



MONTHLY WATER INVENTORY REPORT FOR OHIO

December 2015

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<http://soilandwater.ohiodnr.gov/water-use-planning/water-inventory-levels>

PRECIPITATION during December was above normal throughout Ohio with only a few scattered locations having below normal precipitation. The state average was 4.27 inches, 1.36 inches above normal. Regional averages ranged from 5.55 inches, 2.40 inches above normal, for the South Central Region to 3.52 inches, 0.81 inch above normal, for the North Central Region. Maysville Locks and Dam (Brown County) reported the greatest amount of December precipitation, 7.00 inches. Laurelville (Hocking County) reported the least amount, 2.56 inches.

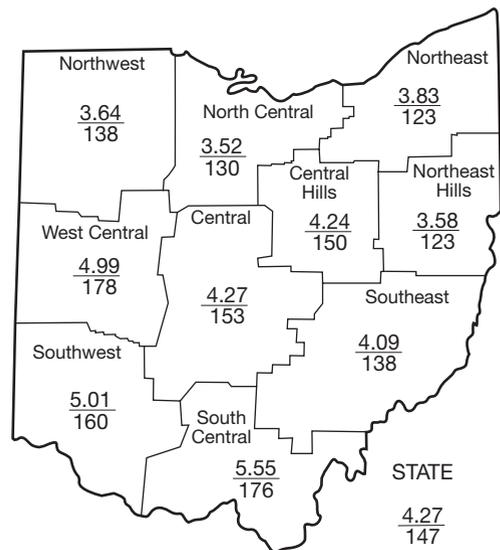
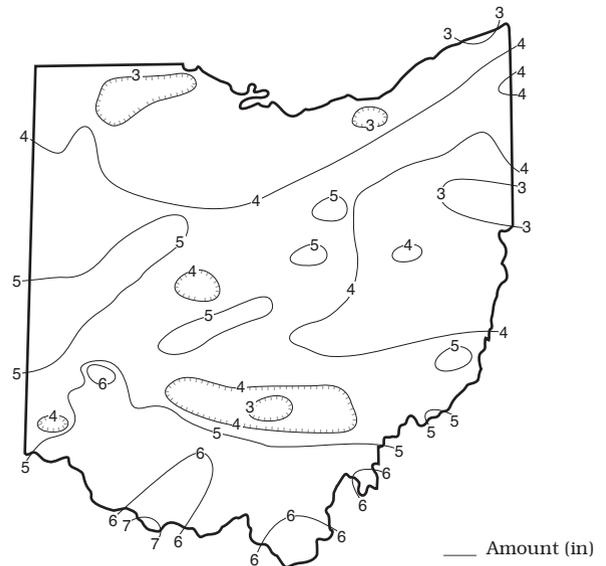
Most of the precipitation during December fell as rain; above normal temperatures kept snowfall to a minimum. Some areas in the snowbelt counties of northeastern Ohio reported more than 5 inches of snow for the month; however, much of Ohio received no measurable snow during December. The first 20 days of the month were rather dry with less than 0.5 inch of total precipitation reported across most of the state. An exception was in extreme south-central and southeastern Ohio where moderate to heavy rain fell on December 1 and 2. Counties bordering the Ohio River reported 0.5 to 1 inch with some locations in Lawrence County reporting around 2 inches during this period. Precipitation occurred on most of the days from December 21-29. Total precipitation during this period exceeded 3.5 inches across many areas. Showers and thunderstorms on December 23 brought 0.5 to 1 inch across most of the state. Some of the storms on this day produced damaging winds and one tornado was confirmed near Arcanum in Darke County. Moderate to occasional heavy rain was widespread on December 27 with most areas receiving at least 1 inch of precipitation. Lima (Allen County) reported 1.69 inches of rain on December 27 followed by 1.36 inches on December 28. Minor flooding occurred in many areas of the state.

Precipitation for the 2016 water year is above normal across much of the state, but below normal in areas in eastern and northwestern Ohio. The state average is 9.15 inches, 0.52 inch above normal. Regional averages range from 11.71 inches, 2.48 inches above normal, for the Southwest Region to 7.41 inches, 0.44 inch below normal, for the Northwest Region.

Precipitation for the 2015 calendar year was above normal statewide. The average for the state was 42.69 inches, 3.65 inches above normal. Regional averages ranged from 47.62 inches, 5.86 inches above normal, for the Southwest Region to 39.02 inches, 2.86 inches above normal, for the North Central Region (see Precipitation table, departure from normal, past 12 months column). This was the seventh wettest year during the past 121 years for the Northwest Region and the ninth wettest for the West Central Region. Lima (Allen County) reported the greatest amount

(continued on back)

PRECIPITATION DECEMBER



Average (in)
Percent of normal

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	+1.01	-0.44	+0.97	+6.37	+5.09	+1.1
North Central	+0.81	+0.01	-0.22	+2.86	+2.58	+2.2
Northeast	+0.71	-0.56	-2.85	+2.05	+7.51	+0.1
West Central	+2.18	+2.15	+2.07	+6.75	+5.67	+1.2
Central	+1.47	+1.22	-0.28	+2.29	+0.85	-0.4
Central Hills	+1.41	+0.44	-2.49	+1.83	+3.04	-0.3
Northeast Hills	+0.66	-0.84	-3.11	+0.59	+4.34	-1.4
Southwest	+1.88	+2.48	+2.52	+5.86	+3.39	+1.9
South Central	+2.40	+1.12	+2.03	+5.20	+2.74	-0.2
Southeast	+1.13	-0.33	-1.06	+2.92	+1.11	-1.1
State	+1.36	+0.52	-0.25	+3.65	+3.61	

*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

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	1,293	98	61	77	106
Great Miami River at Hamilton	3,630	7,519	211	126	157	133
Huron River at Milan	371	527	155	93	113	124
Killbuck Creek at Killbuck	464	432	108	68	93	96
Little Beaver Creek near East Liverpool	496	415	88	65	80	110
Maumee River at Waterville	6,330	6,368	117	58	145	134
Muskingum River at McConnelsville	7,422	6,670	75	58	75	90
Scioto River near Prospect	567	888	198	90	147	143
Scioto River at Higby	5,131	7,205	150	96	135	111
Stillwater River at Pleasant Hill	503	1,373	398	144	189	135

STREAMFLOW during December was above normal in the western two-thirds of Ohio and below normal in much of the eastern one-third. Some flows in west-central and southwestern Ohio were high enough to be considered excessive. Flows during December increased seasonally from the flows recorded during November.

Flows at the beginning of the month were below normal throughout most of the state. Flows remained below normal through the first three weeks of the month. Lowest flows for December occurred during December 20-21 across most of Ohio. Flows began increasing as a result of widespread precipitation that started on December 21 and continued for several days. Greatest flows for the month occurred between December 28 and 30 statewide.

Flows at the end of the month were above normal throughout Ohio and excessive across most of the state.

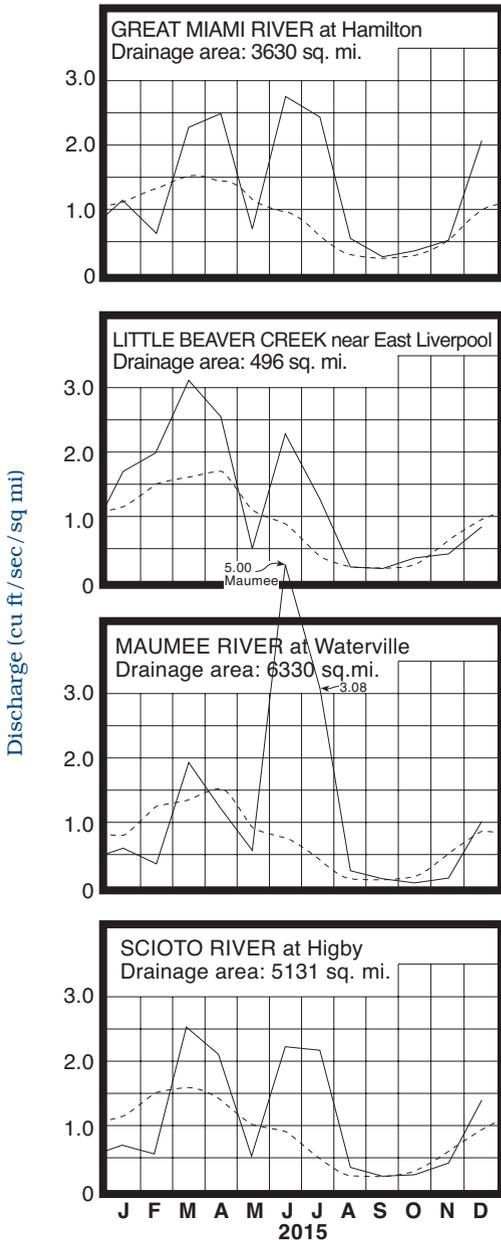
Streamflow for calendar year 2015 was above normal throughout most of the state, but slightly below normal in a few basins in eastern and southeastern Ohio (see Mean Stream Discharge table, percent of normal, past 12 months column). Flows during the first two months of the year were below normal across most of the state. March and April flows were above normal. Minor flooding was reported across many areas of Ohio during March and April with some moderate flooding in northern Ohio during March as ice jams contributed to the flooding situation. Flows were below normal in May, but record rainfall during June resulted in excessive flows during June and July. Several gauging stations, especially in northern Ohio, recorded record or near-record flows during June and July. Some moderate flooding was observed in northern Ohio during June. Flows were near to above normal in August and September, and generally below normal during October and November. The year ended with above normal flows across much of the state and some minor flooding during December.

RESERVOIR STORAGE for water supply during December increased in both the Mahoning and Scioto river basins. Storage remained above normal in both basins.

Reservoir storage at the end of December in the Mahoning basin index reservoirs was 82 percent of rated capacity for water supply compared with 71 percent for last month and 76 percent for December 2014. Month-end storage in the Scioto basin index reservoir was 99 percent of rated capacity for water supply compared with 80 percent for last month and 75 percent for December 2014.

Surface water supplies during 2015 were adequate throughout the state. Storage was near to above normal at the start of the year, but fell to below normal levels during February and remained below normal through late spring. Reservoir storage recovered to above normal as a result of much above normal rainfall in June. Reservoir storage remained above normal through the end of the year.

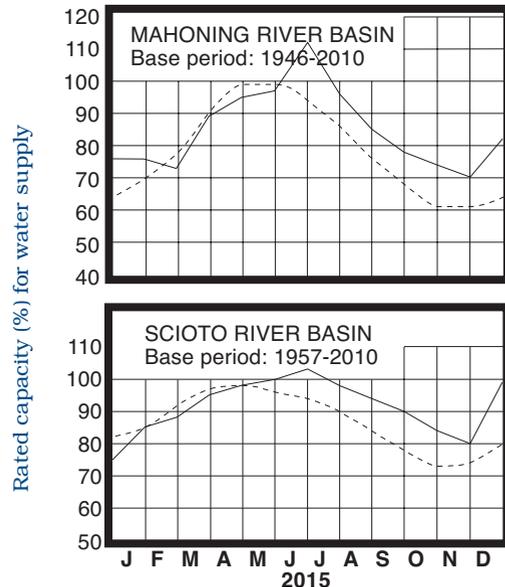
MEAN STREAM DISCHARGE



Base period for all streams: 1981-2010

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 December rose in most aquifers, but declined slightly in some areas in eastern Ohio. Generally, levels were rather stable or declined slightly during the first three weeks of the month and then rose during the last 10 days of December. A few exceptions were noted in deeper aquifers in eastern Ohio where levels declined through the end of the month.

The 2015 calendar year was generally favorable for ground water supplies. The year started with ground water levels at below normal levels throughout most of the state. Spring showers helped replenish soil moisture, but it was the noticeably above normal June rainfall that improved ground water storage considerably across the state. By the end of July, ground water levels were near or above normal statewide. A drier than normal late summer and fall in most areas helped accelerate the seasonal decline in ground water storage during the autumn months. But abundant precipitation from December 21-29 across the state was of great benefit to the ground water supply situation. At the end of the 2015 calendar year, ground water levels are below normal in some eastern and northeastern areas of the state and near or above normal elsewhere. Levels are higher than they were at the start of the calendar year in most aquifers.

LAKE ERIE level declined during December. The mean level was 571.42 feet (IGLD-1985), 0.17 foot lower than last month's mean level and 0.62 foot above normal. This month's mean level is the same as the December 2014 level and 2.22 feet above Low Water Datum.

The level of Lake Erie remained above normal throughout most of calendar year 2015, being below normal during March only. Levels were near normal during April and May; however, levels rose substantially as a result of record precipitation that fell in the Lake Erie basin during June. Lake Erie's level is predicted to remain above normal for the foreseeable future based on the present condition of the Great Lakes basin and anticipated future weather conditions.

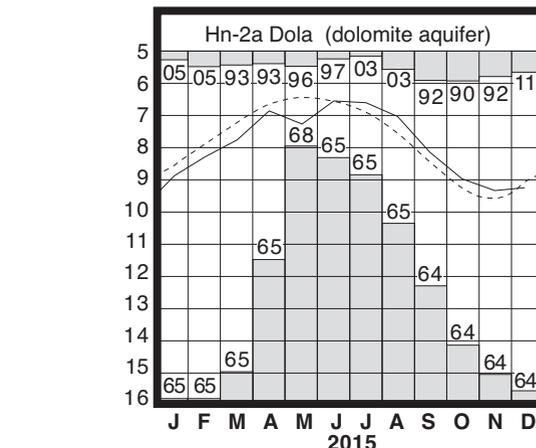
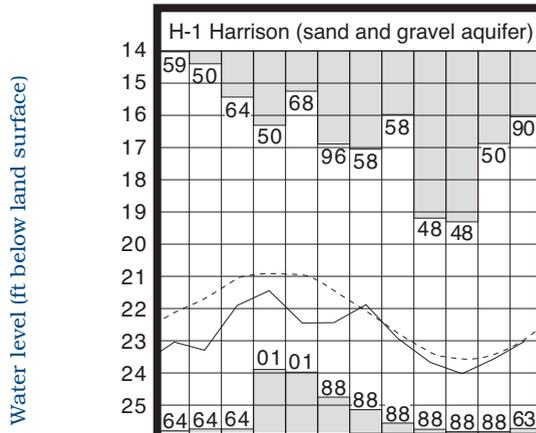
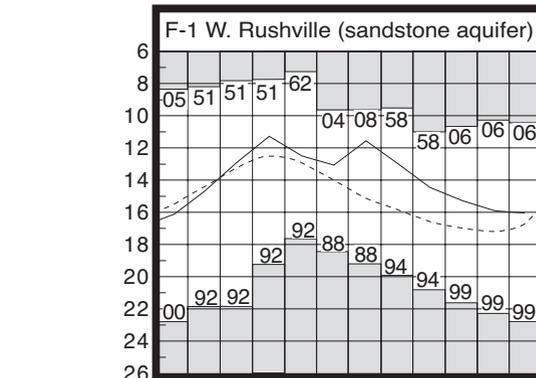
SUMMARY

December precipitation was above normal throughout most of Ohio. Streamflow was above normal in the western two-thirds of the state and below normal in much of the eastern one-third. Reservoir storage increased and remained at above normal levels. Ground water levels rose in most aquifers, but declined slightly in some aquifers in eastern Ohio. Lake Erie level declined 0.17 foot and was 0.62 foot above the long-term December average.

Precipitation for the 2015 calendar year was above normal statewide. Streamflow was above normal throughout most of the state, but slightly below normal in some eastern and southeastern Ohio basins. Both surface and ground water supplies were adequate throughout the year. Ground water levels improved in most aquifers during the year and were near or above normal across most of the state at the end of 2015. Lake Erie was at above normal levels throughout most of the year.

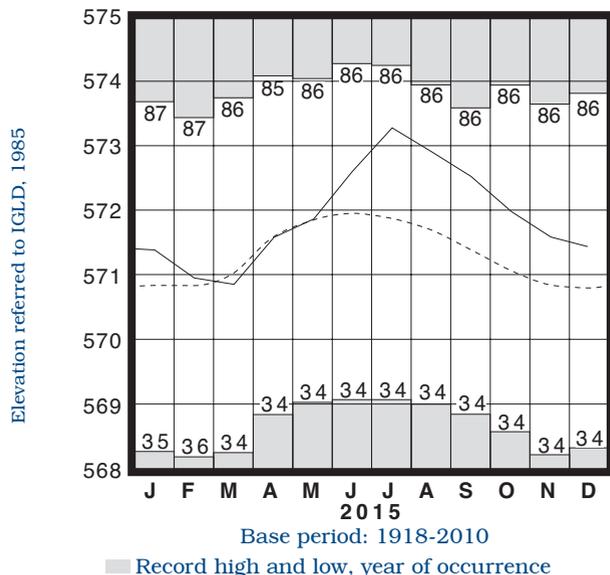
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	16.05	+0.66	-0.13	+0.87
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.39	+0.24	+0.52	+2.39
Fr-10	Columbus, Franklin Co.	Gravel	42.58	+1.66	+0.27	+0.69
H-1	Harrison, Hamilton Co.	Gravel	23.01	-0.06	+0.54	+0.69
Hn-2a	Dola, Hardin Co.	Dolomite	9.23	-0.15	+0.09	+0.63
Po-124	Freedom, Portage Co.	Sandstone	77.47	-0.44	-0.12	-0.22
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.41	-1.60	-0.28	-1.32

GROUND-WATER LEVELS



Base periods: F-1, 1947-2010; H-1 1951-2010.
Hn-2a, 1955-2010

LAKE ERIE LEVELS



Normal - - - - Current ———

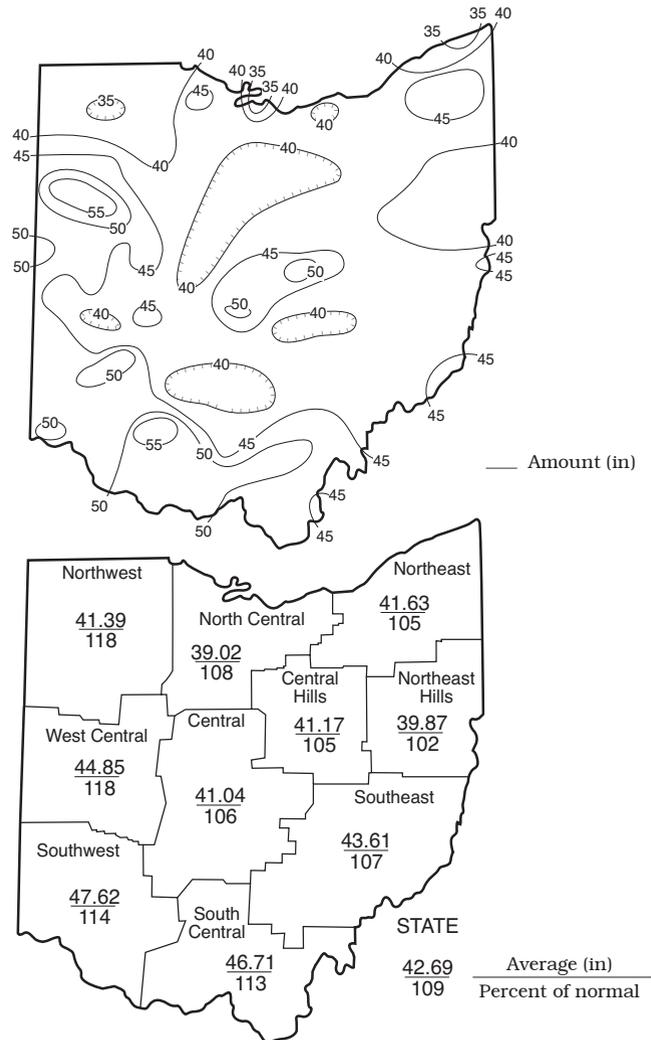
(Precipitation continued from front)

of precipitation for the year, 56.86 inches. Van Wert (Van Wert County) also reported more than 56 inches; 56.32 inches. Napoleon (Henry County) reported the least amount, 30.90 inches. An isohyetal map and regional averages with percentages of normal precipitation for the 2015 calendar year appear below.

Precipitation for the 2015 calendar year started above normal across much of northern and western Ohio during January. During February, precipitation was below normal across most of the state. Precipitation during the next two months was above normal throughout much of Ohio, but generally below normal across the northern third of the state. May precipitation was below normal throughout most of Ohio. Noticeably above normal rainfall during June fell across the state with this being the wettest June for the state during the past 133 years. Precipitation continued to be above normal in western Ohio during July. Precipitation was below normal throughout most of the state during August and in western Ohio during September. In October, precipitation was near to above normal across much of the state while during November precipitation was below normal in most of Ohio. The year ended with above normal precipitation throughout most of the state during December.

NOTE: Effective January 1, 2016, and in accordance with Amended Substitute House Bill Number 64 of the 131st General Assembly, all programs and staff related to soil and water conservation will be moved to the Ohio Department of Agriculture. All programs and staff related to storm water issues will be moved to the Ohio Environmental Protection Agency, and all programs and staff related to silviculture will be moved to the Ohio Department of Natural Resources (ODNR) Division of Forestry. All remaining water resource related programs and staff in ODNR's Division of Soil and Water Resources will become the Division of Water Resources.

PRECIPITATION 2015 CALENDAR YEAR



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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