ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois State Water Survey

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ILLINOIS WATER AND CLIMATE SUMMARY
January 2002

January 2002 Overview (Bob Scott)

Temperatures in Illinois during January were well above average, the 6th warmest January since 1895. Precipitation was slightly above average. Soil moisture within the top 40 inches of soil was near the long-term statewide average. Mean streamflows were near median heights, and shallow groundwater levels were slightly above the long-term average depths.

Temperatures across Illinois (Figure 1) for January were well above average (a +8.4-degree departure). Crop reporting district temperatures ranged from 6.2 degrees above average (southwest) to 9.9 degrees above average (northwest).

Precipitation amounts (Figure 1) were slightly above the long-term average value for the month. The statewide average of 2.19 inches represents a +0.26-inch departure or 114 percent of average. District precipitation totals varied from 1.12 inches (northwest) to 2.71 inches (west), 80 to 189 percent of average, respectively.

Soil moisture across Illinois in the 0- to 40-inch (0- to 100-centimeter) layer near the end of January (Figure 1) was near normal in all but the deepest layer in which moisture was below normal (northwestern Illinois) and much above normal (southeastern Illinois).

Mean provisional streamflow statewide was near the median flow, 101 percent of median (Figure 1). Rivers throughout most of Illinois recorded mean discharges in the normal range this month with few exceptions. Peak stages were well below flood stage on the Illinois River and at stations on the Mississippi River along the Illinois border. The Ohio River at Cairo recorded a peak stage less than a foot above flood stage.

Water surface levels at the end of January were above the normal pool at 31 of 37 reporting reservoirs. Levels at Carlyle Lake, Lake Shelbyville, and Rend Lake were above the target operating levels at the end of January. **Lake Michigan's** mean level remains below the long-term average.

Statewide, **shallow groundwater levels** were above average levels for January by 0.3 feet. Levels averaged 0.9 feet below levels last month and were approximately 0.4 feet below January levels one year ago.

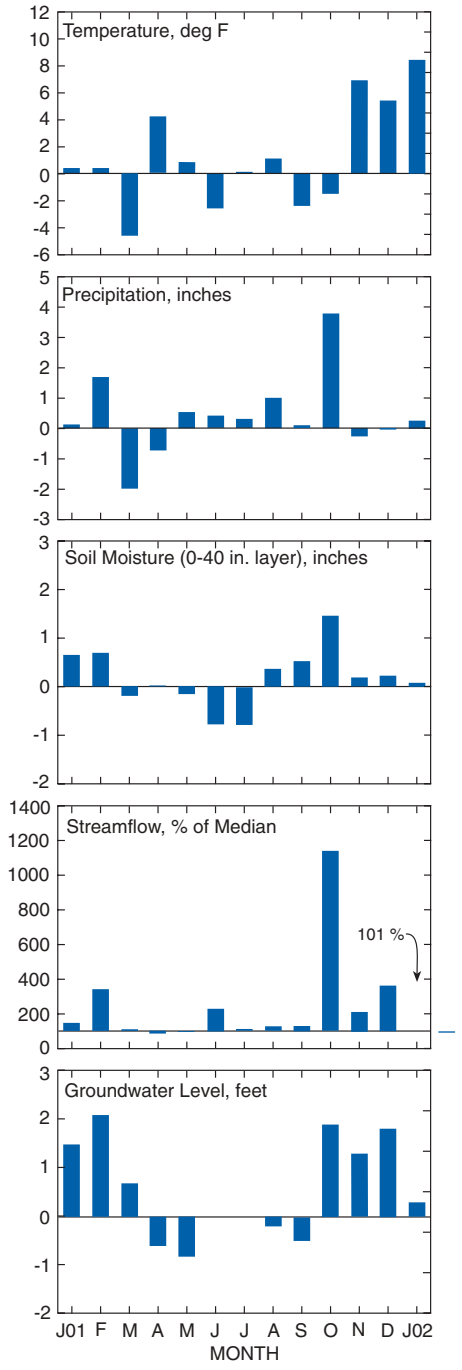

Figure 1.
Statewide departures from normal

Note: *Extended network descriptions appear in the January and July issues. Network maps are available upon request.*

Contact

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On the Web at www.sws.uiuc.edu/warm

Weather/Climate Information (Nancy Westcott, Jim Angel, and Bob Scott)

Cook County Precipitation. December precipitation amounts (Figure 2) were small. Site values for the month ranged from 1.21 inches of precipitation at site #25 (Chicago Heights) to 0.70 inches at site #5 (Franklin Park). Precipitation was heaviest in the southeastern corner of the network and in a southwest to northeast band through the center of the network. Precipitation was lightest to the northwest and in the southwestern corner. The December 2001 network average of 0.91 inches was about 51 percent of the 12-year (1989–2000) December network average of 1.78 inches.

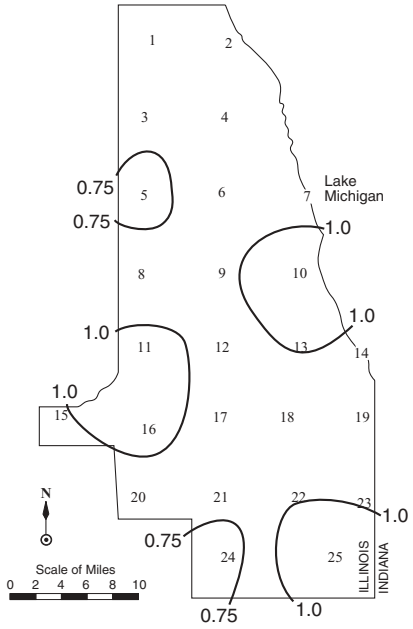

Figure 2.
Cook County precipitation (inches) during December 2001

Temperatures across Illinois for January were much warmer than average across the state (Figure 3 and Table 1). As a result, this was the 6th warmest January since 1895. Except for the first three days of January, temperatures were generally at or above average each day. The warmest reading for the month, 70°F was reported on January 28 (Belleville), January 29 (Flora, Dixon Springs, Rend Lake, and Fairfield), January 30 (Iuka, Salem, Cairo, Carbondale, and Benton), and January 31 (McLeansboro). The coolest reading was reported on January 2, -1°F at Galesburg. Since 1895, this was the 2nd warmest December–January (2-month period) and November–January (3-month period) on record in Illinois; the 4th warmest August–January (6-month period); and the 12th warmest February–January (12-month period).

Precipitation was slightly above average statewide for January (Figure 3 and Table 1). Gauge amounts from individual stations ranged from 1 inch (north) to more than 4 inches (south and west). Grand Chain Dam reported the highest daily precipitation amount, 4.47 inches on January 24, and the highest monthly total, 6.99 inches. The statewide monthly precipitation total was the 40th wettest January on record since 1895.

Snowfall was above average in parts of western and northern Illinois due to a January 30–31 winter storm that deposited large amounts of snow in a band from Galesburg to Chicago. Galesburg reported the most snow for the

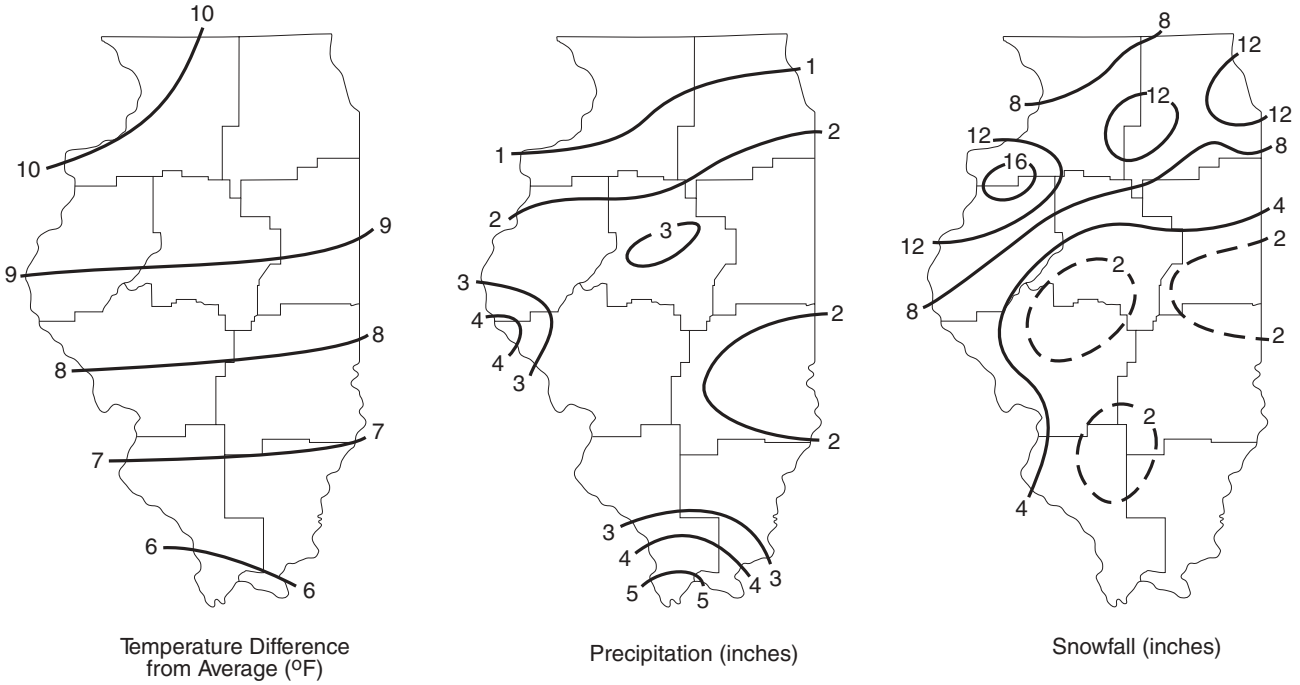

Figure 3. Illinois temperature, precipitation, and snowfall during January 2002

Table 1. Illinois Precipitation (inches) and Temperature (ºF) by Crop Reporting District

Crop Reporting District	Last Month			Last 3 Months			Last 6 Months			Last 12 months		
	Jan 02 Amount	% Avg	Temp Dev	Nov 01-Jan 02	% Avg	Temp Dev	Aug 01-Jan 02	% Avg	Temp Dev	Feb 01-Jan 02	% Avg	Temp Dev
Northwest	1.12	80	9.9	4.39	73	9.0	17.37	105	4.3	38.01	105	2.2
Northeast	1.50	91	9.5	4.58	67	8.3	21.49	126	4.0	38.73	106	2.2
West	2.71	189	9.1	6.13	94	8.0	18.51	111	3.6	40.38	108	1.7
Central	2.55	158	9.3	6.33	89	7.9	18.83	112	3.5	38.58	104	1.9
East	2.50	143	9.3	6.86	93	7.6	22.13	130	3.3	40.95	109	1.8
West-southwest	2.70	146	7.8	8.13	102	6.6	21.43	126	3.0	41.24	109	1.5
East-southeast	1.98	84	7.4	8.27	89	6.2	21.67	116	2.9	40.80	99	1.6
Southwest	2.43	94	6.2	10.45	102	5.6	22.56	114	2.6	42.81	100	1.5
Southeast	2.60	86	6.8	13.09	120	5.8	27.50	136	2.8	47.39	107	1.7
State Average	**2.19**	**114**	**8.4**	**7.36**	**93**	**7.3**	**21.06**	**119**	**3.4**	**40.73**	**105**	**1.8**

Note: Data are provisional. Complete, quality controlled data are available about six months after a given month.

month, 19.9 inches, with 17.3 inches from this storm alone compared to 10–12 inches in the Chicago area. There were reports of 12.3 inches (Chicago Botanic Garden), 12 inches (O'Hare), and 11.1 inches (Midway). Southern Illinois also reported above average January snowfall due to a smaller storm that left 2 to 5 inches at most locations on January 18–19. However, large portions of central Illinois experienced only 25 to 75 percent of average January snowfall, having received rain rather than snow on January 30–31.

There were no reports of **severe weather** in January.

Illinois Climate Network (ICN) Data. Average daily wind speeds across Illinois for January (Figure 4) ranged from 5 mph at Dixon Springs and Rend Lake to 11 mph at Monmouth, Bondville, and Stelle. The highest wind gust for the month, 41 mph, occurred at Monmouth on January 22. The prevailing wind direction for the month was from the southwest. Wind speeds in excess of 8 mph reflected a seasonal maximum, ranging from 95 hours at Dixon Springs and Rend Lake to approximately 530 hours at Monmouth, Bondville, and Stelle. (January has 744 hours.)

Average air temperatures across the state ranged from 26°F at DeKalb to 39°F at Carbondale and Dixon Springs. Solar radiation totals ranged from 202 Mega-Joules per meter squared (MJ/m^2) at St. Charles to 260 MJ/m^2 at Belleville and Rend Lake. Potential evapotranspiration was seasonally small, varying from 1.0 inch at St. Charles to 1.7 inches at Belleville. Soil temperatures at both the 4- and 8-inch levels ranged from 31°F at Freeport to the low 40s at Dixon Springs.

Extended climate outlooks issued by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Climate Prediction Center for February call for a slight chance of above normal temperatures over all of Illinois and equal chances of above, below, and normal precipitation. February–April outlooks call for equal chances of above, below, and normal temperatures and precipitation over all of Illinois.

Additional Information: The Cook County Precipitation Network is a 25-site weighing-bucket raingauge array operated by the Illinois State Water Survey for the U.S. Army Corps of Engineers and the U.S. Geological Survey since 1989. The network is located in the Lake Michigan and Des Plaines River watersheds of Cook County to provide accurate precipitation measurements for modeling storm runoff, a crucial parameter used to compute the amount of water diverted from Lake Michigan.

Illinois temperature and precipitation data are observed at selected Cooperative Observer Network sites of the National Weather Service (NWS), an agency of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce (USDOC). The Midwestern Regional Climate Center (MRCC) at the Water Survey receives near real-time data via the NWS Remote Observation Surface Automation system. Data reported are provisional. The MRCC receives complete, quality controlled data from its parent agency, the National Climatic Data Center (NCDC, NOAA, USDOC) about three months in arrears.

The Illinois Climate Network (ICN) is a 19-station array of automated weather sites scattered across Illinois and operated by Water Survey staff. The network provides enhanced temporal weather observations on atmospheric pressure, air temperature, relative humidity, wind speed and direction, solar radiation, precipitation, and soil temperatures at several depths. Sites are located primarily at Illinois community colleges and University of Illinois

Figure 4. January monthly averages and totals as collected by the Illinois Climate Network

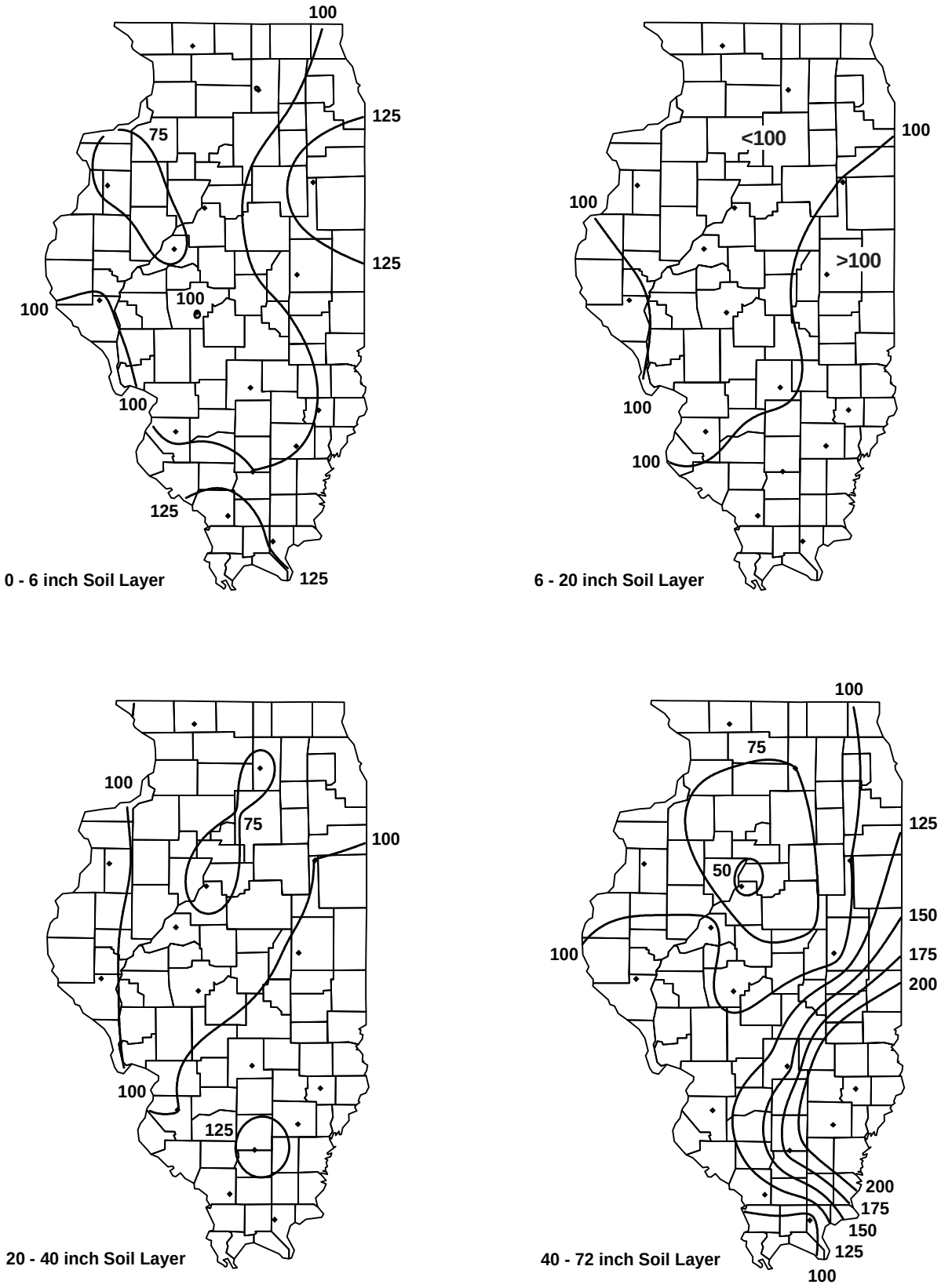

Figure 5. February 1 observed percent-of-normal soil moisture based on 1985-1995 mean

Table 2. Soil Moisture in Various Layers on February 1, 2002

Location	*Feb 1 0 - 6 (inches)*	*Change from Jan 1 (%)*	*Feb 1 6 - 20 (inches)*	*Change from Jan 1 (%)*	*Feb 1 20 - 40 (inches)*	*Change from Jan 1 (%)*
Freeport (NW)	2.2	16	4.5	-0	6.7	-4
DeKalb (NE)	2.0	-2	4.7	-3	6.5	-6
Monmouth (W)	1.9	-1	4.5	-4	6.4	-2
East Peoria (C)	2.0	-4	4.8	-2	7.4	-6
Topeka (C)	1.2	-11	2.5	-7	3.0	-9
Stelle (E)	2.9	27	5.5	-7	6.8	-3
Champaign (E)	2.3	5	5.5	5	7.2	-3
Bondville (E)	2.5	24	5.4	11	8.2	2
Perry (WSW)	2.3	-0	5.2	-7	7.7	-4
Springfield (WSW)	2.1	8	5.0	0	7.7	-7
Brownstown (ESE)	2.2	-3	4.6	-4	8.4	-0
Olney (ESE)	2.5	-9	4.8	-0	7.2	0
Belleville (SW)	2.3	6	4.9	-3	8.6	0
Carbondale (SW)	3.4	45	5.6	4	8.2	1
Ina (SE)	2.7	3	5.5	3	7.8	2
Fairfield (SE)	3.0	21	5.6	2	7.6	2
Dixon Springs (SE)	3.0	18	5.7	8	8.3	2

and Southern Illinois University agricultural experimental farms. Most sensors are polled automatically every 10 seconds, averaged by hour and day, and downloaded to a Water Survey computer once a day. Hourly and daily extremes and times of occurrence also are recorded. Temperature and precipitation data are added to MRCC records. These ICN data provide valuable information on extreme and usual weather events, as well as short- and long-term trends in climate data, which may have future direct impacts on other water resources of Illinois.

The Climate Prediction Center (CPC, NOAA, USDOC) produces monthly and seasonal climate outlooks based on an extensive source of timely climate information. Outlooks for Illinois are extracted and included for our readers.

Soil Moisture Information (Bob Scott)

When monthly soil moisture observations were made, January precipitation totals were much below average across northern Illinois and below average in southern Illinois. This report does not include substantial rainfall and snowfall over the northern two-thirds of the state that occurred subsequent to the observations. Until the most recent deluge of precipitation on January 30-31, below normal precipitation in northern and western Illinois during the last several months had begun to generate soil moisture conditions that were just slightly below normal in these areas. However, in general, near average soil moisture was found within the top three soil layers. Soil moisture conditions in the 0- to 6-, 6- to 20-, and 20- to 40-inch layers near the end of January ranged from approximately 70 to 130 percent of normal across the state (Figure 5). Data within the 40- to 72-inch layer showed a more complex pattern with values ranging from 50 percent of normal moisture at Peoria to more than 200 percent of normal in southeastern Illinois. Overall, soil moisture in Illinois at the end of January was near normal (Figure 1).

Compared to one month ago, soil moisture in the 0- to 6-inch layer increased at six sites across Illinois and decreased at one site (Table 2), generating changes ranging from 15 to 45 percent. Elsewhere, and in deeper layers, changes from December's observations were small (generally less than 10 percent).

Additional Information: Soil moisture is monitored across the state at 17 sites, mostly co-located with the ICN sites. Data are collected manually from site visits twice monthly during the growing season (March–October) and monthly during the remainder of the year. The information aids in pinpointing areas and extent of unusual soil moisture and impacts on Illinois agriculture. These data become especially important during prolonged periods of precipitation extremes.

Surface Water Information (Sally McConkey)

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 and the Illinois State Water Survey, and USACE. Provisional discharge data are obtained from direct computer access to the USGS.

Table 3 lists selected streamgaging stations located on the Illinois, Mississippi, and Ohio Rivers, flood stage, and the provisional peak stage for the current month. The peak stage is determined from the daily morning reading posted by the National Weather Service and/or USACE. Most stations along the Illinois River reached peak stage on the last day of January; none, however, exceeded flood stage. The Mississippi River at stations along the Illinois border did not exceed flood stage. The Ohio River at Cairo peaked nearly one foot above flood stage.

Table 4 lists 26 streamgaging stations located throughout Illinois. Provisional monthly mean flows posted by the USGS are listed if available; otherwise, daily mean discharge data posted by the USGS were 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 January mean flow for each year of record and selecting the middle value, 50 percent exceedence probability.

Throughout Illinois, flows were in the normal range for January, with some exceptions. In northern Illinois, the Rock River at Rockton and the Pecatonica River at Freeport recorded flows in the above normal range. Rivers in central Illinois had normal flows, except at Bear Creek at Marceline where flow was above normal. In southern Illinois, the Little Wabash below Clay City was the only station listed in Table 4 with a below normal January flow. Mean provisional flow statewide was near the median this month (101 percent of the median) and below the mean (67 percent of the mean).

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. Starting this month, current reservoir levels will be reported in terms of their difference from normal pool rather than the elevation relative to National Geodetic Vertical Datum (NGVD) 1929 (e.g., mean sea level) as has been the practice in the past. The average of the month-end readings for the period of record (column 6) is reported in terms of the difference

Table 3. Peak Stages for Major Rivers, January 2002

River	*Station*	*River mile**	*Flood stage (feet)**	*Peak stage (feet)***	*Date*
Illinois					
	Morris	263.1	13	5.8	31
	La Salle	224.7	20	13.3	05
	Peoria	164.6	18	12.5	31
	Havana	119.6	14	11.0	31
	Beardstown	88.6	14	10.9	31
	Hardin	21.5	25	20.2	31
Mississippi					
	Dubuque	579.9	17	9.0	11
	Keokuk	364.2	16	5.0	08
	Quincy	325.0	17	11.8	12
	Grafton	218.0	18	15.9	31
	St. Louis	180.0	30	4.2	31
	Chester	109.9	27	5.0	15
	Thebes	43.7	33	13.9	31
Ohio					
	Cairo	2.0	40	40.9	31

Notes:

*River mile and flood stage from *River Stages in Illinois: Flood and Damage Data*, Illinois Department of Natural Resources, Office of Water Resources, July 1998.

**Peak stage based on daily a.m. readings, not instantaneous peak.

Table 4. Provisional Mean Flows, January 2002

Station	*Drainage area (sq mi)*	*Years of record*	*2002 mean flow (cfs)*	*Long-term flows* *Mean* (cfs)*	*Median (cfs)*	*Flow condition*	*Percent chance of exceedence*	*Days of data this month*
Rock River at Rockton	6,363	66	4,773	3,210	2,620	above normal	19	29
Rock River near Joslin	9,549	58	5,428	5,256	4,201	normal	38	31
Pecatonica River at Freeport	1,326	82	830	757	618	above normal	30	19
Green River near Geneseo	1,003	63	407	543	363	normal	47	29
Edwards River near New Boston	445	63	87	247	140	normal	62	22
Kankakee River at Momence	2,294	84	2,360	2,231	2,053	normal	40	30
Iroquois River near Chebanse	2,091	77	1,060	1,911	1,395	normal	56	31
Fox River at Dayton	2,642	82	1,367	1,475	1,108	normal	37	31
Vermilion River at Pontiac	579	57	293	370	258	normal	44	18
Spoon River at Seville	1,636	84	341	1,030	666	normal	64	30
LaMoine River at Ripley	1,293	78	465	631	367	normal	46	30
Bear Creek near Marceline	349	57	144	149	67	above normal	29	31
Mackinaw River near Congerville	767	52	360	469	302	normal	46	28
Salt Creek near Greenview	1,804	59	639	1,170	807	normal	54	28
Sangamon River at Monticello	550	89	198	421	258	normal	59	31
So. Fork Sangamon near Rochester	867	51	359	589	292	normal	45	29
Illinois River at Valley City	26,743	62	15,117	19,890	17,248	normal	56	30
Macoupin Creek near Kane	868	72	310	529	218	normal	45	31
Vermilion River near Danville	1,290	57	647	1,139	697	normal	53	30
Kaskaskia River at Vandalia	1,940	31	1,759	2,400	2,091	normal	55	29
Shoal Creek near Breese	735	57	131	666	325	normal	68	30
Embarras River at Ste. Marie	1,516	87	513	1,670	1,110	normal	66	30
Skillet Fork at Wayne City	464	81	130	655	355	normal	64	27
Little Wabash below Clay City	1,131	86	175	1,381	622	below normal	74	31
Big Muddy at Plumfield	794	86	462	863	610	normal	55	29
Cache River at Forman	244	77	486	498	344	normal	34	31

Notes:
*As reported in U.S. Geological Survey (USGS) Water Resources Data, Illinois, Water Year 2000.
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

For security considerations, statewide tabular reservoir data are not available on the Internet. Specific data requests may be made to Sally McConkey at: sally@sws.uiuc.edu.

from normal pool or target level. Column 7 lists the number of years of record included in the month-end average at each reservoir. Most reservoirs listed in Table 5 serve as public water supplies with exceptions noted in column 8. Reservoir levels are obtained from a network of cooperating reservoir operators who are contacted each month by Water Survey staff for current water levels.

Compared to levels at the end of December at 37 reservoirs, the water surface elevation at the end of January had risen at 33 reservoirs and decreased at 3 reservoirs. The reported elevation was the same as last month at one reservoir. For the 37 reservoirs reporting at the end of January, 31 reservoirs had water surface levels above the normal pool (or target operating level), 2 reservoirs were at normal pool, and 4 reservoirs were below normal pool. Lake Evergreen and Coulterville reservoir reported water levels more than a foot below normal pool.

Major Reservoirs. Water levels at Carlyle Lake, Lake Shelbyville, and Rend Lake increased this month. These reservoirs were above the target water level.

Great Lakes. Current month mean and end-of-month values are provisional and are relative to International Great Lakes Datum 1985. The January mean level for Lake Michigan was 577.4 feet, compared to a mean level of 576.7 feet in January 2001. The long-term average lake level for January is 578.6 feet, based on 1918–1998 data. Historically, the lowest mean level for Lake Michigan in January occurred in 1965 at 576.1 feet, and the highest level occurred in 1987 at 581.3 feet. The month-end level of Lake Michigan was 577.3 feet.

Additional Information: River stage observations are reported in Table 3 at 14 locations along the Illinois, Mississippi, and Ohio Rivers in terms of the water surface height, registered in feet above the gage's datum. The stage of a river is not the same as the depth of its flow. Stage may be converted to a commonly used vertical datum (e.g., National Geodetic Vertical Datum [NGVD] 1929 or mean sea level) by adding the stage in feet to the gage datum elevation (reported in feet, NGVD 1929). The elevation of the gage datum varies from station to station. Flood stage is typically defined as the level at which a river goes out of its banks.

Long-term mean streamflows for each month are published by USGS. The month's median flow for 26 stations listed in Table 4 is determined by ranking the current month's mean flow for each year of record, and selecting the middle value, 50 percent exceedence probability. The current month's flow condition (above normal to below normal) is determined on the basis of its rank relative to the historical record for the month. The terms much above normal to much below normal indicate a relative stratification of current conditions and are defined in the notes following Table 4. The statewide average of the computed percentages of median flow for the stations are presented in Figure 1. With very few exceptions, the median flow is less than the mean flow for the month at the 26 stations reported herein. The current month's flow as a percent of the median in nearly every case will be higher than the percent of the mean.

The ISWS started collecting month-end water surface elevations at reservoirs in 1983. Water levels are reported by the reservoir operators in terms of difference from normal pool at most reservoirs. The number of reporting stations has increased over time. The current month's average month-end water surface elevation for each reservoir is the arithmetic average of the month-end levels for the period of record at each station. The number of years of data is also tabulated.

Groundwater Information (Ken Hlinka)

Comparison to Average Levels. Shallow groundwater levels in 13 observation wells, which are remote from pumping centers, were above average levels for January by 0.3 feet and ranged from 1.4 feet below average to 2.7 feet above average (Table 6). Due to limited precipitation, low precipitation recharge was experienced throughout the northern two-thirds of Illinois during the month.

Comparison to Previous Month. Shallow groundwater levels in January were below those of December. Levels averaged 0.9 feet lower than last month's levels, and individual sites ranged from 3.9 feet lower to 2.2 feet higher. All network sites, with the exception of those in the extreme southern tip of Illinois, exhibited deviations below those of last month.

Comparison to Same Month, Previous Year. Shallow groundwater levels from the network this month were below the observed levels during January 2001. Levels averaged 0.4 feet lower and ranged from 5.4 feet below to 5.9 feet above the levels of last year.

Additional Information. The Water Survey operates a network of 17 shallow groundwater monitoring wells sited in rural locations. Wells are remote from pumping stations to assess both short- and long-term trends in water table levels under natural conditions. These data assist in our understanding of the effects and extents of phenomena such as droughts and floods in Illinois and, in particular, their lingering impacts on the shallow groundwater resources of the state.

Table 6. Month-End Shallow Groundwater Level Data Sites, January 2002

					Deviation from			
Number	*Well name*	*County*	*Well depth (feet)*	*This month's reading (depth to water, feet)*	*15-year avg. level (feet)*	*Period of record avg. (feet)*	*Previous month (feet)*	*Previous year (feet)*
1	Galena	JoDaviess	25.0	22.08	-0.26	-0.30	-0.22	-0.79
2	Mt. Morris	Ogle	55.0	N/A	N/A	N/A	N/A	N/A
3	Crystal Lake	McHenry	18.0	N/A	N/A	N/A	N/A	N/A
4	Cambridge	Henry	42.0	10.36	-2.01	-0.86	-0.62	-5.39
5	Fermi Lab	DuPage	15.0	7.44	-1.30	-1.41	-2.14	-3.23
6	Good Hope	McDonough	30.0	N/A	N/A	N/A	N/A	N/A
7	Snicarte	Mason	42.0	37.89	-0.46	-0.80	-0.22	+0.07
8	Coffman	Pike	28.0	13.72	-1.55	-0.98	-3.88	+0.39
9	Greenfield	Greene	20.70	8.64	+2.18	+2.45	-1.96	+1.03
10	Janesville	Cumberland	11.0	5.35	-0.58	-0.27	-0.39	-0.59
11	St. Peter	Fayette	15.0	1.76	-0.08	+0.29	-1.29	-0.79
12	SWS #2	St. Clair	80.0	N/A	N/A	N/A	N/A	N/A
13	Boyleston	Wayne	23.0	1.79	+0.59	+1.24	-0.02	-0.84
14	Sparta	Randolph	27.0	7.09	-1.10	+0.24	-3.47	-2.10
15	SE College	Saline	10.19	0.07	+2.54	+2.70	+2.15	+2.47
16	Dixon Springs	Pope	8.63	0.46	+1.98	+1.70	+1.19	+5.86
17	Bondville	Champaign	21.0	4.27	-0.40	-0.52	-0.40	-1.18
				Averages	-0.03	+0.27	-0.87	-0.39

Note:
N/A - data not available

Data sources for information in this publication include the following:

CPC - Climate Predication Center, http://www.cpc.ncep.noaa.gov/products/predictions/
ISWS - Illinois State Water Survey, http://www.sws.uiuc.edu/
MCC - Midwestern Regional Climate Center, http://mcc.sws.uiuc.edu/
NCDC - National Climate Data Center, http://www.ncdc.noaa.gov/
NWS - National Weather Service, http://www.nws.noaa.gov/
USACE - U.S. Army Corp of Engineers, http://water.mvr.usace.army.mil/
USGS - U.S. Geological Survey, http://water.usgs.gov/
WARM - Water and Atmospheric Resources Monitoring Program, http://www.sws.uiuc.edu/warm/