



MONTHLY WATER INVENTORY REPORT FOR OHIO

March 2001

<http://www.dnr.state.oh.us/odnr/water/pubs/newsltrs/mwirmain.html>

Compiled By David H. Cashell and Scott Kirk

Hydrologists
Water Inventory Unit

PRECIPITATION during March was noticeably below normal across most of the state except in the southeastern Ohio counties along the Ohio River where it was above normal. The state average was 1.80 inches, 1.58 inches below normal. For the state as a whole, this was the 16th driest March during the past 119 years. Regional averages ranged from 3.25 inches, 0.37 inch below normal, for the Southeast Region to 0.79 inch, 2.08 inches below normal, for the Northwest Region. This was the 5th driest March of record for the Northwest and West Central regions, the 6th driest for the North Central Region, the 7th driest for the Southwest Region, the 9th driest for the Central Region and the 10th driest for the Central Hills Region. Greenup Dam (Scioto County) reported the greatest amount of precipitation for March, 5.34 inches. Grover Hill (Paulding County) reported the least, only 0.21 inch.

March precipitation in Ohio was the greatest in the southeast and diminished in amount to the northwest. The first significant precipitation of the month fell on March 4 when a weather system brought mostly rain to the southeastern half of the state. Storm totals of 0.25-0.50 inch were common throughout this area with up to 1 inch reported at some sites in extreme south-central and southeastern Ohio. Little or no precipitation fell in the northwestern half of the state during this time. The next several days were rather dry with only a few light snow showers reported, except in northeastern Ohio where several inches of snow fell. Two weather systems affected the state around mid-month. The first was during March 12-13 when 0.25-0.50 inch of rain fell across the entire state. The second event occurred on March 16-17 with another 0.25-0.50 inch of precipitation reported across most of the state. This precipitation fell mostly as rain in the southern half of the state, but in the northern half it started as rain and then changed to snow. The next wet period was during March 20-21 when a storm system moving up the Atlantic coastline brought rain to the southeastern half of the state. Generally, 0.25-0.50 inch of rain fell throughout this region with 1-2 inches reported in some areas. Little or no precipitation fell in the northwestern half of the state during this storm. The remainder of the month was rather dry across most of the state, except in northeastern Ohio where lake-effect snow occurred during March 25-27.

Precipitation for the 2001 calendar year is below normal statewide. The average for the state as a whole is 4.69 inches, 3.70 inches below normal. Regional averages range from 6.77 inches, 2.31 inches below normal, for the Southeast Region to 3.33 inches, 3.70 inches below normal, for the North Central Region (see Precipitation table, departure from normal, past

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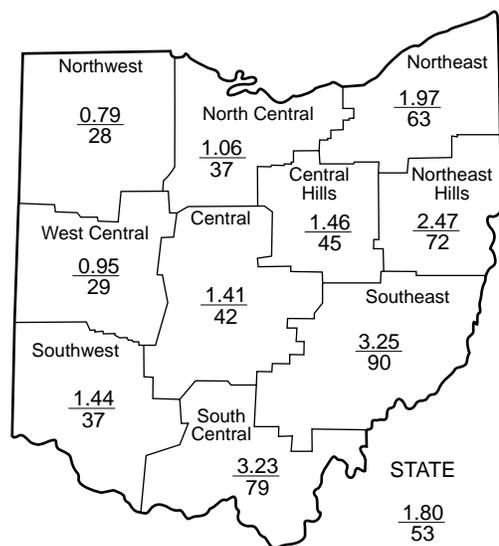
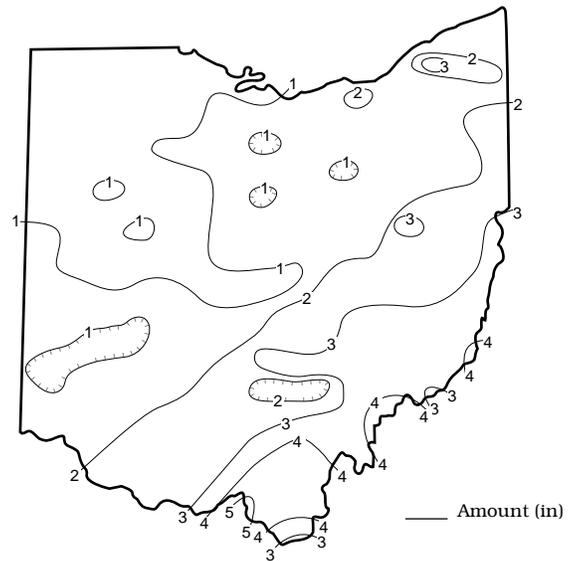
PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.)				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-2.08	-3.16	-3.30	+2.55	-1.36	+0.3
North Central	-1.80	-3.70	-4.30	+3.50	+1.39	+0.5
Northeast	-1.14	-2.92	-2.52	+2.77	+1.84	-0.4
West Central	-2.31	-4.49	-4.67	-1.13	-8.11	-1.1
Central	-1.96	-4.31	-3.57	-1.04	-6.75	-1.1
Central Hills	-1.80	-4.05	-3.84	+0.34	-3.08	-1.1
Northeast Hills	-0.98	-2.91	-3.86	+0.86	-3.88	-0.6
Southwest	-2.48	-5.45	-5.95	-3.79	-12.64	-1.2
South Central	-0.86	-3.71	-5.69	-3.59	-8.93	-0.8
Southeast	-0.37	-2.31	-3.32	-3.13	-7.29	-0.5
State	-1.58	-3.70	-4.10	-0.27	-4.90	

*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



Average (in)
Percent of normal

MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	This Month		
				% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,161	61	88	83	92
Great Miami River at Hamilton	3,630	1,990	34	51	66	80
Huron River at Milan	371	246	35	63	114	145
Killbuck Creek at Killbuck	464	352	38	61	84	84
Little Beaver Creek near East Liverpool	496	516	44	60	71	81
Maumee River at Waterville	6,330	3,761	29	85	89	102
Muskingum River at McConnelsville	7,422	7,384	46	64	78	88
Scioto River near Prospect	567	302	31	54	60	81
Scioto River at Higby	5,131	3,191	35	46	66	80
Stillwater River at Pleasant Hill	503	189	23	42	48	75

STREAMFLOW during March was below normal across Ohio. Flows were low enough to be considered deficient statewide. Flows for the month decreased contra-seasonally from the February flows across the state.

Streamflow at the beginning of the month was below normal statewide. Generally, flows decreased steadily or remained rather constant during the first half of the month. Lowest flows for the month occurred during this period in the eastern half of the state. Flows increased statewide around mid-month in response to precipitation. As a result, greatest flows for the month occurred between March 14-18 across most of Ohio. Flows generally declined during the remainder of the month and were at their lowest monthly flow in the western half of the state toward the end of the month. Streamflow at the end of March was below normal statewide.

RESERVOIR STORAGE for water supply during March increased in the Mahoning River basin and decreased in the Scioto River basin. Month-end storage was below normal in the Mahoning River basin and above normal in the Scioto River basin.

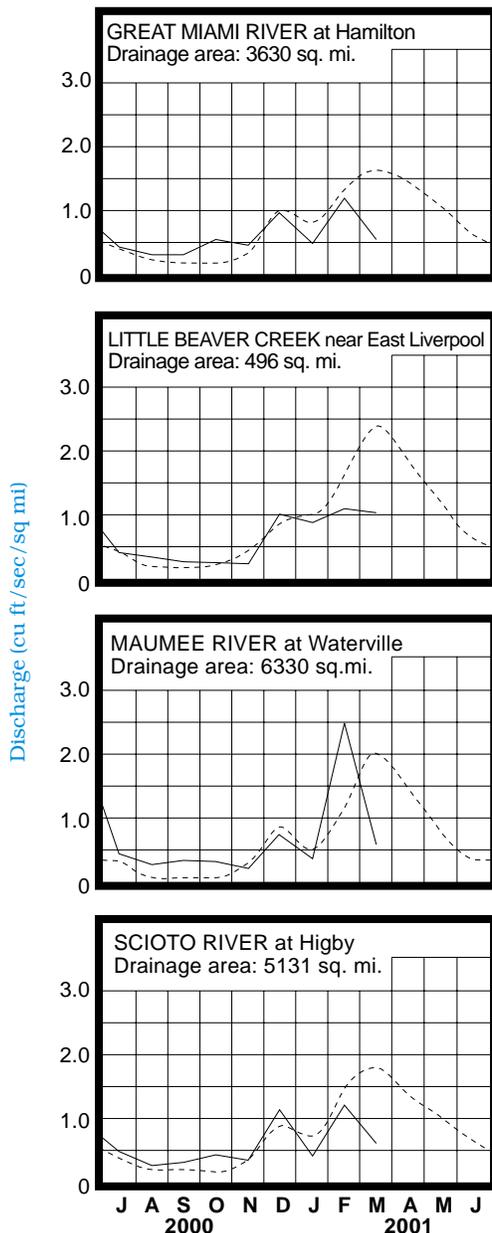
Reservoir storage at the end of March in the Mahoning basin index reservoirs was 85 percent of rated capacity for water supply compared with 77 percent for last month and 92 percent for March 2000. Month-end storage in the Scioto basin index reservoirs was 101 percent of rated capacity for water supply compared with 103 percent for last month and 106 percent for March 2000.

Surface water supplies are adequate across the state. With near normal precipitation during the next several months, surface-water supplies should remain in good shape as we enter the summer high use period.

GROUND WATER levels during March showed mixed results. Generally, most consolidated aquifers showed improvement during the month while many unconsolidated aquifers showed a net decline for March, which is counter to the normal seasonal trend. Even in aquifers in which water levels rose during the month, the rises were less than what is usually expected for this time of year. Levels in consolidated aquifers were rather stable or declined slightly during the first half of the month, and then rose during the second half. Levels in most unconsolidated aquifers were stable or declined slowly throughout the month.

Ground water levels remain below normal across most of the state ranging from 1 to 3 feet below the average March levels. An exception is in some carbonate aquifers in northwestern Ohio where levels are slightly

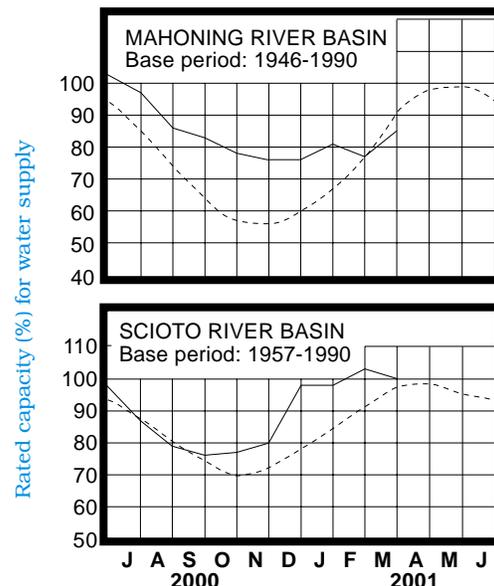
MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

Normal - - - - - Current ———

RESERVOIR STORAGE FOR WATER SUPPLY



GROUND-WATER LEVELS

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

above normal. Current ground water levels remain above the March 2000 levels across most of the state ranging from 0.25 foot to about 1.5 feet above the March 2000 levels. However, levels in some unconsolidated aquifers in southwestern Ohio are lower than they were at this time last year. The 2001 water year recharge season has not been exceptionally good so far. Although only a couple of months remain in the nominal recharge season, normal precipitation and other climatic conditions during this period could still provide some much needed recharge to the state's ground water supplies. However, soil moisture conditions are not particularly favorable for prolonged recharge. The Ohio Agricultural Statistics Service reports that near the end of March, soil moisture was rated as being short or very short in 18 percent of the state, adequate in 73 percent of the state and surplus in 9 percent of the state.

This marks the third consecutive year where the January-March period has not been exceptionally good for ground water recharge. This is reflected in that ground water levels during March have been below normal in each of the past three years. Although this year's levels are higher than last year's, current levels are lower than they were during March 1999, ranging from 0.25 foot to more than 2.5 feet lower than the March 1999 levels. The significance of the March 1999 levels is that they were observed during the middle of the 1998-1999 drought period and continued to decline sharply during the remainder of 1999 as drought conditions persisted.

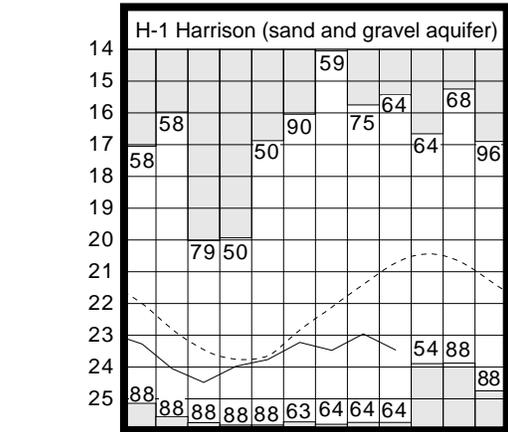
LAKE ERIE level rose during March. The mean level was 570.80 feet (IGLD-1985), 0.36 foot higher than last month's mean level and 0.07 foot below normal. This month's mean level is 0.49 foot higher than the March 2000 level and 1.60 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during March averaged 1.72 inches, 1.04 inches below normal, and the entire Great Lakes basin averaged 1.33 inches which is 0.84 inch below normal. For calendar year 2001 through March, the Lake Erie basin has averaged 5.78 inches of precipitation, 1.48 inches below normal while the entire Great Lakes basin has averaged 5.40 inches which is 0.69 inch below normal. In addition, the USACE predicts that, based on the current condition of the Great Lakes basin and anticipated future weather conditions, the level of Lake Erie should range from 0.5-1.0 foot below the long-term seasonal average for the foreseeable future. However, deviations from the expected weather patterns could result in the lake level ranging from a few inches to around 1.75 feet below the normal seasonal levels.

Editors Note: Lake Erie levels presented in this report are from the gauge located at Fairport. Normal levels are based on data obtained from 1900-1991. Updated normals based on data through 2000 will be incorporated into this report later this year.

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	14.52	-1.21	+1.18	+1.59
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.92	-1.07	-0.42	+0.59
Fr-10	Columbus, Franklin Co.	Gravel	44.62	-1.95	+0.49	+0.42
H-1	Harrison, Hamilton Co.	Gravel	23.46	-2.75	-0.50	-0.62
Hn-2a	Dola, Hardin Co.	Dolomite	6.48	+0.30	+0.47	+1.75
Po-1	Windham, Portage Co.	Sandstone	20.71	-0.68	+0.37	+1.45
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.48	-3.08	-0.05	+0.22

GROUND-WATER LEVELS



3 months column). The 2001 January-March period ranks as one of the driest on record for much of Ohio. For the state as a whole, this was the 5th driest January-March period during the past 119 years. The South-west Region experienced its 2nd driest January-March of record, and in the North Central, West Central and Central Hills regions, it was the 3rd driest. Other regions with unusually low January-March precipitation totals include: Northeast Region, 5th driest; Northwest and Central regions, 6th driest; Northeast Hills Region, 7th driest; South Central Region, 10th driest; and the Southeast Region, 16th driest.

Precipitation for the 2001 water year is below normal statewide. The average for the state as a whole is 11.85 inches, 4.10 inches below normal. Regional averages range from 13.59 inches, 2.52 inches below normal, for the Northeast Region to 9.58 inches, 4.30 inches below normal, for the North Central Region.

SUMMARY

Precipitation was below normal across most of the state except in the southeastern Ohio counties along the Ohio River where it was above normal. Streamflow was below normal statewide. Reservoir storage increased in the Mahoning River basin and was below normal. Reservoir storage decreased in the Scioto River basin and was above normal. Ground water levels showed mixed results and remained below normal across most of the state. Lake Erie level rose 0.36 foot and was 0.07 foot below the long-term March average.

NOTES AND COMMENTS

WMAO SPRING CONFERENCE

The Water Management Association of Ohio (WMAO) 2001 Spring Conference is scheduled for May 1, 2001. The purpose of this conference is to provide a technical forum that will promote mutual partnerships with stakeholders involved in watershed management issues. This year's spring conference is co-sponsored by the Ohio Water Environment Association, American Water Works Association and WMAO. The conference will be held from 8:00 am-3:00 pm at the Worthington Holiday Inn, 175 Hutchinson Avenue, Columbus, Ohio, 43235. The registration fee is \$100.00 before April 20, 2001. After April 20 the fee will be \$135.00. Registration fees may be sent to:

Ohio Water Environment Association
Attn: Watershed Management Workshop
3972 Indianola Avenue
Columbus, OH 43214
Phone: (614) 268-4069
Fax : (614) 268-3244

DIVISION OF WATER MAPS SELECTED FOR PUBLICATION

Environmental Systems Research Institute, Inc. (ESRI) has selected two maps from the Division of Water's Statewide Aquifer Mapping Project, for publication in Volume 16 of the *ESRI Map Book*. The maps selected show the approximate yield of the unconsolidated aquifers of Ohio and the approximate yield of the bedrock aquifers of Ohio. Paul Spahr, a hydro-geologist in the Water Resources Section, prepared the maps from geographic information system (GIS) coverages created for the Statewide Aquifer Mapping Project. Paul's maps were presented at ESRI's annual conference in June of last year. ESRI selects only a few dozen maps out of several thousand maps presented at their annual conference for publication in their annual *ESRI Map Book*. Information on how to obtain Statewide Aquifer Mapping Project GIS coverages is available at the Division of Water's web site: www.odnr.state.oh.us/odnr/water.

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.



Division of Water
1939 Fountain Square
Columbus, Ohio 43224

Bob Taft
Governor

Samuel W. Speck
Director

James R. Morris P.E.
Chief

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