily record by 3°.

Growing degree days (DD, base 50°, from April 1) ranged from just above 2700 in northern Illinois to around 4000 in far southern Illinois (Figure 2b). This neared or slightly exceeded the long-term average in far northern Illinois with the departure increasing to over 200 DD above average into southern Illinois.

Precipitation averaged 4.77 inches in September, 1.54 inches above the long-term average (Table 1, Figure 2a). However, there was quite an extreme precipitation gradient across the state. Several areas in northern Illinois received over 12 inches of rain for the month, while some places in southeast Illinois received less than 0.25 inches. To put things in perspective, the Southeast CRD's average of 0.61 inches, the driest in the state, was only 6.25% of the Northwest CRD's average of 9.75 inches, the wettest in the state.

The wetness in the northern half of the state is a complete reversal from the dryness seen in many of these areas in July and August, which had allowed some pockets of moderate drought to develop. Most of this drought quickly ended as these same areas saw September totals of 4-6 inches or more above average. This led to moderate flooding along many northern Illinois rivers, including the Des Plaines, Fox, Rock, and Pecatonica Rivers. These high totals were partly

Table 1. Temperature and Precipitation for September 2019

	Temp. (°F)	Departure from long- term avg. (1981-2010)	Precip. (in)	Departure from long- term avg. (1981-2010)
Illinois	71.6	+5.4	4.77	+1.54
CRD 1 (northwest)	68.2	+4.5	9.75	+6.40
CRD 2 (northeast)	68.1	+4.0	8.83	+5.53
CRD 3 (west)	71.4	+5.6	6.85	+3.33
CRD 4 (central)	71.0	+5.3	5.64	+2.51
CRD 5 (east)	70.3	+4.8	5.49	+2.51
CRD 6 (west southwest)	73.2	+6.1	2.58	-0.67
CRD 7 (east southeast)	72.8	+5.5	1.29	-1.82
CRD 8 (southwest)	75.5	+6.9	0.92	-2.35
CRD 9 (southeast)	75.1	+6.5	0.61	-2.52

Data from NOAA's National Centers for Environmental Information, accessed 10/8/2019.

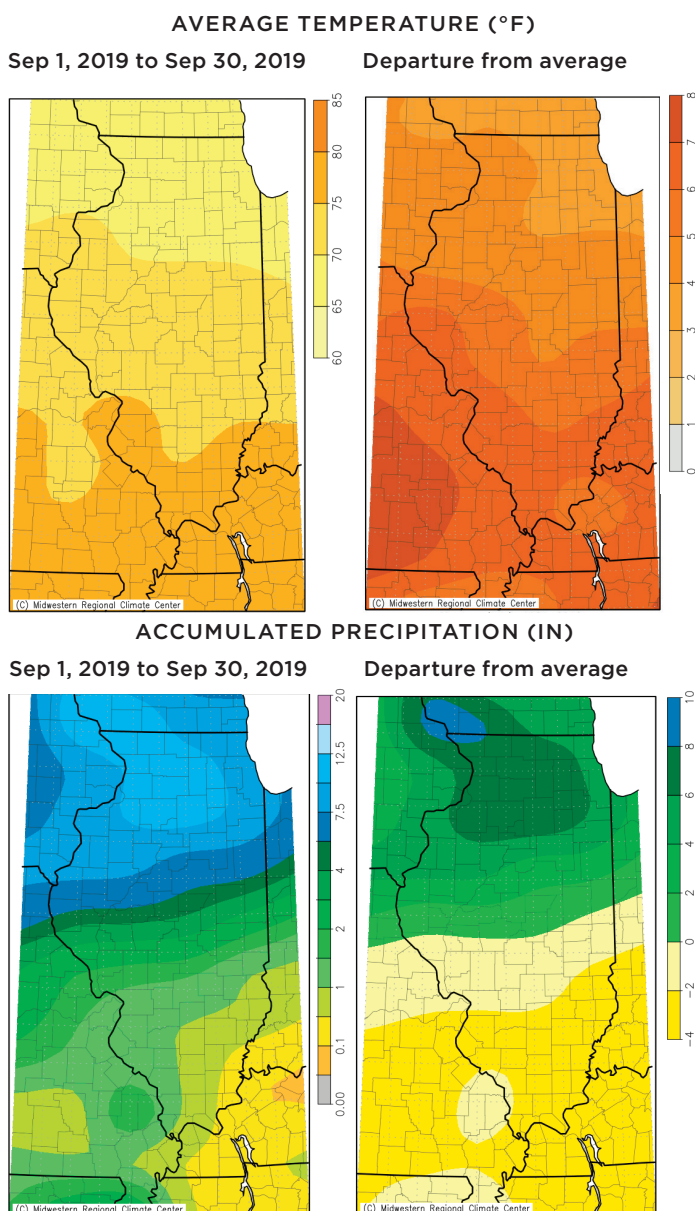


Figure 2a. Illinois temperature, precipitation, and their departures from average for September 2019.

Source: cli-MATE, Midwestern Regional Climate Center.

<http://mrcc.illinois.edu/CLIMATE>, accessed on October 8, 2019.

due to several heavy rain events in these areas in the latter half of the month, including one on September 27 and 28. A station in Minonk (Woodford County) reported 9.09 inches on September 28, with dozens of other stations from Peoria to Cook County reporting 5-7 inches during this same period, leading to flash flooding in these areas. The highest monthly total in Illinois of 16.85 inches was also recorded in this area near Seneca (La Salle County).

The large precipitation totals quickly ended heading south across central Illinois, with most areas south of I-70 receiving 1.5 inches or less for the month, 2-3 inches below average. Some parts of southeast Illinois saw less than 0.25 inches, especially near the Ohio River. The driest monthly total of a mere 0.02 inches occurred at a station in Pope County, 3.58 inches below average. This lack of precipitation combined with the much above average temperatures quickly dried southern Illinois, leading to some areas of moderate drought by the end of the month.

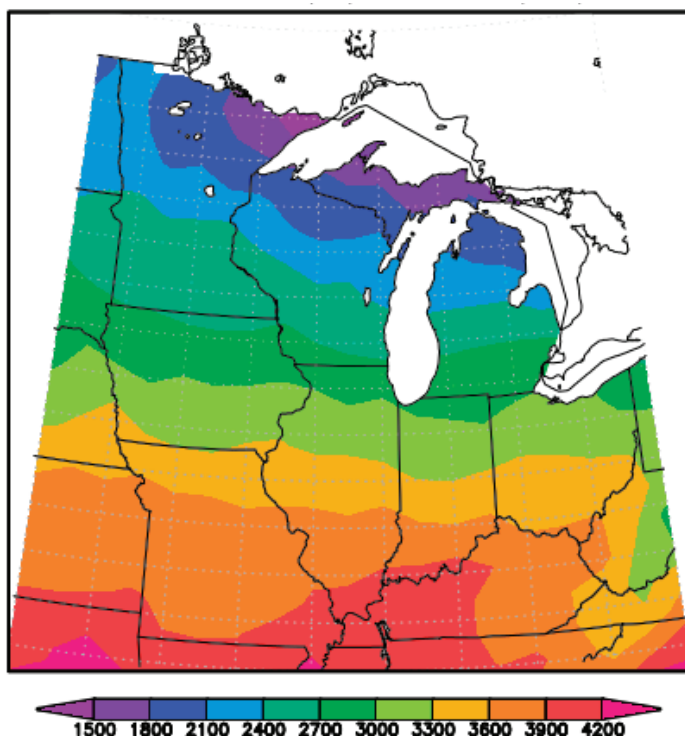
The NOAA Storm Prediction Center recorded 50 **severe weather reports** for September in Illinois, 2 for tornadoes, 19 for hail, and 29 for wind. (Multiple reports can be generated for a single event.) The tornado reports were received from near Teutopolis (Cumberland County) on September 1 and near Emden (Logan County) on September 29. Additionally, the National Weather Service confirmed a tornado near Waukegan (Lake County) on September 3 and another

in Fulton County on September 27, although neither was classified as such in the initial NOAA storm reports.

September began with many areas north of I-72 abnormally dry with pockets of moderate **drought** north of Champaign and Danville and near the Quad Cities partly stretching east all the way into Livingston County. As the month progressed, the above average precipitation began to alleviate conditions in many of these areas, such that the only pocket of moderate drought left in this part of the state by the end of the month was the one near Champaign and Danville. At the same time, the lack of precipitation and much above average temperatures quickly dried southern Illinois, leading to abnormally dry conditions and a pocket of moderate drought from Pope and Hardin Counties through Perry and Franklin Counties by the end of the month.

In the U.S. Drought Monitor's September 24 report, 6.31% percent of the state was under moderate drought (Figure 4). The area listed as abnormally dry shrank in September to 22.89% of the state in the September 24 report, including some lingering pockets in central Illinois and most areas south of I-64.

TOTAL MGDD FROM 4/1/2019 TO 9/30/2019



MGDD DEPARTURE FROM 4/1/2019 TO 9/30/2019

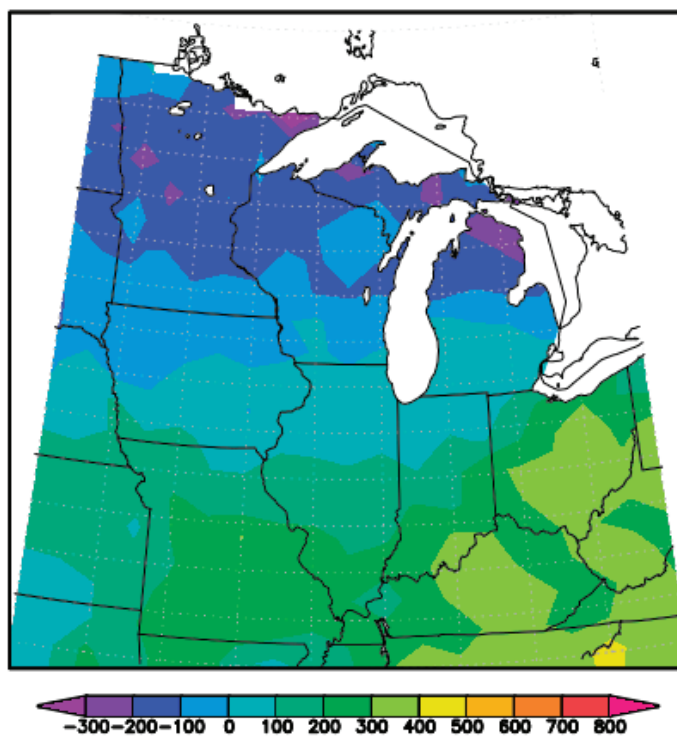


Figure 2b. Illinois growing degree days and departure from average through the end of September. Source: Midwestern Regional Climate Center. <http://mrcc.illinois.edu>, accessed on October 1, 2019.

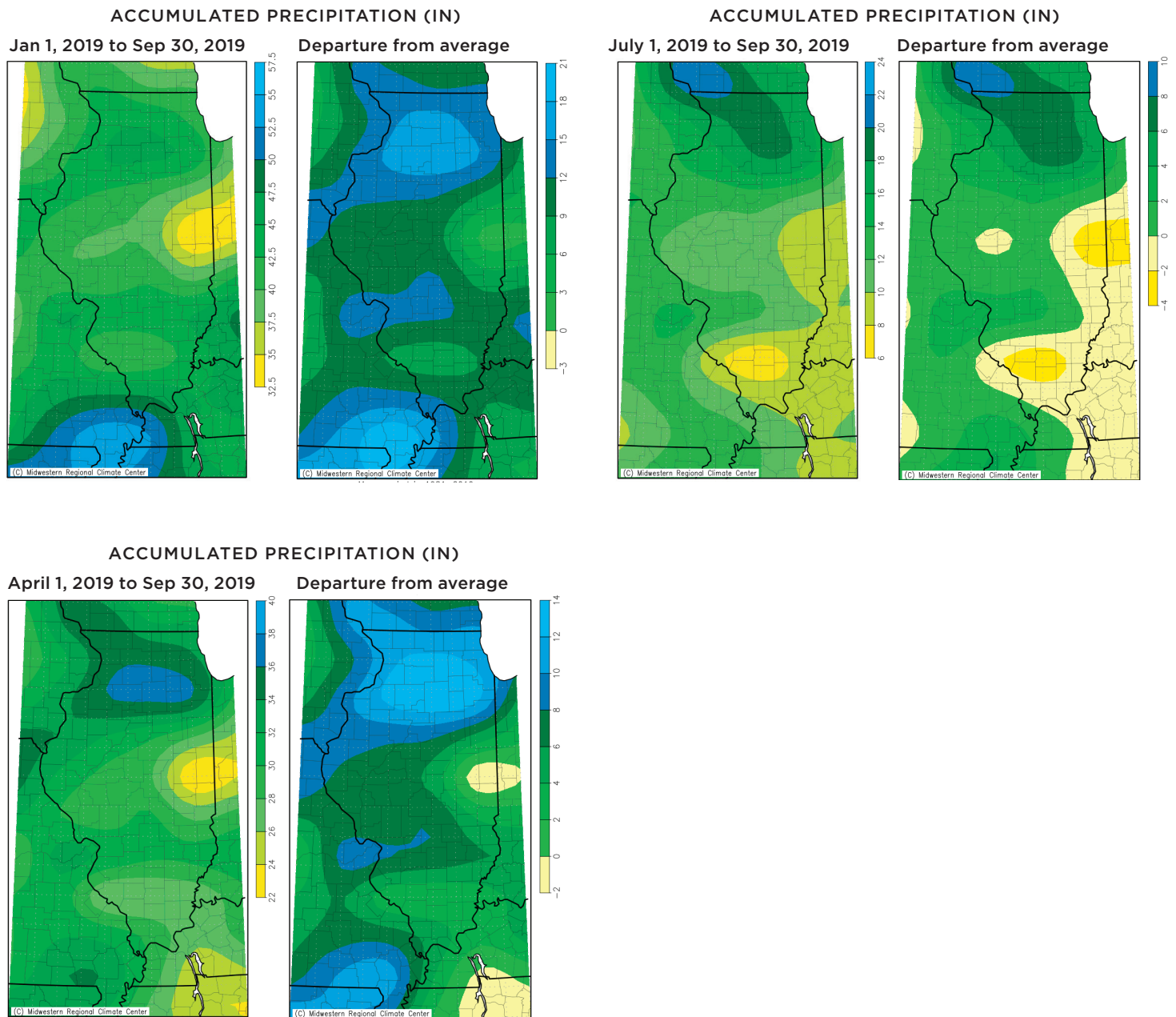
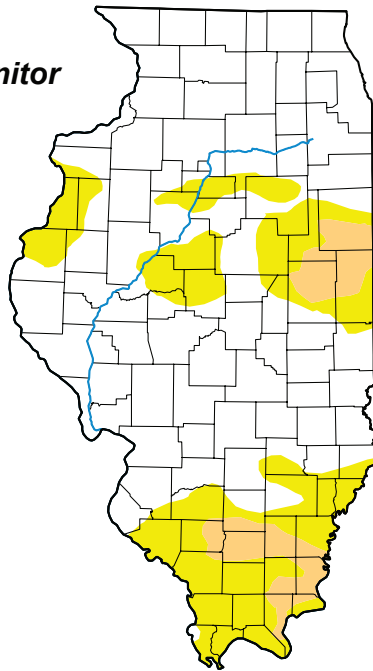


Figure 3. Illinois precipitation and precipitation departure from average for year to date (top left), last 3 months (top right), and last 6 months (bottom). Source: cli-MATE, Midwestern Regional Climate Center. <http://mrcc.illinois.edu/CLIMATE>, accessed on October 8, 2019.

U.S. Drought Monitor Illinois



September 24, 2019
(Released Thursday, Sep. 26, 2019)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)						
	None	D0	D1	D2	D3	D4
Current	70.80	22.89	6.31	0.00	0.00	0.00
Last Week 09-17-2019	61.84	32.37	5.79	0.00	0.00	0.00
3 Months Ago 06-25-2019	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 09-25-2018	96.92	3.08	0.00	0.00	0.00	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

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

Author:

Eric Luebehusen
U.S. Department of Agriculture



Figure 4. U.S. Drought Monitor report for Illinois. Source:
U.S. Drought Monitor. Author: Eric Luebehusen,
U.S. Dept of Agriculture
<http://droughtmonitor.unl.edu>, accessed on October 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 September are presented in Table 2.

Wind speeds averaged 4.9 mph in September, 0.7 mph higher than in August but 0.2 mph lower than the network's long-term average. The highest recorded wind gust was 49.2 mph, reported at ICN Dekalb on September 12. The month's windiest station was ICN Monmouth with an average of 7.5 mph.

Air temperatures fell slightly from August temperatures to an average of 71.5°, 6.1° higher than September's long-term average. Station highs remained in the 80s and 90s as lows ranged from the mid-40s to the mid-50s. The highest temperature was 97.1°, recorded at the Rend Lake station on September 16. The lowest was 49.2° at ICN Dekalb on September 5.

Soil temperatures declined 3 to 4° from in August to averages in the mid-70s. Temperatures were 3 to 5° higher than the long-term averages. Temperatures under bare soil ranged from 52.6 to 105.0° at depths of 2 inches and 57.7 to 95.5° at 4 inches. Under sod, temperatures ranged from 61.2 to 93.7° at 4 inches and 63.6 to 87.7° at 8 inches.

Precipitation varied greatly across the network in September. Overall, the network averaged 4.72 inches for the month, 1.79 inches above the long-term average. However, most of the rain fell in northern Illinois where the Freeport station reported 14.02 inches, the highest for the month. Southern Illinois saw considerably less with a regional average of only 0.68 inches. Five ICN stations reported less than an inch. ICN Rend Lake recorded only 0.26 inches, the month's lowest.

Soil moisture at 2 inches on average showed no significant change in September. However, at the regional level, soil moisture increased 21 to 31% in central and northern Illinois, while declining 40% in the south. Similar trends occurred at depths of 4 to 20 inches with increases of 20% and greater at the northern and central stations and declines from 30 to 10% in the south.

At the greater depths, soil moisture was relatively steady in central and southern Illinois. At the northern stations, levels increased 19% at 39 inches and 14% at 59 inches.

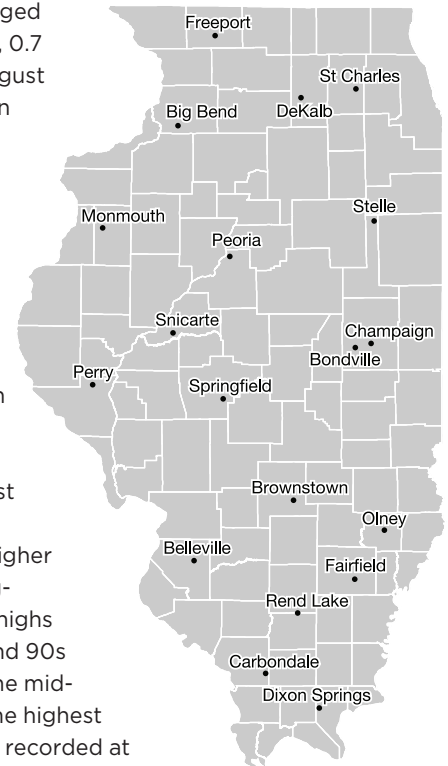


Table 2. Data from the Illinois Climate Network (ICN), September 2019

Station	Wind			Air Temperature (°F)			Total Solar Radiation (MJ/m²)
	Avg. Speed (mph)	Avg. Direction (°)	Max. Gust (mph)	Max.	Min.	Avg.	
Belleville	4.2	162.5	36.2	93.7	51.7	73.8	560.0
Big Bend	6.6	174.2	27.9	90.8	48.3	69.1	442.1
Bondville	6.8	186.9	42.6	90.1	49.2	70.0	569.0
Brownstown	4.2	161.8	27.3	91.1	50.9	72.9	584.4
Carbondale	4.0	191.8	29.9	95.8	49.5	74.9	617.9
Champaign	2.3	177.4	21.9	93.1	51.3	71.7	522.4
DeKalb	6.3	179.9	49.2	86.6	46.8	66.9	437.6
Dixon Springs	2.3	169.5	28.1	96.1M	48.6M	74.8M	593.1
Fairfield	4.5	159.4	29.3	93.0	52.7	74.0	603.0
Freeport	4.0	181.6	23.9	86.8	48.4	67.2	390.0
Monmouth	7.5	181.3	33.3	89.5	49.6	70.2	503.8
Olney	3.9	175.7	31.3	93.4M	50.6M	73.4M	606.4
Peoria	5.8	175.5	34.8	90.9	51.1	70.8	492.8
Perry	4.9	185.6	32.5	92.2	51.5	72.5	540.2
Rend Lake	3.2	169.6	27.1	97.1	49.9	75.1	571.6
Snicarte	6.8	182.5	38.8	91.8	50.5	72.0	535.5
Springfield	4.4	173.1	30.8	91.5	54.2	73.4	555.5
St. Charles	5.2	179.2	36.0	89.0	49.7	67.9	407.1
Stelle	6.7	183.7	28.8	90.5	48.7	68.4	459.1

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	80.4	0.79	66.5	4.76	74.1	73.6	75.2	79.6
Big Bend	85.5	6.41	63.9	3.56	72.3	71.7	72.7	74.5
Bondville	81.1	4.53	63.3	4.68	72.2	72.8	75.3	75.6
Brownstown	77.5	0.67	64.8	4.87	74.9	72.0	74.5	74.8
Carbondale	80.4	0.35	67.3	5.27	76.8	75.0	79.5	79.5
Champaign	76.1	3.28	63.0	4.29	74.4	74.2	76.3	76.5
DeKalb	86.4	12.10	62.3	3.40	70.4	69.7	71.5	70.7
Dixon Springs	72.9	0.45	64.3M	4.98M	75.3	74.6	79.8	81.5
Fairfield	75.6	1.21	64.9	5.11	75.1	74.8	75.8	80.0
Freeport	87.3	14.02M	62.8	3.08	72.0	69.6	68.9	69.3
Monmouth	85.1	8.60	64.9	4.08	72.3	71.2	73.2	72.6
Olney	75.3M	1.06	64.1M	5.07M	75.2	75.2	77.6	77.4
Peoria	78.6	9.44	63.3	4.16	73.2	71.4	72.0	73.0
Perry	80.8	3.06	65.6	4.53	74.4	73.8	76.2	77.3
Rend Lake	69.2M	0.26	63.1	5.05	80.8	81.6	80.0	80.4
Snicarte	75.7	3.60	63.3	4.68	77.6	77.2	77.6	80.0
Springfield	77.0	5.57	65.1	4.69	73.8	72.6	76.2	76.9
St. Charles	82.2	8.08	61.7	3.31	70.6	69.4	70.8	70.1
Stelle	82.1	6.30	62.2	3.76	71.4	70.7	72.4	69.4

M = Missing data.

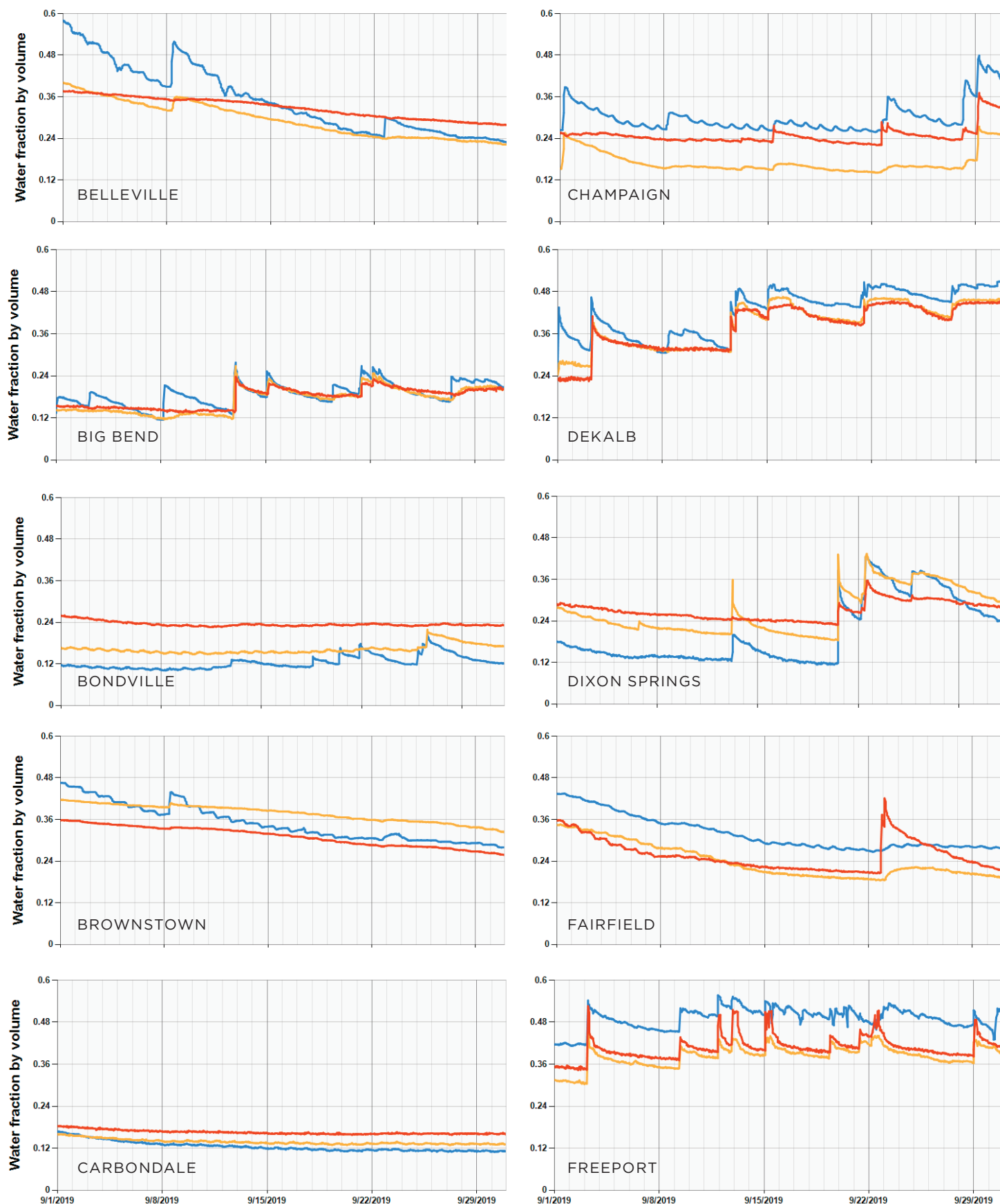


Figure 5. September soil moisture levels at ICN stations: — 2 in, — 4 in, and — 8 in

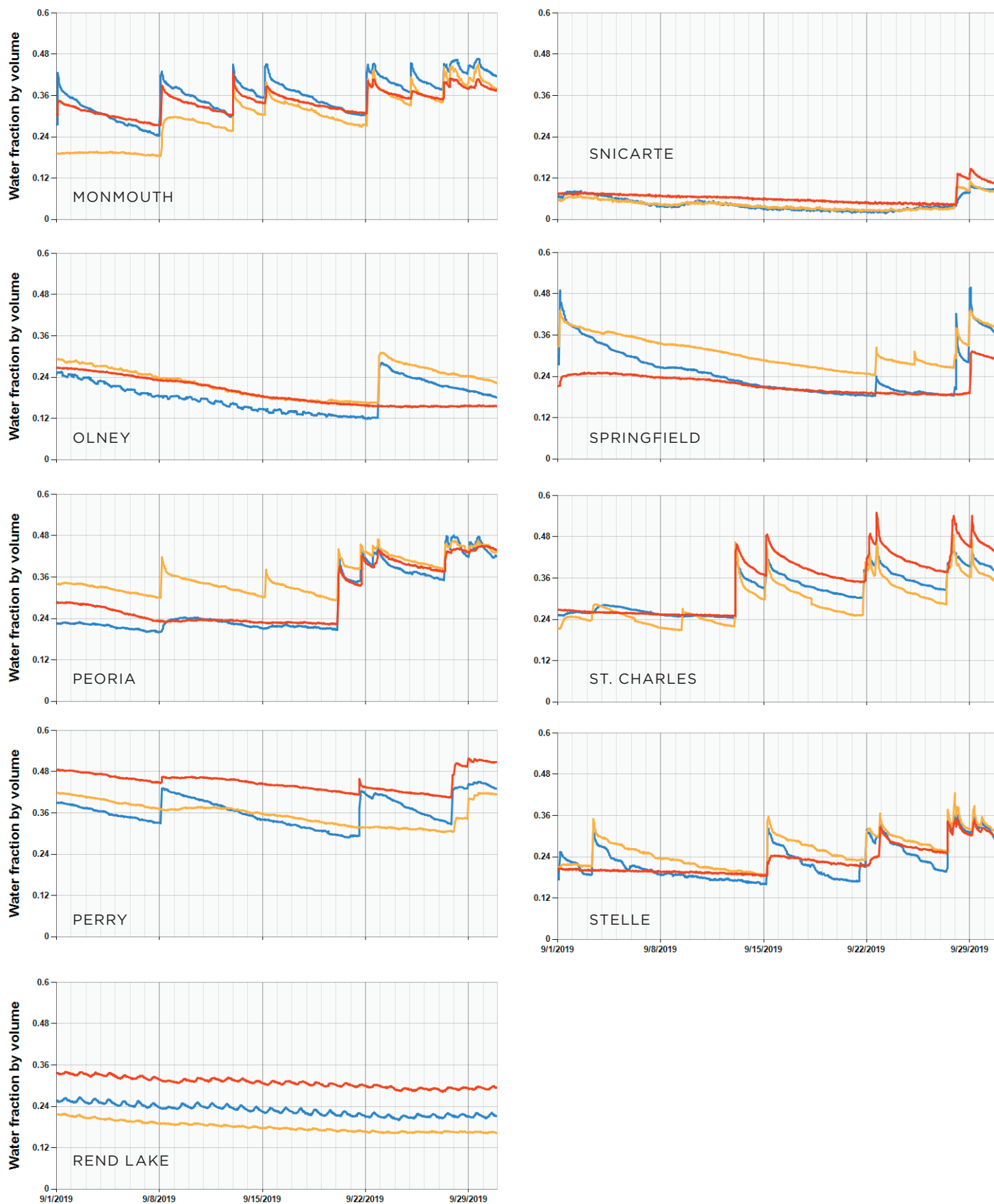


Figure 5. September soil moisture levels at ICN stations: — 2 in, — 4 in, and — 8 in

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

Illinois River water surface levels were above the local flood stages at the end of the month from upstream of Peoria County downstream to Havana. Mississippi River water levels rose to near or above the local flood stages in late September at most gaging stations from Rock Island downstream to Grafton.

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 September 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, was above the median value for September (approximately 435 percent of the median) and above the mean for September (approximately 200 percent of the mean). Monthly mean discharge values ranged primarily from normal to much above normal for September. The Rock River at Rockton, the Rock River near Joslin, the Green River near Geneseo, and the Fox River at Dayton streamgages, all in northern Illinois, posted monthly mean flows that are the second highest for the month of September in the periods of record of the respective gages. The September 2019 monthly mean streamflow of the Pecatonica River at Freeport was the highest recorded for the month of September in the period of record of the streamgage.

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-August water levels at 23 reservoirs for which levels were reported last month and this month, reported end-of-September water levels were lower at 17 reservoirs, higher at 3 reservoirs, and about the same as last month at 3 reservoirs. For the 25 reservoirs with measurements reported at the end of September, water levels were below normal target pool or spillway level at 19 reservoirs, above normal target pool or spillway level at 5 reservoirs, and at about full pool level at 1 reservoir.

Major Reservoirs. Compared to water levels at the end of August, at the end of September the water level at Lake Shelbyville was 1.5 feet lower, Carlyle Lake was 4.7 feet lower, and Rend Lake was 1.1 feet lower. At the end of September, Lake Shelbyville was 0.1 foot above the seasonal target level, and Carlyle Lake was 0.4 feet above the seasonal target level, Rend Lake was 0.7 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 September 2019 mean level for Lake Michigan was 581.6 feet. The monthly mean level one year ago (September 2018) was 580.5 feet. The long-term average lake level for September is 579.1 feet, based on 1918-2018 data. In this period of record, the lowest mean level for Lake Michigan for September occurred in 1964 at 576.6 feet, and the highest mean level for September occurred in 1986 at 582.0 feet. The month-end level of Lake Michigan was 581.7 feet. All values are provided by the U.S. Army Corps of Engineers Detroit District.

Table 3. Peak Stages for Major Rivers during September 2019

River	Station	River mile*	Flood stage (feet)*	Peak stage (feet)**	Date
Illinois	Morris	263.1	16	18.3	29
	La Salle	224.7	20	26.8	30
	Peoria	164.6	18	17.2	30
	Havana	119.6	14	14.8	30
	Beardstown	88.6	14	12.6	30
	Hardin	21.5	25	23.4	30
Mississippi	Dubuque	579.9	17	15.8	23
	Keokuk	364.2	16	13.6	30
	Quincy	327.9	17	17.6	30
	Grafton	218.0	18	18.4	30
	St. Louis	180.0	30	24.8	30
	Chester	109.9	27	25.8	28
	Thebes	43.7	33	29.0	28
Ohio	Cairo	2.0	40	26.0	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.

Table 4. Provisional Mean Flows, September 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	9,545	3,036	2,742	much above normal	2	30
Rock River near Joslin	9549	74	15,617	4,453	3,853	much above normal	2	30
Pecatonica River at Freeport	1326	98	3,753	777	668	much above normal	**	30
Green River near Geneseo	1003	79	1,807	361	161	much above normal	2	30
Edwards River near New Boston	445	79	478	137	52	much above normal	6	30
Kankakee River at Momence	2294	100	1,347	1,099	795	above normal	21	30
Iroquois River near Chebanse	2091	93	267	621	126	normal	34	30
Fox River at Dayton	2642	98	5,732	1,057	669	much above normal	2	30
Vermilion River at Pontiac	579	73	46	137	18	above normal	28	30
Spoon River at Seville	1636	100	1,005	599	194	above normal	15	30
LaMoine River at Ripley	1293	94	423	459	125	above normal	21	30
Bear Creek near Marceline	349	73	215	150	19	above normal	15	30
Mackinaw River near Congerville	767	72	351	238	28	above normal	14	30
Salt Creek near Greenview	1804	75	281	479	200	normal	39	30
Sangamon River at Monticello	550	105	14	125	29	below normal	72	30
South Fork Sangamon near Rochester	867	68	383	180	23	above normal	11	30
Illinois River at Valley City	26,743	78	16,608	12,350	8,279	above normal	18	30
Macoupin Creek near Kane	868	88	42	212	53	normal	56	30
Vermilion River near Danville	1290	95	71	302	112	normal	68	30
Kaskaskia River at Vandalia	1940	47	565	558	311	normal	31	30
Shoal Creek near Breese	735	73	107	173	40	normal	32	30
Embarras River at Ste. Marie	1516	103	72	353	115	normal	64	30
Skillet Fork at Wayne City	464	97	14	78	19	normal	59	30
Little Wabash below Clay City	1131	102	64	224	63	normal	49	30
Big Muddy at Plumfield	794	46	144	175	106	normal	40	30
Cache River at Forman	244	93	6.0	57	14	below normal	71	30

Notes:

Source streamflow data are obtained from the U.S. Geological Survey.

N/A = not available (due to ice or equipment problems).

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.

*As reported in U.S. Geological Survey (USGS) Water Resources Data, Illinois, Water Year 2016.

** Highest monthly mean flow for September in the period of record of the streamgage.

Table 5. Reservoir Levels in Illinois, September 2019

Reservoir	County	Normal pool or target level (feet)	Current level difference from normal or target	Monthly change (feet)	Average difference from normal or target (feet)	Years of record	August reported pumpage (million gallons)
Altamont	Effingham	582.0	-1.2	-0.7	-2.3	36	6.6
Bloomington	McLean	719.5	-2.1	-1.7	-3.0	33	N/A
Carlinville	Macoupin	571.1	-1.3	-1.3	-1.4	33	28.3
Carlyle ⁽¹⁾	Clinton	445.0	+0.4	-4.7	+0.2	41	N/A
Decatur ^(1,3)	Macon	614.3	-1.0	-0.5	-0.9	35	1,145.3
Evergreen ⁽⁴⁾	Woodford	720.0	-1.6	+0.4	-2.7	29	N/A
Glenn Shoals ⁽²⁾	Montgomery	590.0	-0.5	N/A	-0.9	25	w/Hillsboro
Highland	Madison	500.0	-0.1	-1.3	-0.7	31	33.9
Hillsboro ⁽²⁾	Montgomery	589.0	N/A	N/A	-0.5	24	N/A
Jacksonville ⁽²⁾	Morgan	644.0	N/A	N/A	-1.0	19	w/Mauvaise Terre
Kinkaid	Jackson	420.0	-0.8	-0.4	-0.7	31	54.7
Lake of Egypt	Williamson	500.0	-1.5	-0.9	-1.2	26	N/A
Mattoon	Coles	632.0	-1.0	0.0	-0.9	25	w/Paradise
Mauvaise Terre ⁽²⁾	Morgan	588.5	N/A	N/A	-0.4	20	no meter
Mt. Olive (new)	Macoupin	600.0	N/A	N/A	-0.6	9	w/Mt. Olive (old)
Mt. Olive (old)	Macoupin	654.0	-0.6	N/A	-1.4	22	4.9
Pana	Christian	641.6	-0.5	-0.6	-1.6	33	N/A
Paradise	Coles	685.0	-0.4	-0.1	-0.7	29	76.8
Paris (east)	Edgar	660.0	-0.3	-0.3	-1.1	34	Not PWS
Paris (west)	Edgar	660.1	-0.1	-0.2	-0.1	24	w/Paris (east)
Raccoon ⁽¹⁾	Marion	477.0	0.0	-0.3	N/A	N/A	103.5
Rend	Franklin	405.0	+0.7	-1.1	+0.7	41	N/A
Salem ⁽³⁾	Marion	546.5	-0.9	-0.4	-0.9	24	27.2
Shelbyville ⁽¹⁾	Shelby	599.7	+0.1	-1.5	-0.2	41	Not PWS
Sparta ⁽³⁾	Randolph	497.0	-0.6	-0.6	-1.7	22	N/A
Spring ^(3,4)	McDonough	654.0	+0.6	+0.6	-0.9	35	51.0
Springfield ^(1,3)	Sangamon	560.0	+0.5	+0.5	-1.8	35	N/A
Taylorville	Christian	590.0	-0.3	0.0	-0.7	25	58.2
Vermilion ⁽⁴⁾	Vermilion	581.7	-0.4	0.0	-0.7	34	224.3

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 October 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 11 observation wells, which are remote from pumping centers, were above normal for the month of September. Levels averaged 1.49 feet above normal and ranged from 2.40 feet below to 5.90 feet above normal levels (Table 6).

Comparison to August 2019. Shallow groundwater levels were above those of the previous month. Levels averaged 0.05 feet above and ranged from 3.53 feet below to 5.59 feet above August levels.

Comparison to September 2018. Shallow groundwater levels in September were above levels from one year ago. Levels averaged 0.41 feet above and ranged from 4.19 feet below to 6.10 feet above September 2018 levels.

Table 6. Month-End Shallow Groundwater Level Data Sites, September 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	17.97	1.91	2.95	1.43	-0.25
2	Mt. Morris	Ogle	55.00	13.15	5.00	5.90	3.68	N/A
3	Crystal Lake	McHenry	18.00	3.30	1.60	2.23	0.95	0.15
4	Fermi Lab	DuPage	15.00	2.48	5.85	5.61	5.59	6.10
5	Good Hope	McDonough	30.00	4.81	3.07	4.18	1.24	1.82
6	Snicarte	Mason	42.00	37.09	0.13	0.09	0.14	-0.63
7	Coffman	Pike	28.00	13.78	-0.22	0.46	-3.53	4.72
8	Greenfield	Greene	20.70	15.44	-0.12	-0.13	-1.50	1.92
9	Janesville	Coles	11.00	6.93	-0.41	-0.45	-0.80	-2.26
10	St. Peter	Fayette	15.00	N/A	N/A	N/A	N/A	N/A
11	SWS #2	St. Clair	80.00	13.84	0.35	1.32	-2.40	-1.82
12	Boyleston	Wayne	23.00	7.44	-0.57	-0.12	-1.08	N/A
13	Sparta	Randolph	27.00	N/A	N/A	N/A	N/A	N/A
14	SE College	Saline	11.00	8.30	0.08	-0.30	-2.18	-1.05
15	Bondville	Champaign	21.00	8.30	-1.86	-2.40	-0.93	-4.19
					1.14	1.49	0.05	0.41

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>

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