

ILLINOIS WATER AND CLIMATE SUMMARY

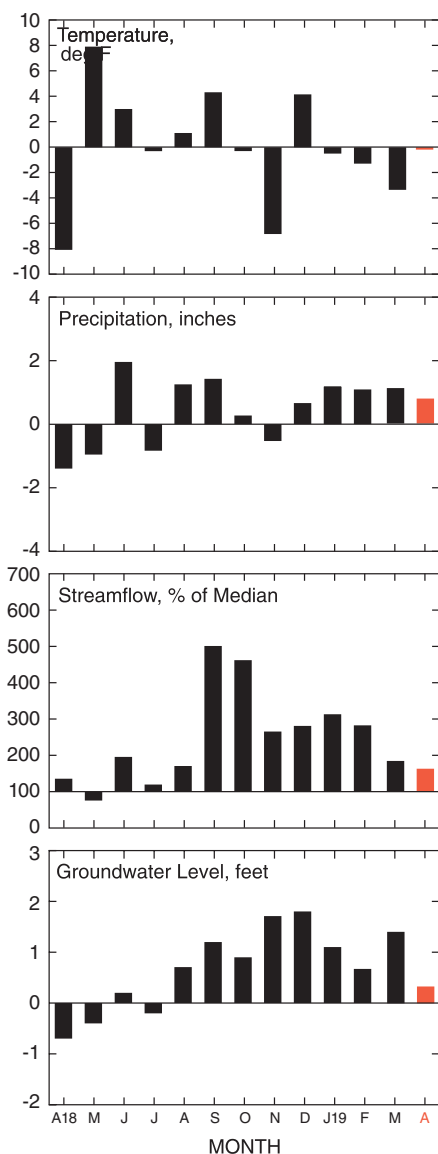


Figure 1. Statewide departures from normal.

APRIL 2019 OVERVIEW

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

Air temperatures averaged 52.5°F in April, 0.1° below the long-term average (Figure 1). The southwest crop reporting district (CRD) was the warmest with an average of 56.9°F. The lowest regional temperature was 48.6°F, reported by the northeast CRD.

Precipitation averaged 4.48 inches, 0.70 inches above the long-term average (Figure 1). The southeast CRD was the wettest with an average of 6.12 inches. The driest was the west CRD with 3.17 inches.

Soil moisture was high throughout April because of the wet weather, with averages at or above field capacity for most of the soils monitored. Levels at depths of 2 inches increased 5%, on average, ending the month with an average of 0.43 water fraction by volume (wfv). Soils were also wet at deeper depths, ending the month with averages from 0.39 wfv at 4 and 8 inches to 0.47 wfv at 39 inches.

Mean provisional streamflow aggregated statewide was above the long-term median flow for April, about 175% of median (Figure 1). Monthly mean discharge values ranged from normal to above normal for April. The Illinois River at most locations from Havana downstream, the Ohio River at Cairo, and the Mississippi River along the length of Illinois remained above the local flood stages throughout April.

Water surface levels at the end of April were at or above full pool or seasonal operating levels at all reporting reservoirs. At the end of April, Lake Shelbyville was 2.5 feet below the May 1 target level (transitioning from spring operational levels), Carlyle Lake was 0.1 foot above the May 1 target level, and Rend Lake was 5.5 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 0.26 feet (Figure 1). A decrease of 1.18 feet in departures was observed from the deviation in normal groundwater levels between March and April. Levels averaged 0.70 feet below March 2019 and 1.69 feet above April 2018 levels.

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.

April in Illinois was marginally cooler and wetter than average.

Despite several significant swings throughout the month, **temperatures** averaged 52.5°F, which is only 0.1° below the long-term average (Table 1, Figure 2a). The month's lowest reading of 18°F was reported in Altona (Knox County) on April 1. In contrast, the month's highest reported temperature of 85°F occurred near Jerseyville (Jersey County) on April 23.

Growing degree days (base 50 degrees, from April 1) were below average for much of the northern two-thirds of the state because of cooler conditions, and tended closer to average toward southern Illinois (Figure 2b). Degree day totals varied from 148 in the north to 308 in the south, ranging from about 40 days below to 20 days above the long-term average.

Precipitation averaged 4.48 inches in April, 0.70 inches above the long-term average (Table 1, Figure 2a). The heaviest totals occurred in southern Illinois, where 6 to 7 inches of precipitation were common, with higher amounts

Table 1. Temperature and Precipitation for April 2019

	Temp. (°F)	Departure from long- term avg. (1981–2010)	Precip. (in)	Departure from long- term avg. (1981–2010)
Illinois	52.5	−0.1	4.48	+0.70
CRD 1 (northwest)	48.8	−0.9	4.20	+0.77
CRD 2 (northeast)	48.6	−0.6	4.21	+0.77
CRD 3 (west)	51.9	−0.3	3.17	−0.59
CRD 4 (central)	52.1	+0.2	4.07	+0.45
CRD 5 (east)	51.0	−0.3	4.21	+0.60
CRD 6 (west southwest)	54.2	+0.2	4.30	+0.51
CRD 7 (east southeast)	54.1	+0.1	4.86	+0.88
CRD 8 (southwest)	56.9	+0.7	5.57	+1.38
CRD 9 (southeast)	56.6	+0.6	6.12	+1.76

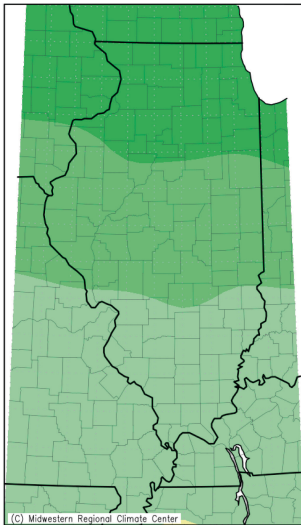
Data from NOAA's National Centers for Environmental Information, accessed 5/8/2019.

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

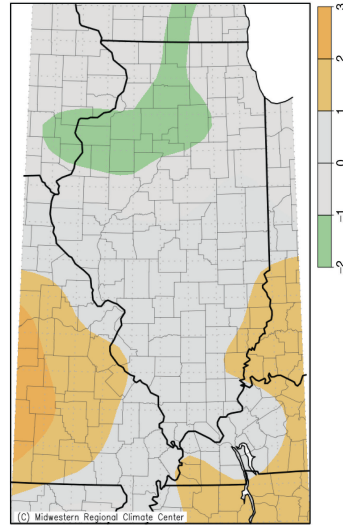
Source: cli-MATE, Midwestern Regional Climate Center. <http://mrcc.illinois.edu/CLIMATE>, accessed on May 2, 2019.

AVERAGE TEMPERATURE (°F)

April 1, 2019 to April 30, 2019

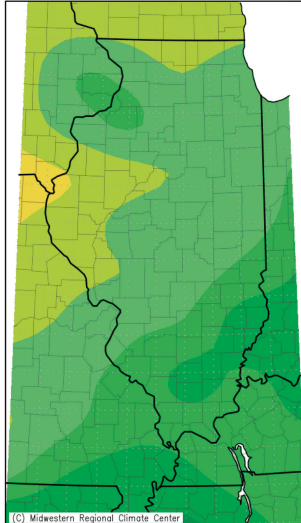


Departure from average

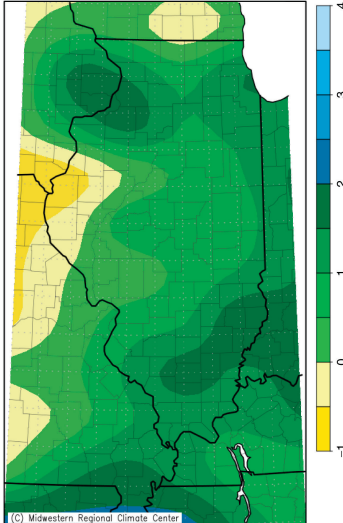


ACCUMULATED PRECIPITATION (IN)

April 1, 2019 to April 30, 2019

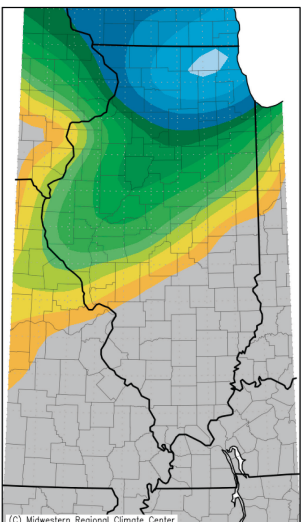


Departure from average

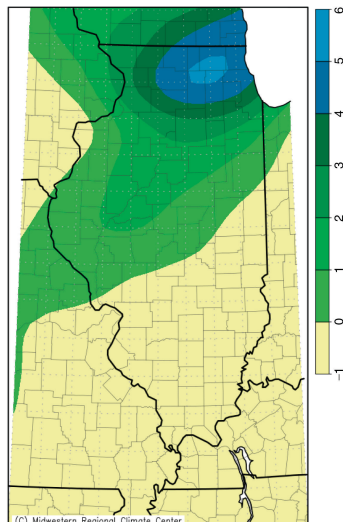


ACCUMULATED SNOWFALL (IN)

April 1, 2019 to April 30, 2019



Departure from average



locally. The highest total was recorded near Cobden (Union County) with 8.32 inches. The west CRD was the only region where precipitation was reported to be below average. Statewide, monthly precipitation has been above average since December 2018. Note that precipitation observations are taken at 8:00 a.m. daily and include all precipitation from the previous 24-hour period. Therefore, April precipitation totals contain the observations made from the mornings of April 1 through April 30.

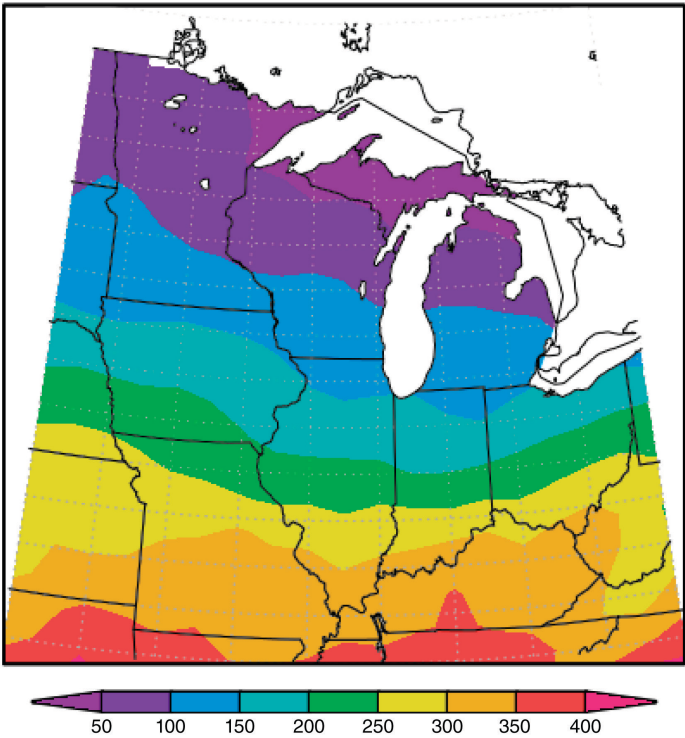
Two short-lived, yet notable late season events brought accumulating **snow** for many in the northern portions of the state, with measurable accumulations reaching as far

south as Peoria (Figure 2a). For localities north and west of Chicago, 6 to 8 inches of accumulation were common. The highest total, 13.5 inches, was reported near St. Charles (Kane County).

The NOAA Storm Prediction Center recorded 17 **severe weather** reports for April, 2 for tornadoes, 12 for hail, and 3 for wind. (Multiple reports can be generated for a single event.)

Illinois remained **drought** free. In the U.S. Drought Monitor's April 30 map, no portion of the state was listed as in drought nor as abnormally dry (Figure 4). This marks six months of drought-free conditions for the entire state.

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



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

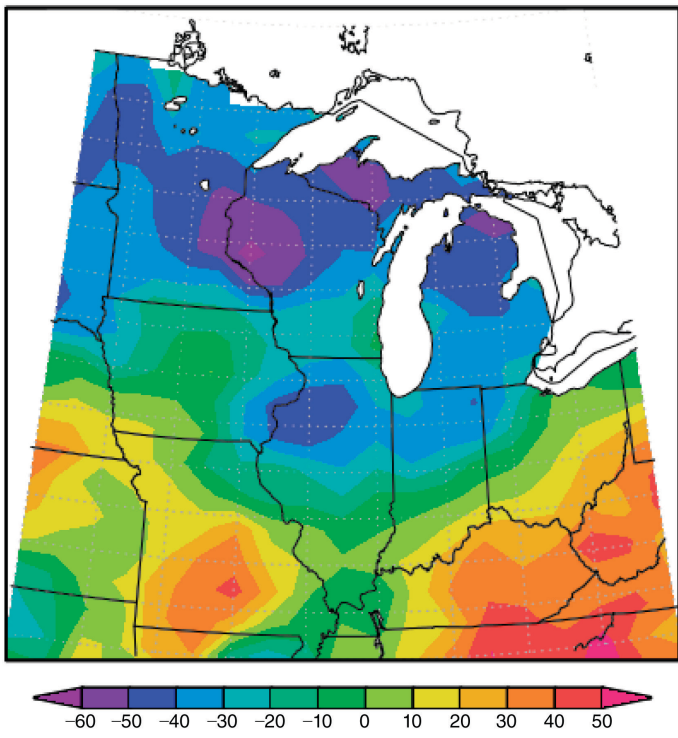


Figure 2b. Illinois growing degree days and departure from average through the end of April.

Source: Midwestern Regional Climate Center. <http://mrcc.illinois.edu>, accessed on May 1, 2019.

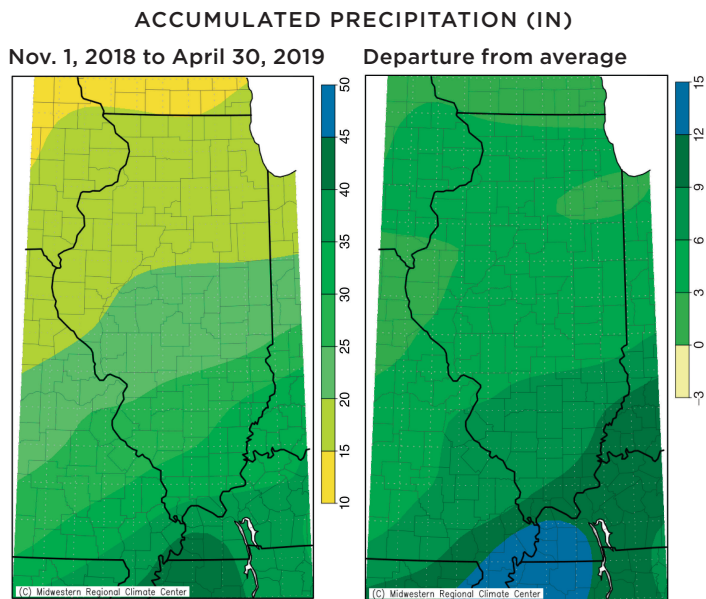
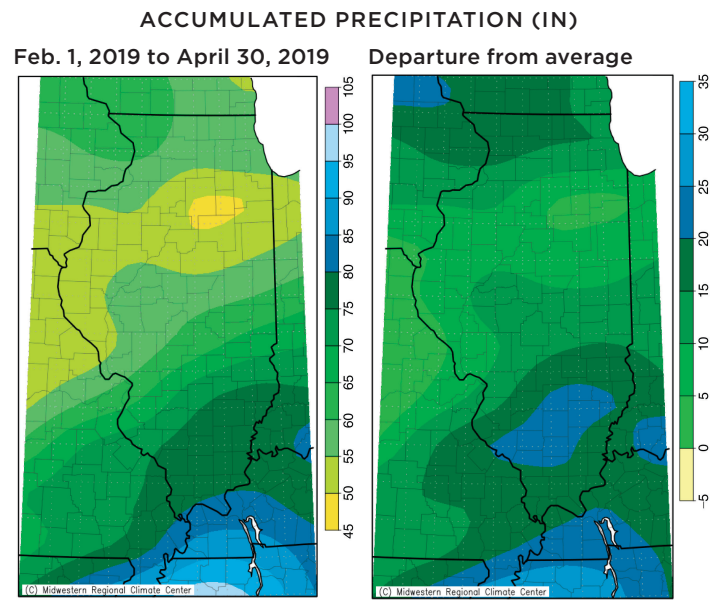
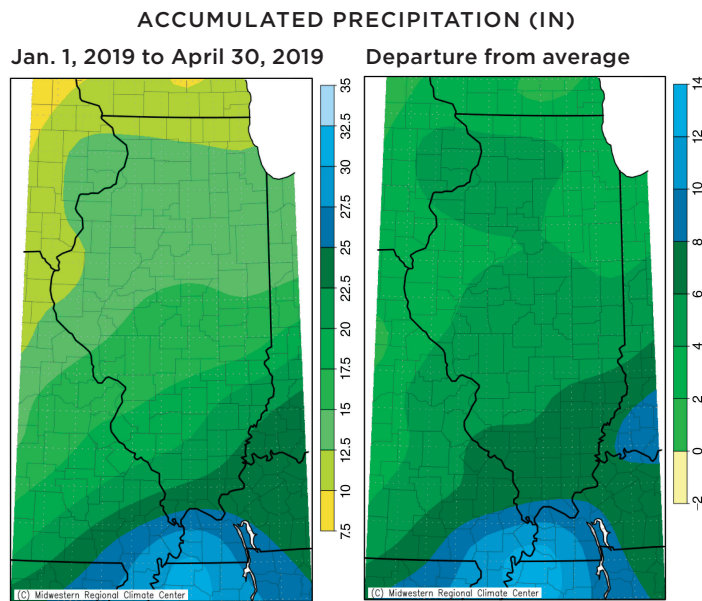
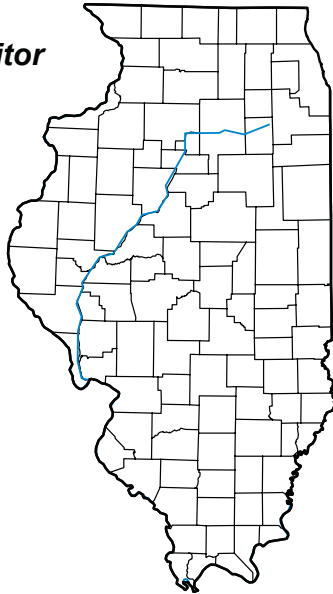


Figure 3. Illinois precipitation and precipitation departure from average for year to date (left), last 3 months (right), and last 6 months (bottom left). Source: cli-MATE, Midwestern Regional Climate Center. <http://mrcc.illinois.edu/CLIMATE>, accessed on May 2, 2019.

U.S. Drought Monitor Illinois



April 30, 2019
(Released Thursday, May 2, 2019)
Valid 8 a.m. EDT

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 03-19-2019	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 12-25-2018	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 03-27-2018	99.64	0.36	0.00	0.00	0.00	0.00

Intensity:

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

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 April are presented in Table 2.

Wind speeds averaged 8.4 mph in April, 0.4 mph below the month's long-term average. ICN Bondville was the windiest station with an average of 12.7 mph. Bondville also recorded the highest wind gust, reporting 47.2 mph on April 11.

Air temperatures were near normal, averaging 53.6°F for April, or 0.2° higher than the long-term average. All stations reported temperatures below freezing with ICN DeKalb having the month's lowest temperature of 19.9° reported on April 15. Highs were in the 70s and 80s. The month's highest was 84.5°, reported by ICN Dixon Springs on April 30.

Soil temperatures rose 11 to 13°F over April, ending the month with network averages in the mid to high 50s at all depths. Temperatures for the month ranged from 33.7 to 87.3° at depths of 2 inches and 34.3 to 77.6° at 4 inches under bare soil. Under sod, temperatures ranged from 35.8 to 72.6° at 4 inches and 37.3 to 68.4° at 8 inches.

Precipitation was higher than normal for all ICN stations in April. The network averaged 5.77 inches, 2.17 inches above the long-term average. (Precipitation totals for ICN are from 12:01 AM April 1 through 12:00 AM May 1.) The month's highest total was 8.33 inches, recorded at ICN St Charles.

Soil moisture remained high throughout April because of the wet weather. Levels averaged 0.43 water fraction by volume (wfv) at depths of 2 inches on April 30, which is above field capacity for most of the soils monitored. Soil moisture rose an average of 5% over the month, though significantly higher increases were observed at the northern

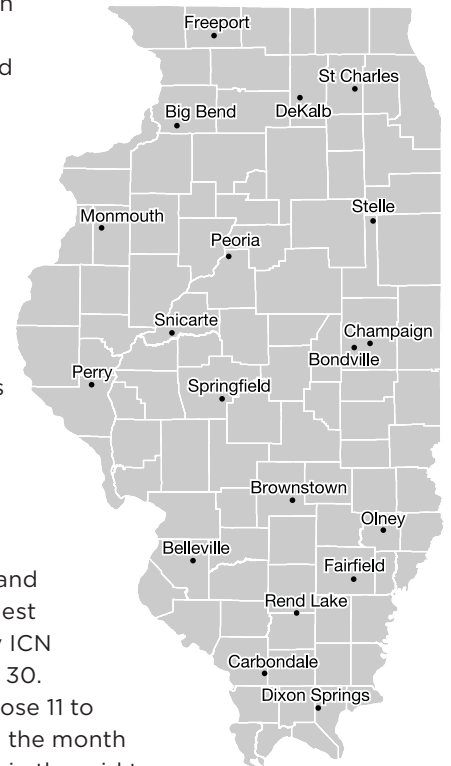


Figure 4. U.S. Drought Monitor report for Illinois. Source: U.S. Drought Monitor. Author: Eric Luebehusen, USDA.
<http://droughtmonitor.unl.edu>, accessed on May 2, 2019.

and western stations. Levels decreased overall in eastern Illinois and no significant overall changes were seen in the south.

Soil moisture increased slightly at depths of 39 and 59 inches, ending the month with averages of 0.47 and 0.43 wfv, respectively.

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

Station	Wind			Air Temperature (°F)			Total Solar Radiation (MJ/m ²)
	Avg. Speed (mph)	Avg. Direction (°)	Max. Gust (mph)	Max.	Min.	Avg.	
Belleville	8.4	184.0	40.7	69.5	27.4	57.5	535.4
Big Bend	9.7	186.0	37.2	65.9	26.1	50.4	475.7
Bondville	12.7	175.6	47.2	67.7	25.8	51.7	504.2
Brownstown	7.6	174.5	42.6	69.3	25.7	55.7	525.9
Carbondale	7.5	195.7	44.4	71.0	24.5	58.3	557.4
Champaign	5.8	172.9	32.5	69.7	25.2M	52.6M	481.6
DeKalb	11.2	180.5	43.6	64.2	19.9M	47.5M	500.5
Dixon Springs	4.5	176.7	30.6	76.7	27.5	59.7	526.2
Fairfield	7.5	177.6	34.6	71.5	25.4	57.2	553.4
Freeport	6.5	189.1	32.9	63.4	25.8	48.2	463.4
Monmouth	12.0	184.7	40.6	67.3	27.3	50.9	506.5
Olney	6.4	172.5	34.6	72.0	25.1	56.7	536.7
Peoria	8.8	184.6	36.7	70.1	26.8	52.4	497.0
Perry	7.4	196.7	34.7	71.9	27.3	54.8	502.6
Rend Lake	5.6	187.6	32.0	72.8	27.2	58.0	529.2
Snicarte	10.7	180.4	43.3	72.1	28.3	53.9	504.9
Springfield	7.2	177.1	36.9	70.6	29.4	54.6	491.6
St. Charles	7.9M	165.6M	36.1M	65.0	21.9M	48.3M	479.8M
Stelle	12.3	178.3	43.7	67.0	22.6M	50.0	524.9

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	75.1	5.90	48.5	4.0	55.6	54.1	58.6	54.3
Big Bend	71.0	5.77	39.7	3.5	51.4	49.9	53.0	52.0
Bondville	75.2	5.65	43.1	3.6	50.6	52.3	55.7	52.5
Brownstown	69.9	5.30	44.8	3.9	54.8	52.4	55.6	55.1
Carbondale	73.5	6.29	48.4	4.3	58.2	56.1	58.2	57.8
Champaign	70.9M	5.34	42.2M	3.48M	54.4	53.6	54.8	54.3
DeKalb	73.2M	4.83	37.9M	3.40M	48.5	46.9	49.8	50.3
Dixon Springs	68.0	6.12	47.6	4.1	59.3	58.5	60.4	59.1
Fairfield	69.7	6.95	46.2	4.2	56.2	55.4	59.6	56.9
Freeport	73.1	4.85	38.7	3.3	49.8	47.2	48.5	48.0
Monmouth	71.2	4.87	40.5	3.7	49.3	47.7	51.3	50.8
Olney	69.5	6.13	45.6	4.0	56.4	55.9	58.3	58.4
Peoria	65.4	4.61	39.6	3.8	50.3	46.1	51.0	50.0
Perry	70.3	4.06	43.9	3.7	52.4	51.6	55.1	54.1
Rend Lake	70.3	7.11	47.1	4.1	58.7	58.5	59.3	58.9
Snicarte	66.8	4.41	41.9	4.0	55.7	54.9	57.6	55.2
Springfield	68.8	6.88	43.3	3.7	54.7	52.7	54.9	54.0
St. Charles	70.3M	8.33M	37.6M	3.40M	49.2M	47.4M	49.7M	50.2M
Stelle	70.7	6.33	39.8	3.8	49.6M	48.3M	50.5M	50.5M

M = Missing data.

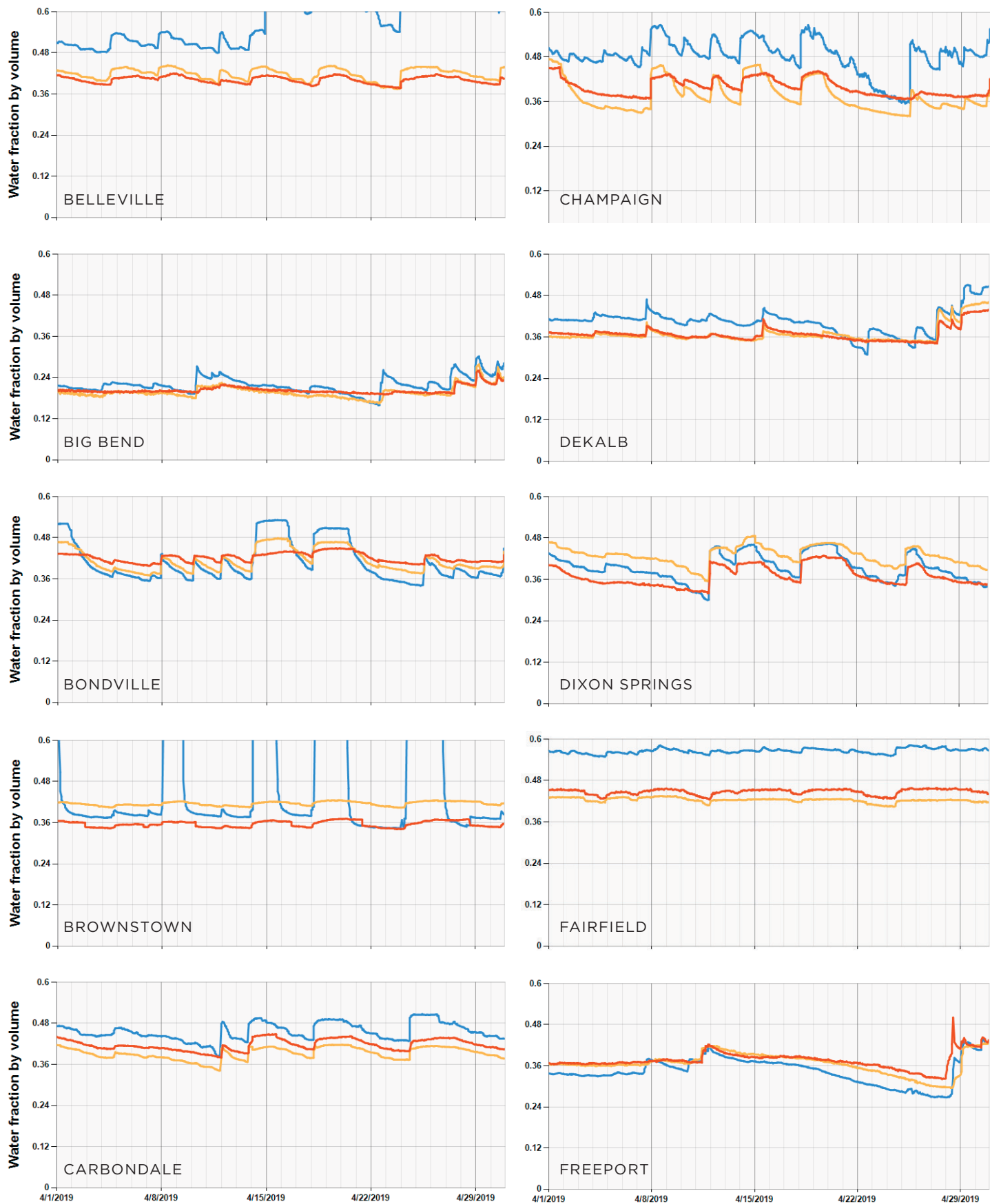


Figure 5. April soil moisture levels at ICN stations: — 2 in, — 4 in, and — 8 in

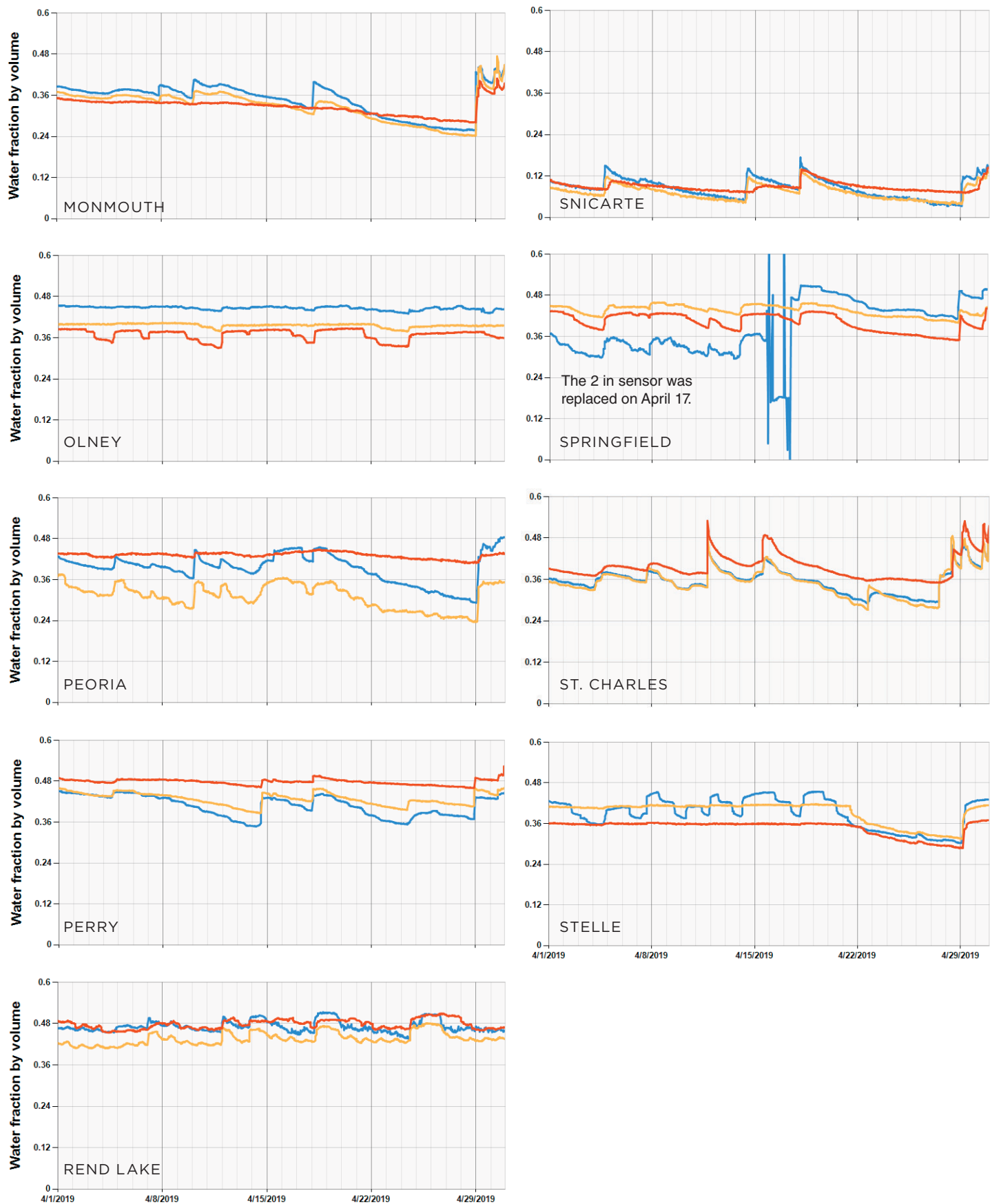


Figure 5. April soil moisture levels at ICN stations: — 2 in, — 4 in, and — 8 in

Other Precipitation Networks

— ERIN BAUER

Imperial Valley. The average network precipitation for April 2019 was 4.35 inches, which is well above the previous 26-year network average (Figure 5a). The largest monthly gage total was in the central to southwestern portion of the network, from Mason City to Easton. Monthly gage totals varied 1.81 inches across the network, from 3.37 inches at site #8, northwest of Topeka, to 5.18 inches at site #22, near Mason City. The 1981–2010 30-year average precipitation amounts for April at Havana and Mason City are 3.67 and 3.61 inches, respectively. The April 2019 network average of 4.35 inches is 125 percent of the 26-year (1993–2017) IVWA April network average of 3.49 inches. The Imperial Valley Water Authority funds this 20-station precipitation network operated by the Illinois State Water Survey.

Cook County. During April 2019, precipitation in Cook County was well above average (Figure 5b). Precipitation was highest in the central region of the network. The lowest precipitation was in the northern end of the network. Precipitation values ranged from 4.12 inches at site #2 (Winnetka, near Hibbard St. and Willow Rd.) to 6.56 inches at site #9 (Cicero, near W. Roosevelt Rd. and S. Laramie Ave.). Across the network, precipitation varied 2.44 inches. The network average of 5.80 inches is about 161 percent of the 29-year (1990–2018) April network average of 3.60 inches. The Illinois State Water Survey operates this 25-station precipitation network funded by the U.S. Army Corps of Engineers. average of 3.93 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.

Based on data posted by USACE, the Mississippi River remained above the local flood stages along the length of the Illinois border throughout April. The Illinois River remained above the local flood stages throughout April

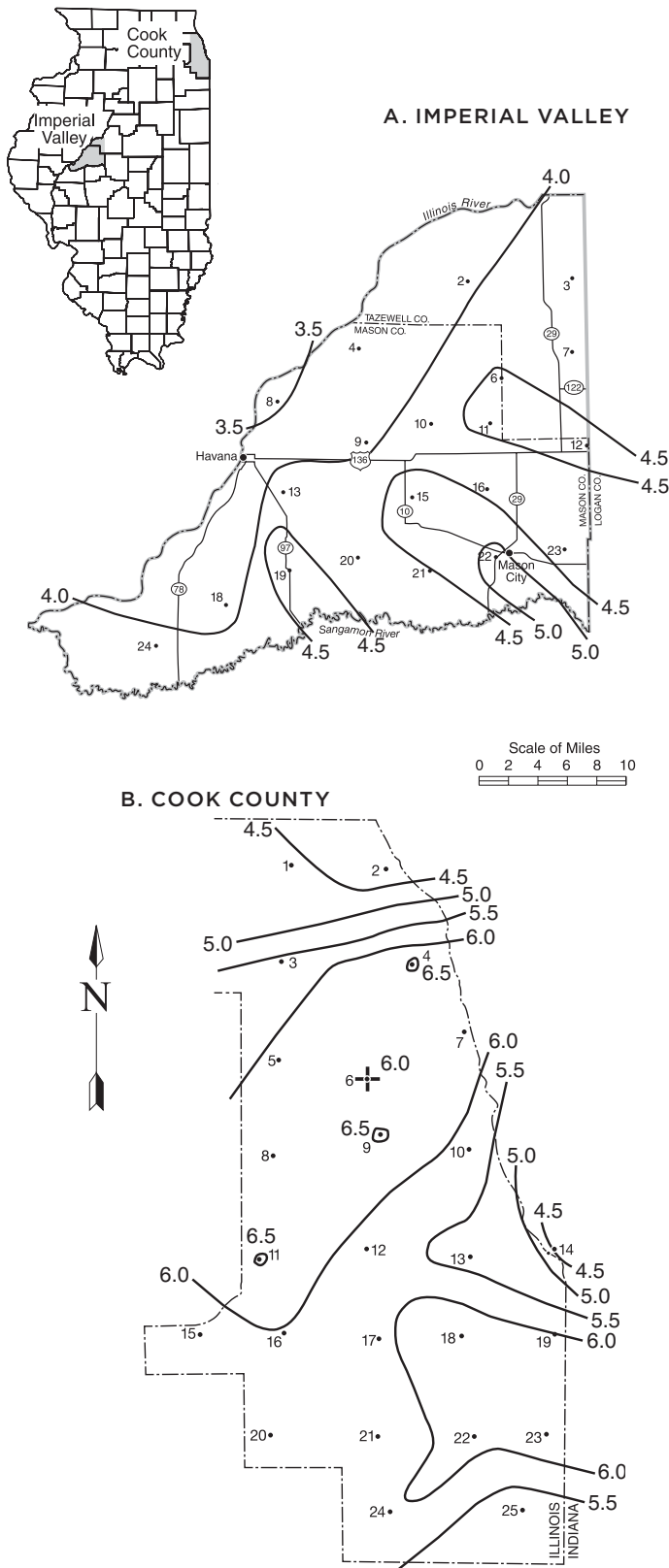


Figure 5. Precipitation totals (inches) for (A) Imperial Valley Water Authority and (B) Cook County raingage networks April 2019.

at most gage stations from Havana downstream to the Mississippi River. The Ohio River remained above the flood stage at Cairo for the entire 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 April 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.)

Table 3. Peak Stages for Major Rivers during April 2019

River	Station	River mile*	Flood stage (feet)*	Peak stage (feet)**	Date
Illinois	Morris	263.1	16	12.8	30
	La Salle	224.7	20	20.7	30
	Peoria	164.6	18	17.6	04-05
	Havana	119.6	14	18.3	05
	Beardstown	88.6	14	21.3	04
	Hardin	21.5	25	34.2	03
Mississippi	Dubuque	579.9	17	23.1	28
	Keokuk	364.2	16	19.7	11-12
	Quincy	327.9	17	25.2	01
	Grafton	218.0	18	29.0	03
	St. Louis	180.0	30	38.2	04
	Chester	109.9	27	39.7	04-05
	Thebes	43.7	33	39.7	05
Ohio	Cairo	2.0	40	49.1	27

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, April 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	6,363	82	10,837	7,700	6,894	above normal	23	30
Rock River near Joslin	9,549	74	16,730	11,230	10,277	above normal	17	30
Pecatonica River at Freeport	1,326	98	1,757	1,293	1,064	above normal	23	30
Green River near Geneseo	1,003	79	1,409	1,070	960	above normal	25	30
Edwards River near New Boston	445	79	473	550	401	normal	44	29
Kankakee River at Momence	2,294	100	3,880	3,469	3,559	normal	41	30
Iroquois River near Chebanse	2,091	93	4,080	3,171	2,926	normal	33	30
Fox River at Dayton	2,642	98	4,183	3,356	2,993	above normal	29	30
Vermilion River at Pontiac	579	73	869	805	667	normal	36	30
Spoon River at Seville	1,636	100	2,003	1,902	1,530	normal	39	30
LaMoine River at Ripley	1,293	94	2,083	1,578	1,257	normal	31	30
Bear Creek near Marceline	349	73	232	420	299	normal	60	30
Mackinaw River near Congerville	767	68	1,299	1,052	924	normal	31	30
Salt Creek near Greenview	1,804	75	3,750	2,367	1,928	above normal	18	29
Sangamon River at Monticello	550	105	1,255	795	679	above normal	19	30
South Fork Sangamon near Rochester	867	68	2,100	1,065	759	above normal	13	30
Illinois River at Valley City	26,743	78	54,380	37,130	33,795	above normal	16	30
Macoupin Creek near Kane	868	88	1,404	1,137	677	normal	31	30
Vermilion River near Danville	1,290	95	2,983	1,882	1,579	above normal	19	30
Kaskaskia River at Vandalia	1,940	47	5,255	2,562	1,998	above normal	14	30
Shoal Creek near Breese	735	73	2,079	1,033	699	above normal	13	30
Embarras River at Ste. Marie	1,516	103	4,107	2,280	1,781	above normal	14	30
Skillet Fork at Wayne City	464	97	1,255	822	701	above normal	23	30
Little Wabash below Clay City	1,131	102	3,378	1,727	1,234	above normal	15	30
Big Muddy at Plumfield	794	46	2,222	1,511	1,236	above normal	17	30
Cache River at Forman	244	93	629	586	518	normal	37	30

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.

Mean provisional flow aggregated statewide, using the available monthly mean data shown this month in Table 4, was above the median value for April (approximately 175 percent of the median) and above the mean for April (approximately 145 percent of the mean). Monthly mean discharge values ranged from normal to above normal for April.

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-March water levels at 24 reservoirs for which levels were reported last month and this month, reported end-of-April water levels were lower at 8 reservoirs, higher at 6 reservoirs, and about the same as at the end of last month at 10 reservoirs. Of the 24 reservoirs with measurements reported at the end of April, water levels were at or above May 1 target levels or spillway level at 23 reservoirs, and the Lake Shelbyville level was between the April operational target level and the May operational target level.

Major Reservoirs. Compared to water levels at the end of March, at the end of April the water level at Lake Shelbyville was 1.1 feet lower, Carlyle Lake was 3.8 feet lower, and Rend Lake was 0.3 feet higher. At the end of April, Lake Shelbyville was 2.5 feet below the May 1 target

Table 5. Reservoir Levels in Illinois, April 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	March reported pumpage (million gallons)
Altamont	Effingham	582.0	+0.1	-0.1	-0.4	33	5.8
Bloomington	McLean	719.5	+0.3	-0.2	-0.6	32	N/A
Carlinville	Macoupin	571.1	+0.7	+0.5	0.0	32	23.7
Carlyle ⁽¹⁾	Clinton	444.0	+0.1	-3.8	+1.0	41	N/A
Decatur ^(1,3)	Macon	612.5	+0.1	+1.4	-0.4	35	1,009.6
Evergreen ⁽⁴⁾	Woodford	720.0	+0.1	-0.4	-0.8	28	N/A
Glenn Shoals ⁽²⁾	Montgomery	590.0	0.0	-0.8	+0.6	24	w/Hillsboro
Highland	Madison	500.0	+0.3	+0.2	+0.3	30	29.8
Hillsboro ⁽²⁾	Montgomery	589.0	N/A	N/A	+0.2	24	37.4
Jacksonville ⁽²⁾	Morgan	644.0	N/A	N/A	-0.1	20	w/Mauvaise Terre
Kinkaid	Jackson	420.0	+1.2	+1.4	+0.3	30	54.3
Lake of Egypt	Williamson	500.0	+5.5	0.0	+0.3	25	N/A
Mattoon	Coles	632.0	0.0	0.0	-0.1	23	w/Paradise
Mauvaise Terre ⁽²⁾	Morgan	588.5	N/A	N/A	+0.1	22	no meter
Mt. Olive (new)	Macoupin	600.0	0.0	0.0	0.0	12	w/Mt. Olive (old)
Mt. Olive (old)	Macoupin	654.0	0.0	0.0	-0.2	21	4.9
Pana	Christian	641.6	+0.2	0.0	-0.3	34	N/A
Paradise	Coles	685.0	0.0	0.0	-0.1	29	60.1
Paris (east)	Edgar	660.0	+0.3	0.0	0.0	34	Not PWS
Paris (west)	Edgar	660.1	+0.3	0.0	+0.2	24	w/Paris (east)
Raccoon ⁽¹⁾	Marion	477.0	+0.3	-0.6	N/A	N/A	92.9
Rend	Franklin	405.0	+5.5	+0.3	+3.9	41	N/A
Salem ⁽³⁾	Marion	546.5	N/A	N/A	-0.5	24	21.7
Shelbyville ⁽¹⁾	Shelby	596.0	-2.5	-1.1	-0.5	41	Not PWS
Sparta ⁽³⁾	Randolph	497.0	+0.1	0.0	-0.6	22	N/A
Spring ^(3,4)	McDonough	654.0	N/A	N/A	+0.2	35	46.5
Springfield ^(1,3)	Sangamon	560.0	+0.5	+0.9	+0.1	35	555.9
Taylorville	Christian	590.0	+0.1	-0.2	+0.1	26	54.8
Vermilion ⁽⁴⁾	Vermilion	581.7	0.0	0.0	-0.2	33	201.8

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 May 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, April 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	17.07	2.24	3.48	-0.16	4.40
2	Mt. Morris	Ogle	55.00	N/A	N/A	N/A	N/A	N/A
3	Crystal Lake	McHenry	18.00	3.33	0.15	0.63	-0.08	0.25
4	Fermi Lab	DuPage	15.00	1.69	2.92	3.02	3.10	3.58
5	Good Hope	McDonough	30.00	3.40	1.02	1.80	-0.35	1.58
6	Snicarte	Mason	42.00	38.84	-1.49	-2.06	-0.21	-2.87
7	Coffman	Pike	28.00	10.81	-1.10	-2.29	-1.76	4.14
8	Greenfield	Greene	20.70	5.84	2.75	1.62	-1.50	6.25
9	Janesville	Coles	11.00	4.74	-0.64	-0.30	-2.38	0.21
10	St. Peter	Fayette	15.00	N/A	N/A	N/A	N/A	N/A
11	SWS #2	St. Clair	80.00	N/A	N/A	N/A	N/A	N/A
12	Boyleston	Wayne	23.00	5.49	-2.34	-2.52	N/A	N/A
13	Sparta	Randolph	27.00	N/A	N/A	N/A	N/A	N/A
14	SE College	Saline	11.00	1.77	0.43	0.51	-1.30	0.05
15	Bondville	Champaign	21.00	4.7	-1.05	-1.45	-2.32	-0.72
Averages					0.26	0.22	-1.35	1.69

Notes: N/A = Data not available.

level (transitioning from spring operational level), Carlyle Lake was 0.1 foot above the May 1 target level, and Rend Lake was 5.5 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 April 2019 mean level for Lake Michigan was 580.6 feet. The monthly mean level one year ago (April 2018) was 580.0 feet. The long-term average lake level for April is 578.7 feet, based on 1918-2018 data. In this period of record, the lowest mean level for Lake Michigan for April occurred in 1964 at 576.2 feet, and the highest level for April occurred in 1986 at 581.5 feet. The month-end level of Lake Michigan was 580.9 feet. All values are provided by the U.S. Army Corps of Engineers Detroit District.

Groundwater Information

— JENNIE ATKINS

Comparison to Average Levels. Shallow groundwater levels in 11 observation wells, which are remote from pumping centers, were above normal for the month of April. Levels averaged 0.22 feet above normal and ranged from 2.52 below to 3.48 feet above normal levels (Table 6).

Comparison to March 2019. Shallow groundwater levels were below those of the previous month. Levels averaged 1.35 feet below and ranged from 2.38 feet below to 3.10 feet above March levels.

Comparison to April 2018. Shallow groundwater levels in April were above levels from one year ago. Levels averaged 1.69 feet above and ranged from 2.87 feet below to 6.25 feet above levels from April 2018.

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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