



MONTHLY WATER INVENTORY REPORT FOR OHIO

October 2013

Compiled By Scott C. Kirk

Hydrologist, Water Inventory Unit

<http://www.ohiodnr.gov/tabid/4191/Default.aspx>

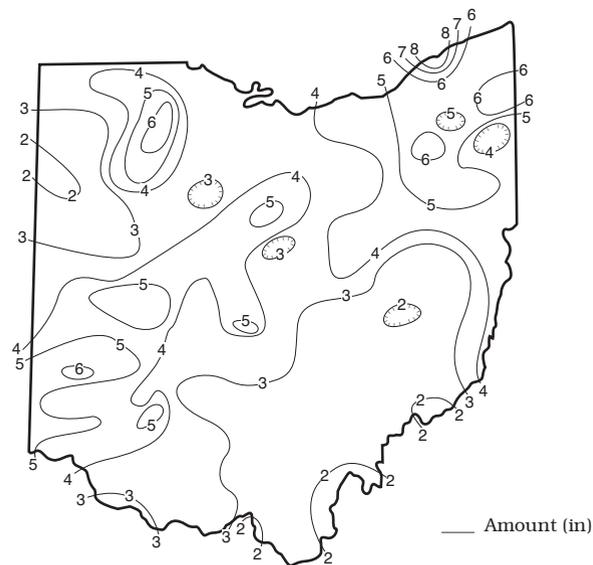
PRECIPITATION during October was above normal throughout most of the state but below normal in the South Central and Southeast regions. The state average was 3.83 inches, 1.19 inches above normal. Regional averages ranged from 5.20 inches, 2.12 inches above normal, for the Northeast Region to 2.44 inches, 0.21 inch below normal, for the South Central Region. Painesville (Lake County) reported the greatest amount of October precipitation, 8.41 inches. Gallipolis Locks and Dam (Gallia County) reported the least amount, 1.65 inches.

The first week of the month was wet and stormy across Ohio. Most of the state received at least 1 inch of precipitation during this period with 2-4 inches reported throughout much of the northwestern two-thirds of Ohio. The heaviest rains occurred on October 5 and 6 and were the result of an approaching cold front and precipitation streaming north from Tropical Storm Karen. More than 3 inches of rain fell in areas in the northwestern two-thirds of the state. Minor urban and small stream flooding was reported at a few locations as a result of this rain. The next week was dry across most of the state with some areas reporting no rain at all. Precipitation occurred on many of the days from October 15-24. Most of the state received between 1 and 1.5 inches of precipitation; however, areas in northwestern Ohio received lesser amounts. Some areas reported the first snow of the season during October 23-24. Although accumulations were generally less than 1 inch, the northeastern Ohio snowbelt reported up to 5 inches of heavy, wet snow. The weight of the snow on trees that still had their leaves toppled trees, broke branches and brought down power lines in the snowbelt counties. Severe storms on the last day of the month brought heavy downpours and high winds to many areas of the state.

Precipitation for the 2013 calendar year is above normal throughout most of the state, but below normal in the South Central Region. The state average is 34.97 inches, 1.91 inches above normal. Regional averages range from 37.70 inches, 4.66 inches above normal, for the Northeast Region to 32.58 inches, 0.31 inches above normal, for the West Central Region.

The 2014 water year (October 1, 2013 to September 30, 2014) is off to a good start as far as precipitation is concerned. The Ohio Agricultural Statistics Service reports that soil moisture near the end of October was rated as being short in 3 percent of the state, adequate in 73 percent of the state and surplus in 24 percent of the state. Conditions are favorable for water supply replenishment during the 2014 recharge season; however, near normal precipitation and other climatic conditions will be necessary during the next several months.

PRECIPITATION OCTOBER

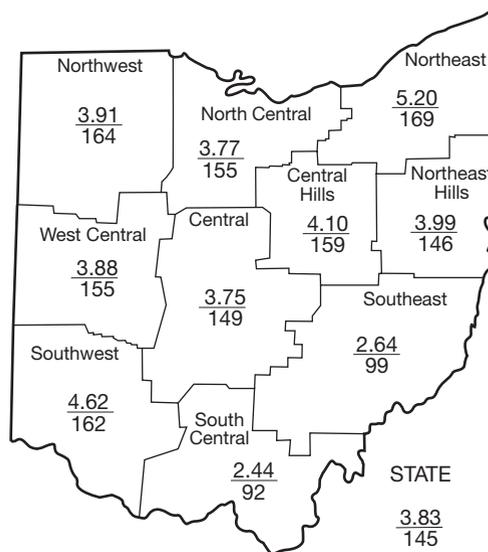


PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1961-2010					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+1.52	-0.40	+1.73	+1.68	+3.63	+1.0
North Central	+1.34	+0.31	+5.78	+4.71	+13.00	+3.7
Northeast	+2.12	+0.95	+5.99	+3.95	+9.74	+1.8
West Central	+1.37	-0.37	-1.03	-0.90	+1.72	+0.1
Central	+1.23	-0.24	+2.05	+1.57	+4.13	+0.5
Central Hills	+1.52	-0.82	+3.80	+2.61	+6.11	+0.7
Northeast Hills	+1.25	-1.07	+1.91	-0.56	-0.42	-1.4
Southwest	+1.76	+0.30	+1.91	-0.50	+1.15	+1.0
South Central	-0.21	-1.69	+0.53	-1.34	-1.00	-0.8
Southeast	-0.02	-0.84	+3.24	+1.13	+2.40	+0.3
State	+1.19	-0.39	+2.58	+1.21	+4.02	

*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

This Month

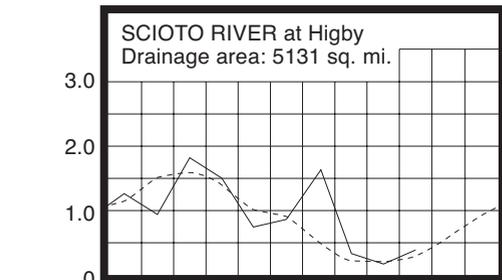
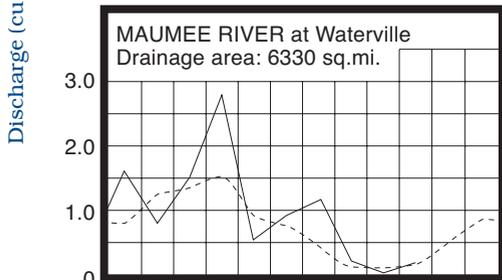
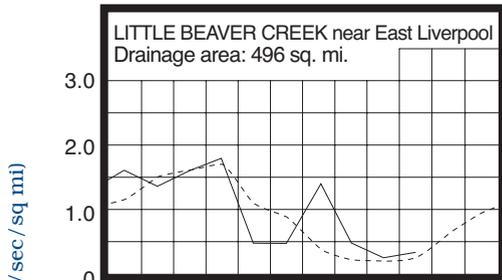
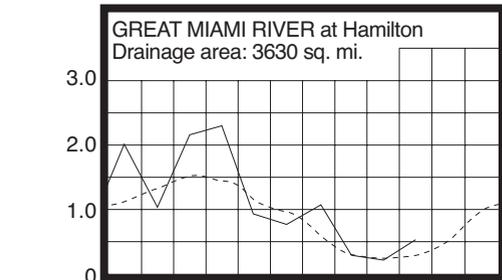
River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	943	352	155	163	107
Great Miami River at Hamilton	3,630	1,909	186	82	80	101
Huron River at Milan	371	213	395	127	173	137
Killbuck Creek at Killbuck	464	235	167	92	126	108
Little Beaver Creek near East Liverpool	496	163	131	73	80	83
Maumee River at Waterville	6,330	1,227	123	49	87	97
Muskingum River at McConnelsville	7,422	2,834	122	74	106	89
Scioto River near Prospect	567	323	926	134	150	145
Scioto River at Higby	5,131	2,010	134	80	94	90
Stillwater River at Pleasant Hill	503	80	98	32	48	92

STREAMFLOW during October was above normal across most of the state. Flows during October were greater than the flows reported during September. Flows in some central Ohio basins were high enough to be considered excessive.

Flows at the beginning of the month were below normal across most of Ohio. Lowest flows for the month occurred during October 1-3 throughout the state. Flows increased as a result of the widespread precipitation during October 3-7. Most drainage basins had their greatest flows for the month during October 7-9 following this precipitation. Flows then declined slowly through the end of the month with some temporary increases noted following local precipitation. At the end of the month, flows were below normal in all

but some of the central and northeastern Ohio drainage basins where they were above normal.

MEAN STREAM DISCHARGE

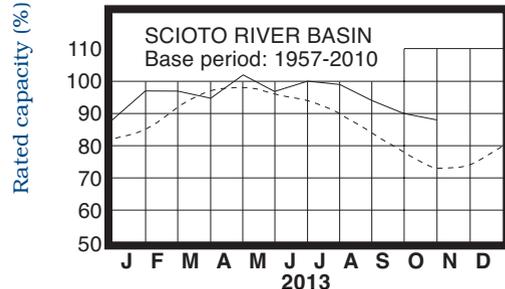
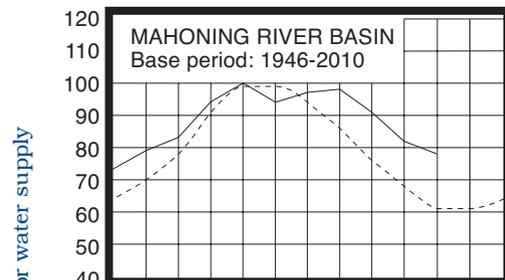


Base period for all streams: 1981-2010

RESERVOIR STORAGE for water supply during October declined seasonally in both the Mahoning and Scioto river basins. Storage remained above normal in both basins.

Reservoir storage at the end of October in the Mahoning basin index reservoirs was 78 percent of rated capacity for water supply compared with 82 percent for last month and 65 percent for October 2012. Month-end storage in the Scioto basin index reservoirs was 88 percent of rated capacity for water supply compared with 90 percent for last month and 76 percent for October 2012. Surface water supplies are favorable throughout Ohio as the 2014 water year begins.

RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

GROUND-WATER LEVELS

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

GROUND WATER levels during October showed mixed responses across the state, but most aquifers showed net declines for the month. Aquifers showing net rises during the month were generally located in the southwestern quarter of Ohio.

Ground water levels continue to remain below normal across much of the state, but are in better condition at the start of the 2014 water year than they were at the start of the 2013 water year. Ground water levels range from slightly higher than last year's level to more than 3.5 feet higher in some aquifers. The above normal precipitation across most of the state during October has improved soil moisture conditions in many areas of the state and bodes well for improvement to the state's ground water storage during the 2014 recharge season.

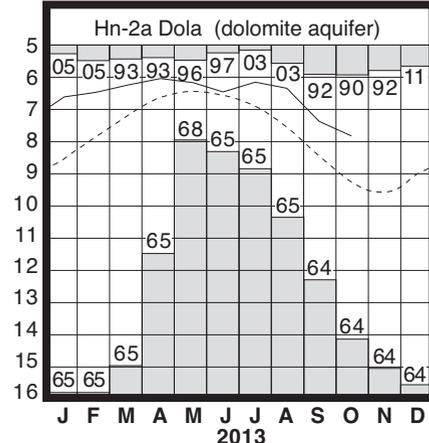
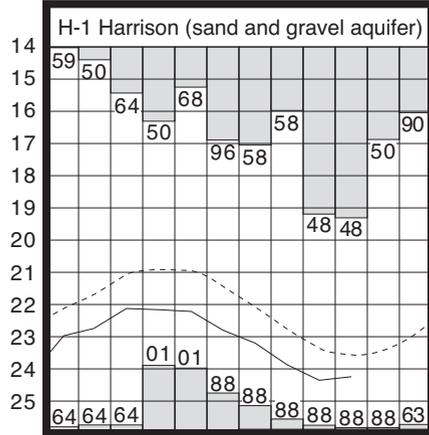
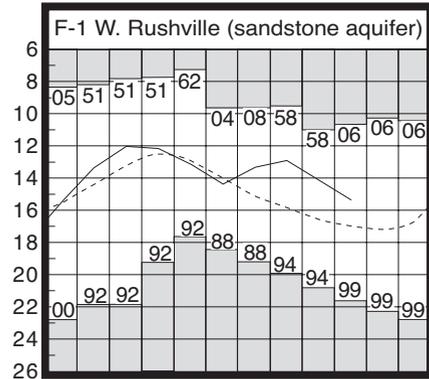
LAKE ERIE level declined during October. The mean level was 571.10 feet (IGLD-1985), 0.29 foot below last month's mean level and 0.04 foot above normal. This month's level is 0.79 foot above the October 2012 level and 1.90 feet above Low Water Datum.

The U.S. Army Corps of Engineers reports that precipitation in the Lake Erie basin during October averaged 4.23 inches, 1.45 inches above normal. For the entire Great Lakes basin, October precipitation averaged 4.05 inches, 1.16 inches above normal. For calendar year 2013 through October, the Lake Erie basin has averaged 33.52 inches, 3.62 inches above normal, while the entire Great Lakes basin has averaged 30.95 inches, 3.40 inches above normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather patterns, the level of Lake Erie should remain near normal for the next six months. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 8 inches above normal to as much as 13 inches below the normal seasonal average.

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	15.36	+1.62	-1.23	+2.09
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.35	-1.01	+0.43	+3.64
Fr-10	Columbus, Franklin Co.	Gravel	44.08	+0.68	+0.17	+0.94
H-1	Harrison, Hamilton Co.	Gravel	24.24	-0.67	+0.09	+0.11
Hn-2a	Dola, Hardin Co.	Dolomite	7.82	+1.43	-0.43	+1.91
Po-124	Freedom, Portage Co.	Sandstone	77.12	-0.07	-0.16	+0.13
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.29	-1.16	-0.91	+0.45

GROUND-WATER LEVELS

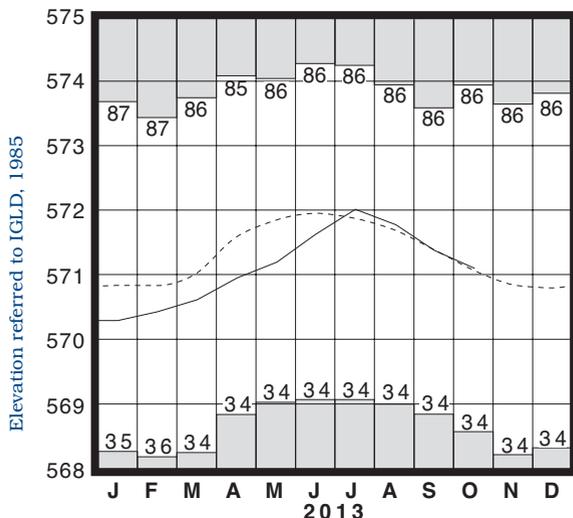


Water level (ft below land surface)

Base periods: F-1, 1947-2010; H-1 1951-2010.

Hn-2a, 1955-2010 ■ Record high and low, year of occurrence

LAKE ERIE LEVELS



Base period: 1918-2010

■ Record high and low, year of occurrence

Normal - - - - Current ———

SUMMARY

Precipitation during October was above normal across most of the state, but below normal in the South Central and Southeast regions. Streamflow was above normal throughout most of the state. Reservoir storage declined slightly, but remained at above normal levels. Ground water showed mixed responses and remained below normal across much of the state. Lake Erie level declined 0.29 feet and was 0.04 foot above the long-term October average.

NOTES AND COMMENTS

Ohio Observation Well Network

The Ohio Department of Natural Resources (ODNR), Division of Soil and Water Resources, Water Resources Section is responsible for collecting, researching, interpreting and disseminating hydrologic and ground water resource information for the state of Ohio. An important component of this program is the Ohio Observation Well Network. The Ohio Observation Well Network characterizes Ohio's ground water resources through monitoring and evaluating both short- and long-term trends in ground water level fluctuations throughout the state's various aquifer systems.

Since the beginning of ground water level monitoring in Ohio in 1938, observation wells have been used to monitor an aquifer's response to changing climatic conditions and impacts from man-induced activities. Monitoring and evaluating long-term trends in ground water levels enables water resource professionals to access the availability and annual replenishment of ground water supplies. The Ohio Observation Well Network is a tool that professionals use to determine the availability of ground water supplies, thus promoting wise management and efficient use of this valuable resource. Currently, the Division of Soil and Water Resources monitors 138 wells distributed across the state. Once information is gathered from the field from each observation well, it is reviewed and verified for accuracy. The data is then made available on-line through the Division's web page. The web site allows the user to view and/or retrieve data from the Ohio Observation Well Network database. Several options are provided that offer a wide range of flexibility in viewing and/or retrieving current and historical data. Statistical and water quality data are also available through the web site. In addition to the 138 currently active observation wells, ground water level data from an additional 208 historic/inactive observation wells is also available. To visit this web site, go to www.dnr.state.oh.us/water/waterobs/default.asp.

The Ohio Observation Well Network is a successful example of local, state, federal and private partnerships. The U.S. Geological Survey (USGS) has been a cooperative partner with the ODNR since the establishment of the network. As part of that cooperative effort, 12 of the observation wells have been equipped with automated equipment, providing near-real time ground water level information that can be accessed through the division's web site. To view data from the 12 near-real time sites, go to the Division of Water, Water Inventory main page and click on "USGS Near real time data for select observation wells."

For more information about Ohio's Observation Well Network, contact the Division of Soil and Water Resources at (614) 265-6740 or e-mail: mike.hallfrisch@dnr.state.oh.us.

ACKNOWLEDGMENTS

This report has been compiled from Division 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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Ohio Department of Natural Resources

Division of Soil and Water Resources

2045 Morse Road

Columbus, Ohio 43229-6693

John Kasich
Governor

James Zehninger
Director

Karl Gebhardt
Chief

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