MONTHLY WATER INVENTORY REPORT FOR OHIO

March 2002

http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.html
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PRECIPITATION during March was above normal across most of the state. The average for the state as a whole was 3.72 inches, 0.55 inch above normal. Regional averages ranged from 5.60 inches, 1.71 inches above normal, for the South Central Region to 2.96 inches, 0.31 inch above normal, for the Northwest Region. South Point (Lawrence County) reported the greatest amount of March precipitation, 8.57 inches. Beach City Dam (Tuscarawas County) reported the least amount, 2.32 inches.

Precipitation during March fell as both rain and snow. The greatest amounts of precipitation for the month fell in southern Ohio where more than 6 inches were reported at several locations. Snowfall during March was above normal in the northern half of the state, while the southern half received little or no snow. Many locations in northern Ohio, especially northwestern areas of the state, received more snow during March than they had previously received the entire snow season. Most of the month's precipitation fell during the second half of the month. However, showers occurring on March 2-3 and on March 9 both brought 0.25-0.50 inch rains across most of the state. Showers and thunderstorms during March 15-16 brought generally 0.50-1.0 inch of rain to the southeastern two-thirds of the state, with amounts diminishing to 0.25 inch or less in the northwestern third. The most notable weather event of the month occurred during March 19-20 when 2-5 inches of rain fell in the Ohio River counties of southeastern Ohio causing flash-flooding (see Notes and Comments on the last page of this report). Rain began early on March 19 in extreme south-central Ohio and fell during most of the day. Amounts of 1-2 inches were reported with amounts decreasing to less than 0.25 inch in central Ohio. Rain overspread the entire state on March 20 with the heaviest rain again concentrated in southern Ohio. Another 1-2 inches were reported from this area with lesser amounts to the north. During this two-day period, most areas in the southern third of the state received at least 2 inches of rain while areas in northwestern Ohio reported as little as 0.25 inch or less. The next notable precipitation began during the evening on March 24 and continued off and on through the 26th as snow and freezing rain in the northern half of the state and as rain in the southern half. Generally, 5-10 inches of snow were reported across northern Ohio. The entire state received 0.75-1.25 inch of liquid precipitation during this period. Once again, flooding was reported in some areas of southern Ohio. Showers around March 29 produced another 0.25-0.50 inch across most of the state.

Precipitation for the 2002 water year is above normal across most of the state, but slightly below normal in southeastern Ohio. The average for the state as a whole is 17.88 inches, 1.71 inches above normal. Regional averages range from 20.56 inches, 2.42 inches above normal, for the Southwest Region to 16.99 inches, 0.12 inch below normal, for the Southeast Region.

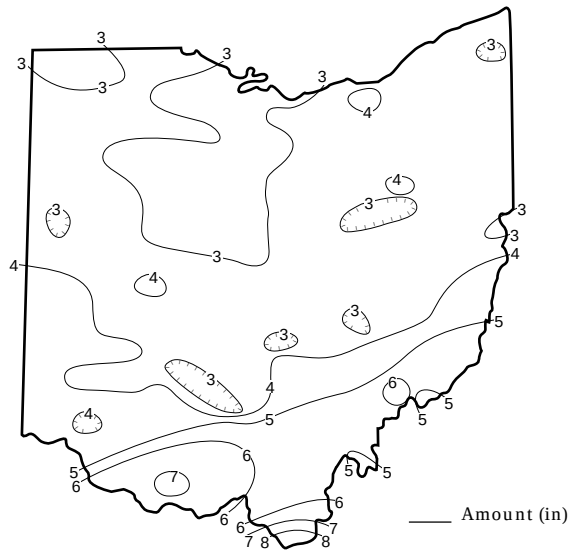
(continued on back)

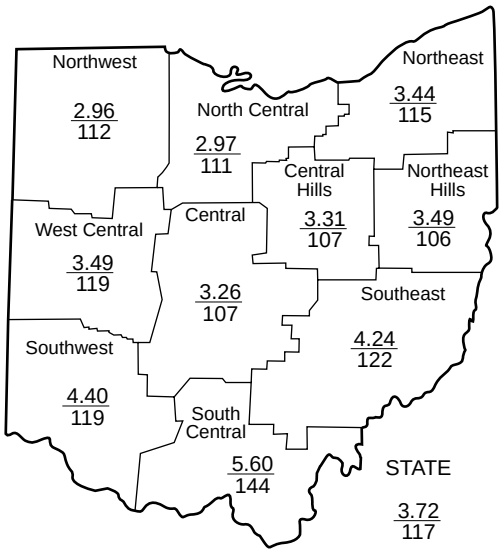
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	
Northwest	+0.31	+0.78	+4.23	+6.26	+8.51	+3.0
North Central	+0.30	+0.26	+3.56	+1.48	+4.36	+2.1
Northeast	+0.45	+0.04	+0.99	-3.18	-1.93	+1.0
West Central	+0.56	-0.44	+2.80	+8.12	+6.78	+3.2
Central	+0.22	-1.18	+1.40	+3.52	+2.41	+0.7
Central Hills	+0.21	-1.04	+1.66	-1.12	-1.65	+0.9
Northeast Hills	+0.21	-1.54	+0.48	-2.15	-1.67	+0.6
Southwest	+0.69	-1.08	+2.42	+6.45	+2.09	+2.8
South Central	+1.71	+0.18	-0.34	-0.56	-3.53	+0.6
Southeast	+0.76	-1.05	-0.12	+1.63	-1.35	+0.6
State	+0.55	-0.51	+1.71	+2.04	+1.39	

*Above +4 = Extreme Moist Spell
3.0 To 3.9 = Very Moist Spell
2.0 To 2.9 = Unusual Moist Spell
1.0 To 1.9 = Moist Spell
0.5 To 0.9 = Incipient Moist Spell
0.4 To-0.4 = Near Normal
-0.5 To -0.9 = Incipient Drought
-1.0 To -1.9 = Mild Drought
-2.0 To -2.9 = Moderate Drought
-3.0 To -3.9 = Severe Drought
Below -4.0 = Extreme Drought

PRECIPITATION MARCH





MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	This Month: Mean Discharge (CFS)	This Month: % of Normal	% of Normal Past: 3 Mos.	% of Normal Past: 6 Mos.	% of Normal Past: 12 Mos.
Grand River near Painesville	685	1,629	97	78	69	61
Great Miami River at Hamilton	3,630	6,425	126	91	144	120
Huron River at Milan	371	525	87	68	78	67
Killbuck Creek at Killbuck	464	532	59	55	62	60
Little Beaver Creek near East Liverpool	496	694	62	58	61	56
Maumee River at Waterville	6,330	7,955	81	78	122	106
Muskingum River at McConnelsville	7,422	9,683	62	81	97	64
Scioto River near Prospect	567	715	78	60	105	97
Scioto River at Higby	5,131	6,408	71	60	79	91
Stillwater River at Pleasant Hill	503	876	122	82	147	113

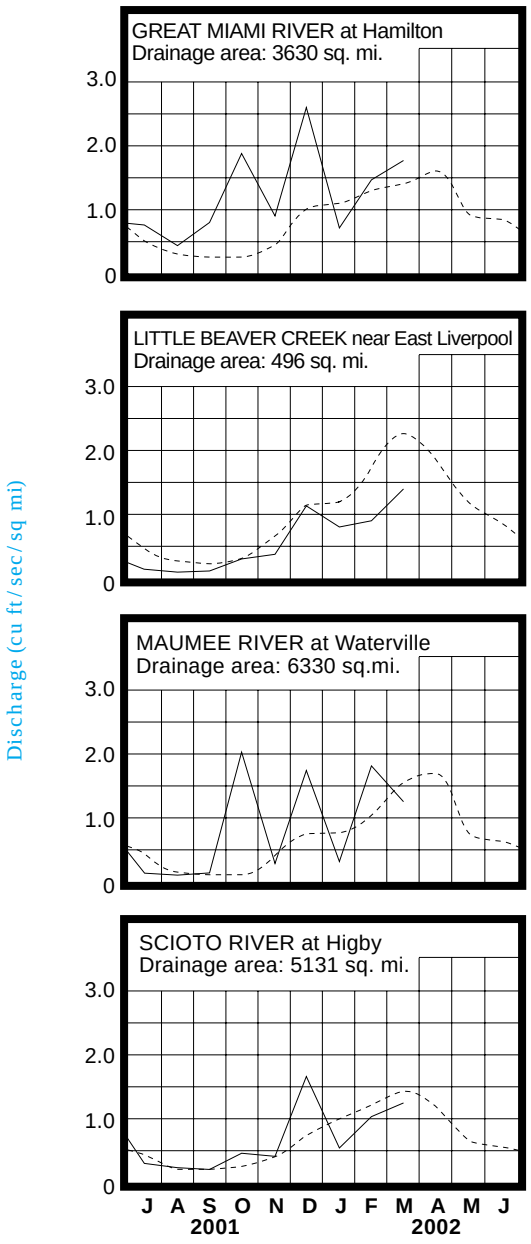
STREAMFLOW during March was below normal across most of the state, but was above normal in west-central and southwestern Ohio basins. Flows were low enough to be considered deficient in some basins in eastern Ohio. March flows were greater than the February flows across much of the state.

Streamflow at the beginning of the month was at its lowest for March and was below normal statewide. Generally, flows remained relatively stable during the first half of the month with only some slight, temporary increases noted following local precipitation on March 2 and March 9. Flows increased significantly during the second half of March reflecting the abundance of precipitation during this period. Streamflow began to increase following precipitation that fell on March 15-16 and then increased notably in southern Ohio after heavy rains during March 19-20. The runoff from these rains caused flooding in several southern Ohio counties (see Notes and Comments on the last page of this report). Flows continued to increase statewide following precipitation that fell during March 25-26. Greatest flows for the month occurred near the end of the month throughout the state as a result of this precipitation combined with the 0.25-0.50 inch rains that fell around March 29. Flooding was again reported in some areas of southern Ohio. Flows at the end of March were above normal throughout most of the state, but remained below normal in some east-central Ohio basins.

RESERVOIR STORAGE for water supply during March increased in the Mahoning and Scioto river basins and was above normal in both basins.

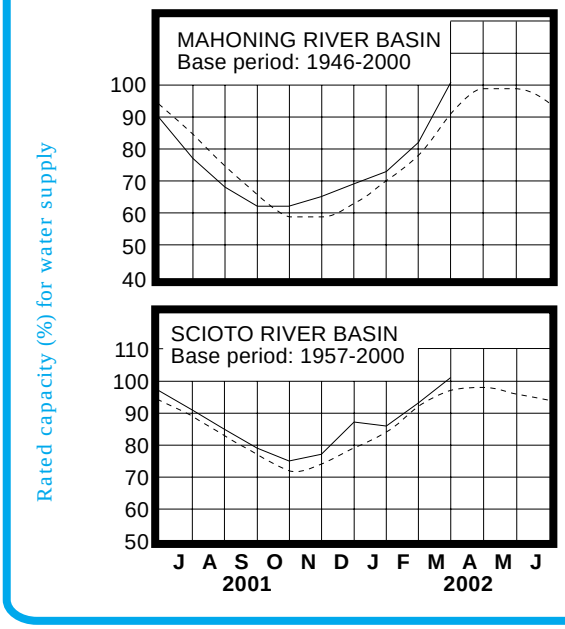
Reservoir storage at the end of March in the Mahoning basin index reservoirs was 101 percent of rated capacity for water supply, compared with 82 percent for last month and 85 percent for March 2001. Month-end storage in the Scioto basin index reservoirs was 101 percent of rated capacity for water supply, compared with 93 percent for last month and 93 percent for March 2001.

MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

RESERVOIR STORAGE FOR WATER SUPPLY



Normal – – – – Current ———

GROUND-WATER LEVELS

Based on daily lowest level in feet below land-surface datum

Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	14.24	-0.92	+0.41	+0.28
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.99	-1.07	-0.05	-0.07
Fr-10	Columbus, Franklin Co.	Gravel	44.82	-2.29	+0.33	-0.20
H-1	Harrison, Hamilton Co.	Gravel	22.08	-1.14	+0.04	+1.22
Hn-2a	Dola, Hardin Co.	Dolomite	6.28	+0.42	+0.16	+0.20
Po-1	Windham, Portage Co.	Sandstone	20.65	-0.46	+0.34	+0.06
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.45	-3.78	+0.12	-0.97

GROUND WATER levels during March rose throughout most of the state. However, positive net changes during March from the February levels were markedly less than usually observed. Generally, ground water levels were stable during the first half of the month and rose during the second half following several days with precipitation.

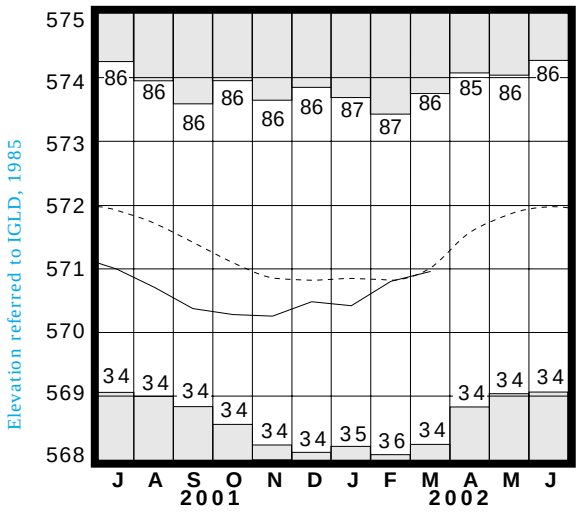
Ground water levels are below normal across most of the state, but remain above normal in some carbonate aquifers in northwestern Ohio. In some areas, levels range up to nearly 4 feet below the long-term March average. However, current levels are higher than last year's levels across much of the state. After a promising start, the 2002 water year recharge season has not been as beneficial as expected for replenishing the state's ground water supplies to normal seasonal levels. This marks the fourth consecutive year that the January-March period has not been exceptionally favorable for recharging the state's aquifers. Observation well TU-1 near Strasburg (Tuscarawas County), representing sand and gravel aquifers in eastern Ohio, reached a record-low level for March. Precipitation during the second half of the month has improved soil moisture supplies across most of the state. The Ohio Agricultural Statistics Service reports that at the end of March, soil moisture was rated as being short or very short in 2 percent of the state, adequate in 49 percent of the state and surplus in 49 percent of the state. With near normal precipitation and other climatic conditions during the next few months, the prospects for additional recharge are favorable. Water supply managers with ground water sources should continue to monitor their respective situations closely.

LAKE ERIE level rose during March. The mean level was 570.96 feet (IGLD-1985), 0.16 foot higher than last month's mean level and 0.14 foot below normal. This month's mean level is 0.26 foot higher than the March 2001 level and 1.76 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during March averaged 3.11 inches, which is 0.36 inches above normal; the entire Great Lakes basin averaged 2.84 inches, which is 0.68 inch above normal. For calendar year 2002 through March, the Lake Erie basin has averaged 8.77 inches of precipitation, 1.52 inches above normal, while the entire Great Lakes basin has averaged 6.54 inches which is 0.45 inch above normal.

The USACE also reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should range from about 3-7 inches below the long-term seasonal average for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as high as 3 inches above to as much as 14 inches below the normal seasonal levels.

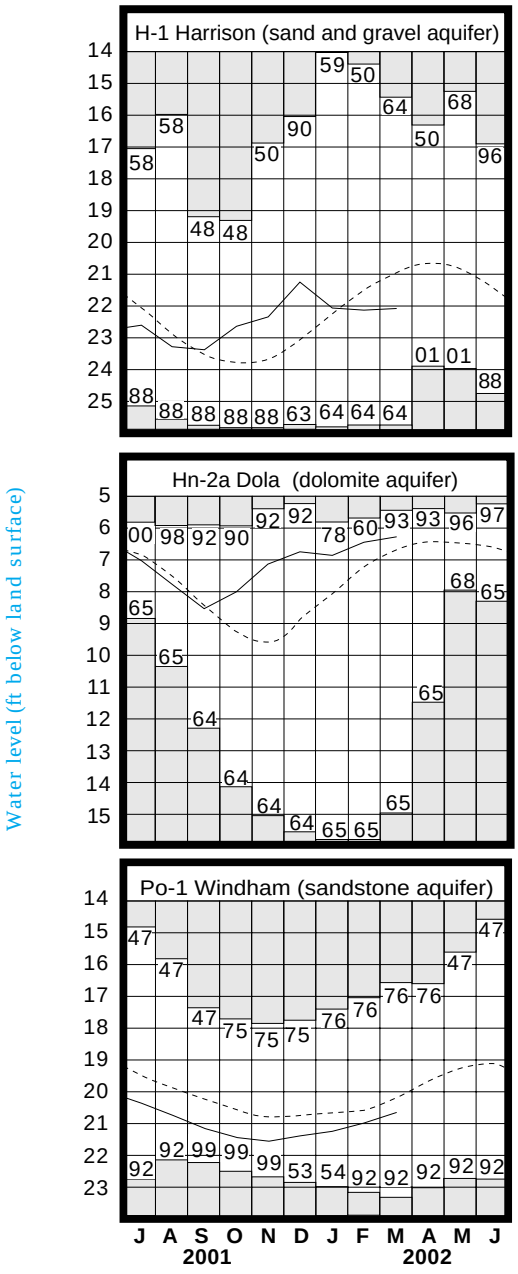
LAKE ERIE LEVELS



Base period: 1918-2000

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-2000; Hn-2a, 1955-2000; Po-1, 1947-2000. Record high and low, year of occurrence

Normal– – – – Current———

(Precipitation continued from front)

Precipitation for the 2002 calendar year is below normal across much of the state, but is above normal in the northern third and also in extreme south-central Ohio. The average for the state as a whole is 7.49 inches, 0.51 inch below normal. Regional averages range from 9.89 inches, 0.18 inch above normal, for the South Central Region to 6.56 inches, 1.18 inches below normal, for the Central Region.

SUMMARY

Precipitation during March was above normal across most of the state. Streamflow was below normal across most of the state, but was above normal in west-central and southwestern Ohio. Reservoir storage increased in both the Mahoning and Scioto river basins and was above normal in both basins. Ground water levels rose, but remained below normal throughout most of the state. Lake Erie level rose 0.16 foot and was 0.14 foot below the normal seasonal level.

NOTES AND COMMENTS

NEW PUBLICATION

The Ohio Department of Natural Resources (ODNR), Division of Water and the U.S. Geological Survey (USGS), Water Resources Division, announce the availability of the following publication:

Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio (U.S. Geological Survey Water-Resources Investigations Report 02-4068)

By Greg F. Koltun and Matthew T. Whitehead

This report, prepared in cooperation with the ODNR Division of Water, the Ohio Department of Transportation and the U. S. Department of Transportation, Federal Highway Administration, provides equations for estimating mean annual streamflow, mean monthly streamflows, harmonic mean streamflow and streamflow quartiles, as a function of selected basin characteristics for rural, unregulated streams in Ohio. The equations were developed from streamflow statistics and basin-characteristics data for as many as 219 active or discontinued streamflow-gauging stations on rural, unregulated streams in Ohio with at least 10 years of homogenous daily streamflow record. Streamflow statistics and basin-characteristics data for the 219 stations are presented in this report.

Copies of this new report are available from the USGS, Water Resources Division, 6480 Doubletree Avenue, Columbus, Ohio, 43229 or call Mike Eberle at (614) 430-7718. Copies are also available from the ODNR, Division of Water, 1939 Fountain Square, Building E-1, Columbus, Ohio, 43224, phone (614) 265-6739. You may also view an abstract of the report or download the report in a Portable Document Format (PDF) by visiting the USGS web page at: http://oh.water.usgs.gov/reports/abstract.html.

Flash Floods Affect Southern Ohio Counties

Heavy rains from a slow moving weather system fell on saturated ground during March 19-20 resulting in flash flooding in southern Ohio, damaging homes, businesses, roads and bridges. The rains began early on March 19 and continued through the late afternoon hours on March 20. The greatest amount of rain fell along the Ohio River, with a large area of southern Ohio receiving 3-5 inches. The hardest hit counties were Lawrence, Gallia, Meigs and Scioto. Governor Bob Taft declared a state of emergency for Lawrence County, thus authorizing state agencies to take any necessary action to assist the local authorities in the cleanup and recovery efforts. Damage in the four counties was severe enough for the federal Small Business Administration to make a disaster declaration, making people impacted by the floods eligible for low-interest loans and other assistance.

WMAO Spring Conference

The Water Management Association of Ohio (WMAO) 2002 Spring Conference is scheduled for June 5, 2002. The theme for this years conference will be *Water Resources Data: Who Has What and Why?* The conference will be held from 8:00 a.m. to 4:30 p.m. at the Ramada Plaza Hotel and Conference Center, 4900 Sinclair Road, Columbus, Ohio, 43229. For more registration information, please contact:

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ACKNOWLEDGMENTS

This report has been compiled from Division of Water data and from information supplied by the following:

Precipitation data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service: The Miami Conservancy District: U.S. Army Corps of Engineers, Muskingum Area.

Streamflow and reservoir storage data:
U.S. Geological Survey, Water Resources Division.

Lake Erie level data:
U.S. Army Corps of Engineers, Detroit District.

Palmer Drought Severity Index:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service.

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