



MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2001

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

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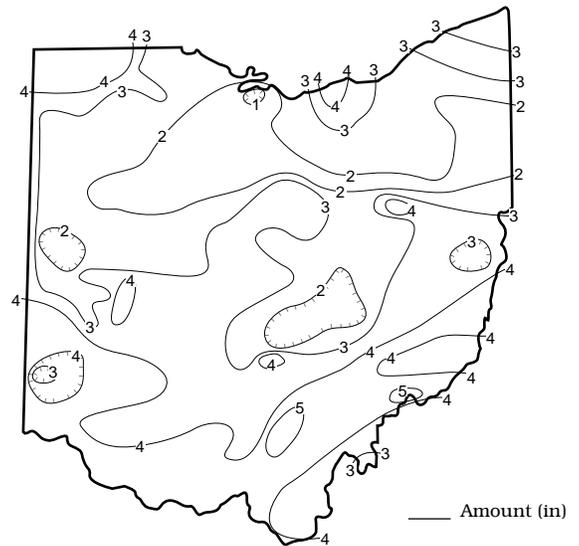
PRECIPITATION during June was below normal across most of Ohio; an exception was in a few isolated areas in the southern half of the state where it was above normal. The state average was 3.01 inches, 0.95 inch below normal. Regional averages ranged from 3.88 inches, 0.17 inch below normal, for the Southwest Region to 2.36 inches, 1.75 inches below normal, for the Central Hills Region. This was the 18th driest June during the past 119 years for the Central Hills Region. Marietta State Nursery (Washington County) reported the greatest amount of June precipitation, 5.60 inches. Other stations reporting in excess of 5 inches of rain for June were: Marietta Lock (Washington County), Jackson (Jackson County) and McArthur (Vinton County). Sandusky (Erie County) reported the least amount of June precipitation, 0.98 inch, the only station reporting less than 1 inch.

Precipitation amounts varied greatly during the month when the first half is compared to the second half. Weather conditions during the first half of June were wet, continuing a trend that was established during the second half of May. Showers and thunderstorms with locally heavy rains at times occurred on several days during the first half of the month. The southern half of the state received the greatest amount of rain during this period with generally 2-4 inches falling. Locally heavy rains caused some isolated small stream and urban flooding in west-central Ohio during June 11-12. The second half of June was noticeably drier than the first half with light showers and a few scattered thunderstorms reported. The one exception was during June 21-22 when a weather system brought widespread rain to the state. Most of the rain amounts were between 0.25-0.50 inch, but greater amounts of up to 1.5 inches fell in some areas of the state, especially in southeastern Ohio.

Precipitation for the first half of the 2001 calendar year is below normal across nearly all the state with just a few areas in southeastern Ohio receiving above normal amounts. The average for the state as a whole is 16.59 inches, 3.02 inches below normal. Regional averages range from 20.89 inches, 0.19 inch above normal, for the Southeast Region to 12.74 inches, 4.87 inches below normal, for the North Central Region (see Precipitation table, departure from normal, past 6 month's column).

Precipitation for the 2001 water year is below normal statewide. The average for the state as a whole is 23.75 inches, 3.42 inches below normal. Regional averages range from 27.57 inches, 0.82 inch below normal, for the Southeast Region to 18.99 inches, 5.47 inches below normal, for the North Central Region.

PRECIPITATION JUNE

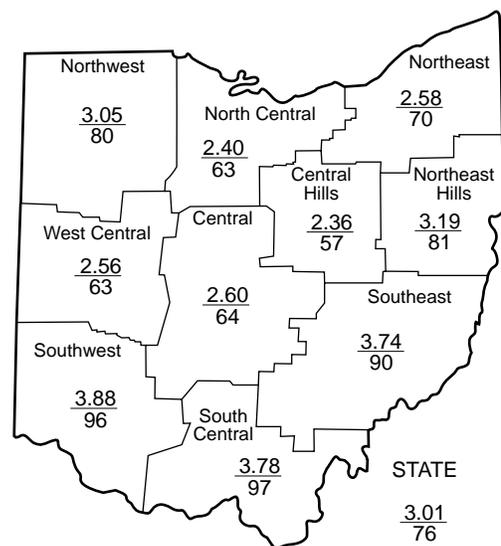


PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.)				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.78	+1.53	-1.63	-0.45	-0.61	-0.7
North Central	-1.42	-1.17	-4.87	-2.52	+1.23	-1.6
Northeast	-1.10	-1.79	-4.71	-3.64	+1.74	-2.7
West Central	-1.48	+0.90	-3.59	-2.89	-4.63	-0.5
Central	-1.46	+2.47	-1.84	-0.66	-0.18	-0.8
Central Hills	-1.75	-0.79	-4.84	-3.73	-0.56	-1.9
Northeast Hills	-0.77	+0.03	-2.88	-2.17	-1.37	-2.1
Southwest	-0.17	+0.82	-4.63	-3.72	-8.03	-0.2
South Central	-0.10	+2.36	-1.35	-1.11	-0.79	+0.5
Southeast	-0.40	+2.50	+0.19	-1.45	-0.65	-0.4
State	-0.95	+0.68	-3.02	-2.24	-1.40	

*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



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	164	63	52	70	68
Great Miami River at Hamilton	3,630	2,979	128	89	69	80
Huron River at Milan	371	70	40	64	62	109
Killbuck Creek at Killbuck	464	297	113	72	63	72
Little Beaver Creek near East Liverpool	496	185	59	63	65	64
Maumee River at Waterville	6,330	5,510	242	109	98	93
Muskingum River at McConnelsville	7,422	6,230	105	84	74	81
Scioto River near Prospect	567	256	96	118	75	79
Scioto River at Higby	5,131	5,940	170	130	83	93
Stillwater River at Pleasant Hill	503	204	76	79	59	62

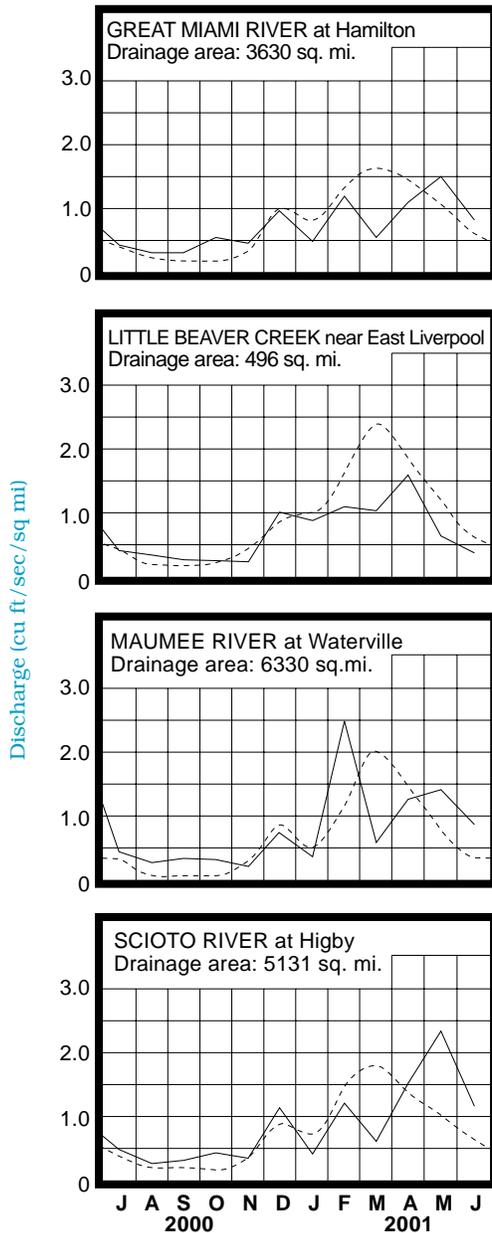
STREAMFLOW during June was generally below normal in the northeastern quarter of the state and above normal elsewhere. Flows were high enough to be considered excessive in some extreme northwestern Ohio basins while in some north-central Ohio basins, flows were low enough to be considered deficient. June flows declined seasonally from the May flows statewide.

Flows at the beginning of the month were above normal throughout most of Ohio, but below normal in the northeastern third of the state. Flows increased statewide during the first 8 days of the month in response to precipitation. Greatest flows for the month were recorded during this time period across most of the state. An exception was in some areas of west-central Ohio where greatest flows occurred shortly after heavy rain fell during June 11-12. Some localized urban and small stream flooding was reported due to the excessive rainfall in this area of the state. Flows decreased during the remainder of the month except for some temporary increases following precipitation, especially following the rains of June 21-22. Lowest flows for the month occurred near or at the end of the month statewide. Flows at the end of June were below normal throughout Ohio.

RESERVOIR STORAGE for water supply during June decreased in both the Mahoning and Scioto river basins. Month-end storage remains below normal in the Mahoning River basin and above normal in the Scioto River basin.

Reservoir storage at the end of June in the Mahoning basin index reservoirs was 90 percent of rated capacity for water supply, compared with 95 percent for last month and 103 percent for June 2000. Month-end storage in the Scioto basin index reservoirs was 98 percent of rated capacity for water supply, compared with 106 percent for last month and 98 percent for June 2000.

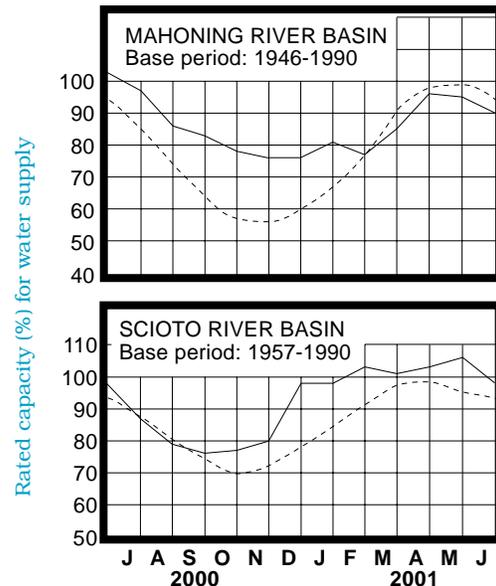
MEAN STREAM DISCHARGE



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

GROUND WATER levels during June rose contra-seasonally across most of the state. Wet conditions prevalent during May and the first half of June helped extend the recharge season across much of the state. Generally, ground water levels in most aquifers were rather stable or increased during the first half of the month and then declined during the second half of June.

Ground water levels remain below normal across most of the state, ranging from about 0.25 foot to 2.0 feet below normal. However, some consolidated aquifers in central and western Ohio are slightly above normal. Current ground water levels continue to range above last year's levels in central and southern Ohio, but they have now fallen below the June 2000 levels in many aquifers in northern Ohio. The abundant precipitation that occurred across the state during May and early June had a positive impact on ground water supplies. Typically there is little if any additional net recharge to ground water storage during the next several months. The Ohio Agricultural Statistics Service reports that at the end of June, soil moisture was rated as being short or very short in 24 percent of the state, adequate in 72 percent of the state and surplus in 4 percent of the state. Although current ground water supplies are adequate across most of the state, water supply managers with ground water sources should continue to monitor their respective situations closely through the next several months.

LAKE ERIE level rose during June. The mean level was 571.26 feet (IGLD-1985), 0.16 foot higher than last month's mean level and 0.56 foot below normal. This month's mean level is 0.33 foot lower than the June 2000 level and 2.06 feet above Low Water Datum.

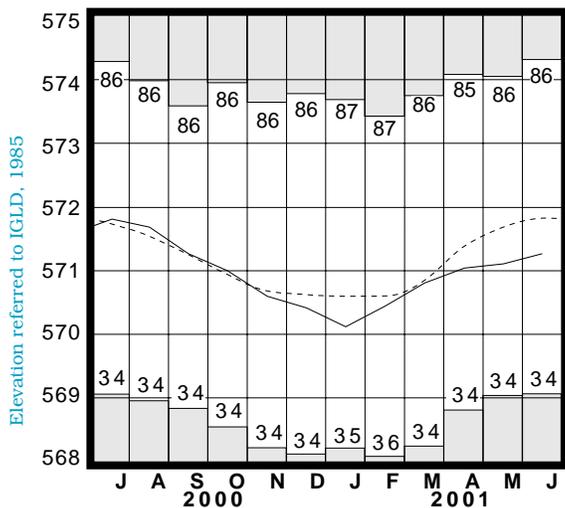
The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged 2.91 inches which is 0.53 inch below normal. The entire Great Lakes basin averaged 2.64 inches of precipitation during June which is 0.55 inch below normal. For calendar year 2001 through June, the Lake Erie basin has averaged 15.26 inches of precipitation, 1.87 inches below normal while the entire Great Lakes basin has averaged 15.10 inches which is 0.34 inch above normal.

In addition, the USACE predicts that, based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should range around 10 inches 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 near normal to as much as 1.5 feet below the normal seasonal levels.

SUMMARY

Precipitation during June was below normal across most of Ohio, except in a few isolated areas in the southern half of the state. Streamflow was below normal in the northeastern quarter of the state and above normal elsewhere. Reservoir storage decreased statewide. Month-end storage was below normal in the Mahoning River basin and above normal in the Scioto River basin. Ground water levels rose across most of the state. Ground water levels remain below normal in most areas of the state, but are above normal in some consolidated aquifers in central and western Ohio. Lake Erie level rose 0.16 foot and was 0.56 foot below the long-term June average.

LAKE ERIE LEVELS at Fairport



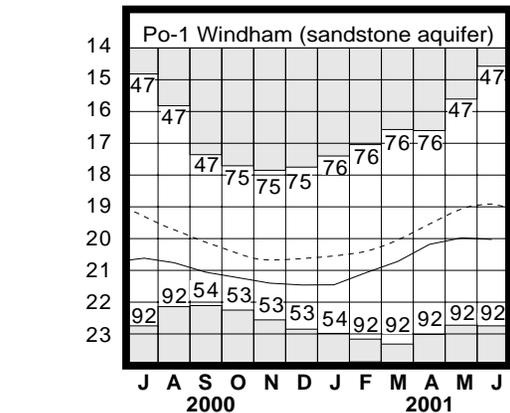
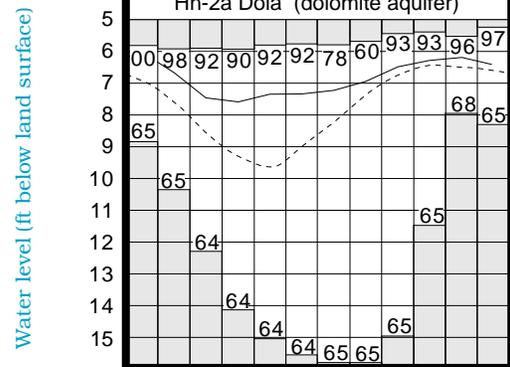
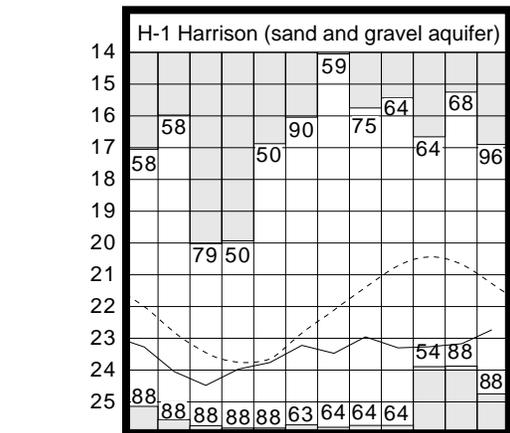
Base period: 1900-1991

■ Record high and low, year of occurrence

Normal - - - - Current - - - -

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	13.64	+0.27	+0.29	+1.93
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.51	-0.14	+0.34	+0.45
Fr-10	Columbus, Franklin Co.	Gravel	44.55	-1.50	+0.04	+0.50
H-1	Harrison, Hamilton Co.	Gravel	22.73	-1.43	+0.43	+0.10
Hn-2a	Dola, Hardin Co.	Dolomite	6.41	+0.22	-0.22	-0.23
Po-1	Windham, Portage Co.	Sandstone	20.01	-1.09	-0.02	-0.73
Tu-1	Strasburg, Tuscarawas Co.	Gravel	13.92	-2.03	+0.09	-0.21

GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990.

Po-1, 1947-1990 ■ Record high and low, year of occurrence

NOTES AND COMMENTS

Great Lakes Charter Annex 2001 Signed

On June 18, the Great Lakes Governors and Premiers of Ontario and Quebec signed the Great Lakes Charter Annex 2001. The Charter Annex is an amendment to the Great Lakes Charter of 1985. Both are good-faith agreements signed by all the Great Lakes Governors and Premiers. The Charter Annex 2001 was designed to update the Great Lakes regional water management system and to help ensure the Great Lakes are protected, conserved, restored and improved for future generations. This is the foundation for the legal standard upon which decisions concerning water resources management should be based. In agreeing to the Annex, the Great Lakes Governors and Premiers maintain their commitment to the principles established in the Great Lakes Charter and that all provisions of the Charter will remain intact and in effect. They also commit to further implementing the principles of the Charter by developing an enhanced water management system. Copies of the Annex 2001 can be obtained on the Division of Water web site: www.dnr.state.oh.us/water or by calling (614) 265-6717.

The Council of Great Lakes Governors is a non-profit, non-partisan partnership comprised of Governors from the eight Great Lakes states. The Premiers of Ontario and Quebec are associate members. Through the Council, the Governors can collectively deal with the environmental and economic challenges facing the Great Lakes region. At the June 18 meeting, Governor Taft was elected as Chairman of the Council of Great Lakes Governors.

Peru Earthquake Makes Its Mark In Ohio

On June 23, 2001 at 4:33pm EDT, a major earthquake measuring 8.4 on the open-ended Richter scale struck southern Peru. The quake, centered near the coast, caused extensive damage and the loss of 170 lives. Shock waves radiating from the epicenter of this quake traveled through rock formations and reached Ohio. The United States Geological Survey estimates that it took about 10 minutes for these waves to reach Ohio. Seismic waves passing through rock formations cause an alternating compression and expansion of the rock. Water levels in some wells finished in certain rock formations can rise and fall with the passing of these waves. Several wells in Ohio's observation well network have responded to earthquakes in the Western Hemisphere. The most sensitive well to these phenomena in Ohio's observation well network is VW-1, located in Van Wert (Van Wert County). Seismic waves from the Peru earthquake caused a 0.6 foot fluctuation of water level in this well. The most notable fluctuation caused by an earthquake in VW-1 occurred March 27, 1964 when the water level changed 5.8 feet following the Alaskan Good Friday earthquake that had a Richter scale magnitude of 8.4.

ODNR Division of Water Announces Retirements

Two long-time ODNR-Division of Water employees will retire at the end of July, 2001. Peter G. Finke, Deputy Chief for the Division of Water will retire after 31 years of service. Pete has been a leader in floodplain management in Ohio since he started with the Division and was instrumental in helping to develop a state floodplain management program. He worked to establish model floodplain regulations and community authority for participation in the National Flood Insurance Program (NFIP), which now includes more than 93 percent of Ohio's floodprone communities. Pete established the initial NFIP cooperative state-federal agreements for Ohio under the old State Assistance Program and Community Assistance Programs and also coordinated agreements with the Corps of Engineers and the Natural Resources Conservation Service to conduct a number of floodplain management studies in the state.

Pete developed state floodplain management legislation to ensure state agency compliance with minimum federal floodplain management criteria, fostered proactive avoidance of the floodplain in planning for critical state facilities, and established technical assistance agreements with state agencies. Under his leadership, the state developed the first hazard mitigation plans and strengthened post-flood outreach activities and links with emergency management.

At the national level, Pete has been active in the Association of State Flood Plain Managers (ASFPM) serving on the Board of Directors, Insurance and Regulation Committees, and has actively participated in ASFPM conferences. Pete has worked extensively with the Flood Insurance Producers National Committee, and has been an effective liaison to the Federal Emergency Management Agency in working to achieve comprehensive national floodplain management goals. Since being assigned as Deputy Chief, Pete has worked on several significant special projects for the Division and has contributed greatly to many of the Division's programs.

Joel Vormelker will retire from the Division of Water after 33 years of service. He began working for the Department of Natural Resources in July 1968. Joel spent his first 23 years at ODNR working for the Division of Geological Survey. While with the Geological Survey, he authored several county bedrock and drift thickness maps. Joel joined the Water Resources Section (WRS) in October 1991. His experience proved invaluable as he answered inquires for information, assisted in special investigation projects, and participated in various mapping projects.

The entire Division of Water staff wishes Pete and Joel the best as they begin a new chapter in their lives. Their expertise, advise, ability and professionalism will be missed.

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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