MONTHLY WATER INVENTORY REPORT FOR OHIO

December 2009

http://www.ohiodnr.gov/tabid/4191/Default.aspx
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PRECIPITATION during December was above normal across much of the state with only a few areas, mainly in northern Ohio, receiving below normal precipitation. The state average was 3.11 inches, 0.35 inch above normal. Regional averages ranged from 3.70 inches, 0.66 inch above normal, for the South Central Region to 2.52 inches, 0.02 inch below normal, for the North Central Region. South Point (Lawrence County) reported the greatest amount of December precipitation, 6.88 inches. Hoytville (Wood County) reported the least amount, 1.40 inches.

Precipitation during December fell as mainly rain during the first half of the month and as rain and snow during the second half. Rain during December 2-3 was greatest in eastern Ohio where 0.50-1.0 inch was reported. Precipitation returned to the state during December 8-10 when most of the state received at least 0.50 inch of precipitation with more than 1 inch falling across much of southeastern Ohio. Many areas in northern Ohio also reported their first measurable snow for the season during this storm. Precipitation on December 13 was greatest from southwestern to central Ohio where about 0.50 inch was reported. There were several days with precipitation during the second half of the month throughout Ohio. On most of these days, precipitation was light and fell as snow. However, on December 25-26 rain spread across the state with most of Ohio reporting 0.50-0.75 and more than 1 inch falling across the eastern one-third of the state. Periods of light snow fell across Ohio from December 27-31.

Precipitation for the first 3 months of the 2010 water year is generally above normal across the western two-thirds of the state and below normal elsewhere. The state average is 8.34 inches, 0.13 inch above normal. Regional averages range from 9.25 inches 0.39 inch above normal, for the Southwest Region to 7.12 inches, 0.52 inch below normal, for the North Central Region.

Precipitation for the 2009 calendar year was below normal throughout much of the state, but above normal in the Northwest, Northeast and South Central regions. The state average was 36.81 inches, 1.21 inches below normal. Regional averages ranged from 42.26 inches, 1.64 inches above normal, for the South Central Region to 33.75 inches, 1.39 inches below normal, for the North Central Region (see Precipitation table, departure from normal, past 12 months column). South Point (Lawrence County) reported the greatest amount of precipitation for the year, 57.64 inches. Elmore (Ottawa County) reported the least amount, 26.84 inches. St.

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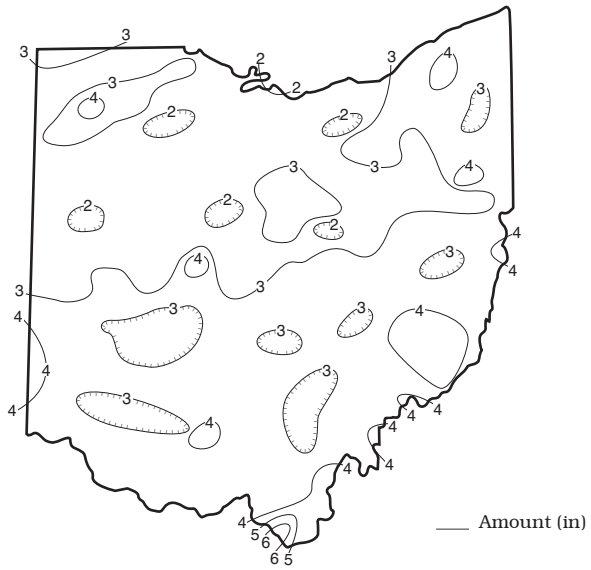
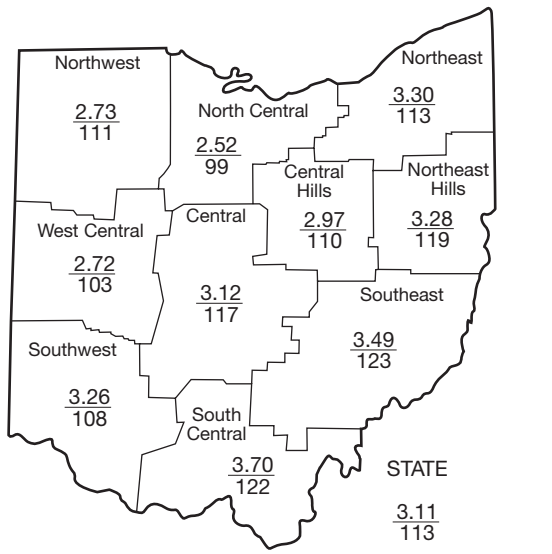
PRECIPITATION

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	+0.27	+1.06	-1.62	+0.88	+8.53	+0.3
North Central	-0.02	-0.52	-2.83	-1.39	+7.77	-0.1
Northeast	+0.39	-0.35	-0.62	+0.56	+11.21	+2.8
West Central	+0.08	+0.57	-0.63	-2.85	+4.42	+0.2
Central	+0.45	+0.81	+1.32	-0.83	+4.68	+1.0
Central Hills	+0.28	+0.25	-0.35	-1.69	+2.03	+0.7
Northeast Hills	+0.53	-0.80	-1.71	-4.49	-0.72	+1.2
Southwest	+0.23	+0.39	+0.61	-1.21	+3.26	+1.4
South Central	+0.66	+0.25	+1.88	+1.64	+6.23	+1.6
Southeast	+0.65	-0.35	-2.01	-2.59	+4.18	+0.7
State	+0.35	+0.13	-0.60	-1.21	+5.14	

*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 DECEMBER





MEAN STREAM DISCHARGE

This Month

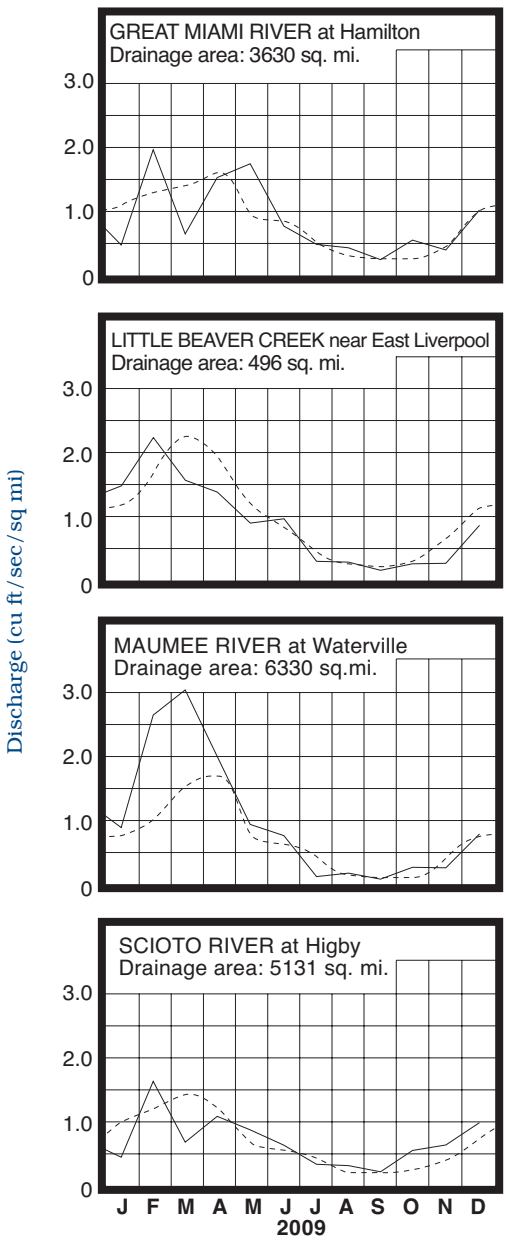
River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,283	94	60	56	90
Great Miami River at Hamilton	3,630	3,709	101	90	83	82
Huron River at Milan	371	143	59	34	28	105
Killbuck Creek at Killbuck	464	374	89	76	65	67
Little Beaver Creek near East Liverpool	496	428	76	52	52	73
Maumee River at Waterville	6,330	5,028	106	71	58	110
Muskingum River at McConnelsville	7,422	6,508	60	104	95	63
Scioto River near Prospect	567	347	130	57	45	66
Scioto River at Higby	5,131	5,065	110	99	83	68
Stillwater River at Pleasant Hill	503	375	101	53	52	77

STREAMFLOW during December was above normal in the western half of the state and below normal in the eastern half. Flows during December increased seasonally from the November flows statewide.

Streamflow at the beginning of December was below normal throughout Ohio. Lowest flows for the month occurred during the first 2 days of December in most areas of the state. Flows increased from these low flows following widespread precipitation that fell during December 2-3. Flows remained rather steady until just after mid-month, then declined during the next week, as drier conditions prevailed. Warmer temperatures and widespread precipitation on Christmas increased streamflow statewide with greatest flows for the month occurring during December 26-27. Flows declined from these peaks during the last few days of the month and by the end of December, streamflow had fallen to below normal across most of the state.

Streamflow during the 2009 calendar year was below normal across most of the state, but above normal in some basins in northwestern and north-central Ohio (see Mean Stream Discharge table, percent of normal, past 12 months column). Flows from January through April were generally above normal across northern and southeastern Ohio, and below normal elsewhere. From May through November, flows were generally below normal across most of Ohio, except during August and October when flows were above normal throughout much of the state. Flows during December were above normal in western Ohio and below normal in eastern Ohio. The most significant flooding of the year occurred mostly in northern Ohio during the second week of February following precipitation and melting snow. Ice jams along some streams contributed to some of the flooding. Other minor, isolated flooding occurred during the summer months following locally heavy downpours.

MEAN STREAM DISCHARGE



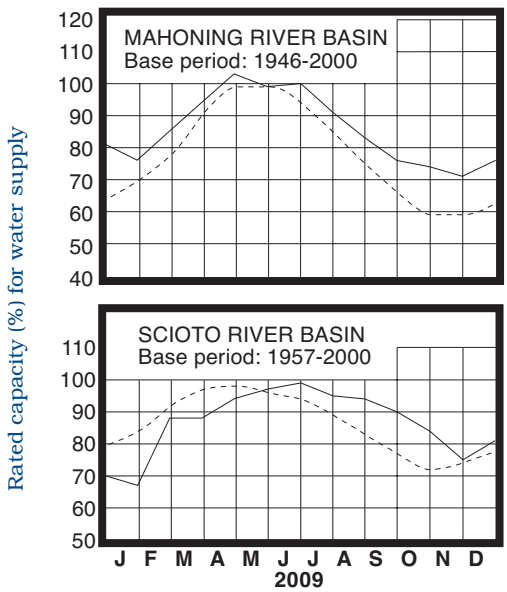
Base period for all streams: 1971-2000

RESERVOIR STORAGE for water supply during December increased in both the Mahoning and Scioto river basins. At the end of December, storage remained above normal in both basins.

Reservoir storage at the end of December in the Mahoning basin index reservoirs was 76 percent of rated capacity for water supply compared with 71 percent for last month and 81 percent for December 2008. Month-end storage in the Scioto basin index reservoirs was 81 percent of rated capacity for water supply compared with 75 percent for last month and 70 percent for December 2008.

Surface water supplies were adequate during the 2009 calendar year. Reservoir storage in the Mahoning basin index reservoirs was above normal throughout most of the past year. Reservoir storage in the Scioto basin index reservoirs was below normal during the first 4 months of the year and above normal during the last 8 months.

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	13.20	+3.89	-0.07	+3.71
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.33	-0.14	+0.68	+2.86
Fr-10	Columbus, Franklin Co.	Gravel	45.16	-1.21	+0.24	+0.05
H-1	Harrison, Hamilton Co.	Gravel	22.72	+0.32	+0.46	+1.55
Hn-2a	Dola, Hardin Co.	Dolomite	12.94	-4.06	-0.30	-0.44
Po-124	Freedom, Portage Co.	Sandstone	76.72	+1.69	-0.05	+0.08
Tu-1	Strasburg, Tuscarawas Co.	Gravel	16.43	-2.94	-0.10	-0.98

GROUND WATER levels during December showed mixed responses, but generally rose in aquifers in southern Ohio and declined contra-seasonally in aquifers in northern Ohio. Generally, consolidated aquifers in southern Ohio were rather stable or rose steadily throughout the month while in northern Ohio levels rose during the first week, and then declined the remainder of the month. Levels in most unconsolidated aquifers rose during the first half of the month, then declined for several days before rising again during the last week of December.

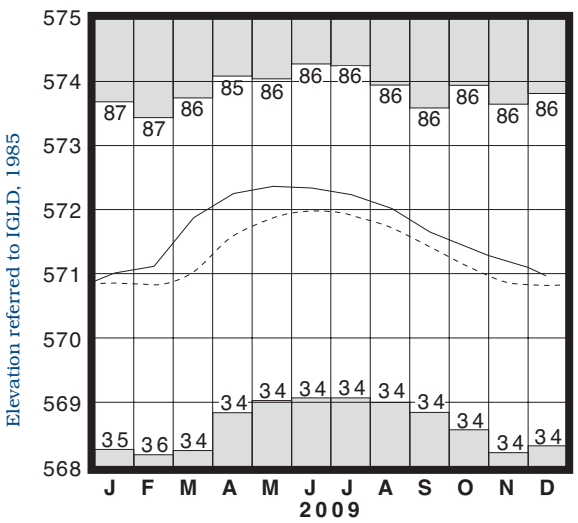
Ground water supplies during the 2009 calendar year were adequate throughout most of the state, even though levels in many aquifers were below normal throughout the year. The year began with ground water levels below normal across most of the state, but above normal in some consolidated aquifers in eastern Ohio. This pattern continued through mid-autumn. In October, precipitation was above normal, benefiting ground water supplies with levels rising to above normal in many aquifers in southern Ohio in addition to those consolidated aquifers in eastern Ohio. However, much below normal precipitation during November halted this short-lived improvement to the state's ground water supplies. Even with above normal precipitation across much of Ohio during December, ground water supplies declined to below normal levels throughout much of the state by the end of the year. Nevertheless, the ground water situation in Ohio is slightly better than it was at the beginning of the year. Ground water supplies are still above normal in some consolidated aquifers in eastern Ohio as well as some unconsolidated aquifers in southern Ohio. Current levels are higher than they were at this time last year throughout most of the state, ranging from about 1 foot lower to nearly 4 feet higher than the December 2008 levels. Near-normal climatic conditions during the next few months would be beneficial to the replenishment of the state's aquifers during the remainder of the recharge season.

LAKE ERIE water level declined during December. The mean level was 570.97 feet (IGLD-1985), 0.13 foot lower than last month's mean level and 0.14 foot above normal. This month's mean level is 0.19 foot higher than the December 2008 level and 1.77 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during December averaged 2.89 inches, 0.26 inch above normal. The entire Great Lakes basin averaged 2.15 inches, 0.19 inch below normal. For calendar year 2009, the Lake Erie basin averaged 37.50 inches, 2.22 inches above normal, while the entire Great Lakes basin averaged 32.17 inches, 0.36 inch below normal.

Lake Erie's level remained above normal throughout the 2009 calendar year. The USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain near normal for the foreseeable future. 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 11 inches below the normal seasonal level.

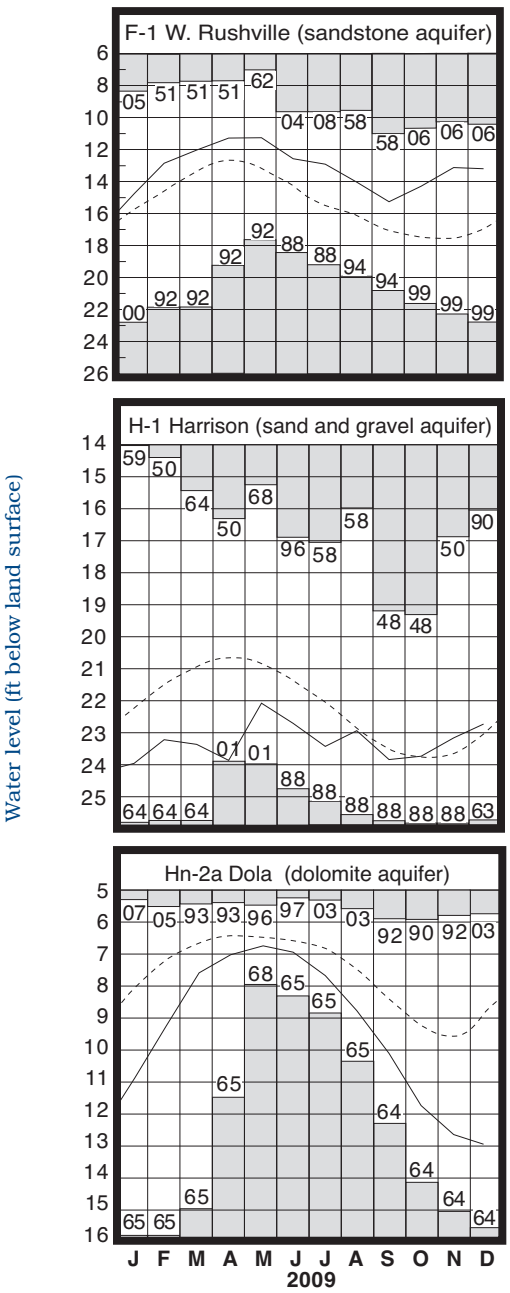
LAKE ERIE LEVELS



Base period: 1918-2000

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: F-1, 1947-2000 H-1, 1951-2000.

Hn-2a, 1955-2000 Record high and low, year of occurrence

Normal – – – – Current ———

(Precipitation continued from front)

Mary's (Auglaize County) reported 27.22 inches for the year. An isohyetal map and regional averages with percentages of normal for the 2009 calendar year appear below.

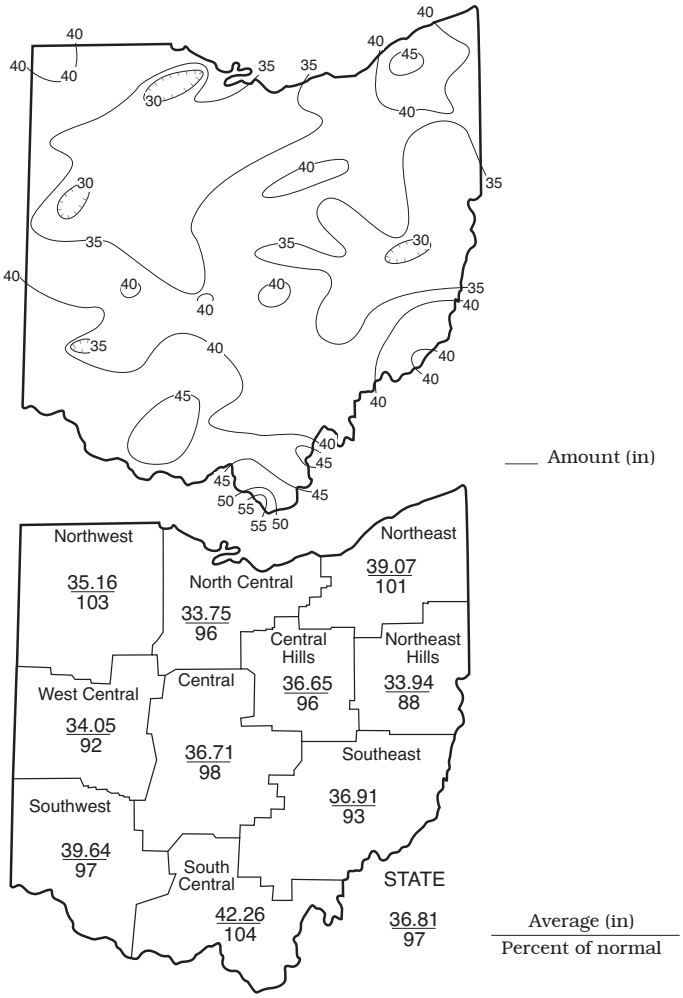
The 2009 calendar year began with above normal precipitation in the southeastern half of the state and below normal in the northwestern half during January. During the next 2 months, precipitation was below normal throughout the southern two-thirds of the state and above normal in the northern one-third. April precipitation was above normal across most of the state while May precipitation was below normal across much of the state. Precipitation during the next 4 months was generally above normal in southwestern Ohio and below normal elsewhere. Above normal precipitation during October got the 2010 water year off to a good start, but was then followed by the 5th driest November for the state during the past 127 years of record. However, with the return to above normal precipitation during December, conditions are favorable for improvement to Ohio's water supplies.

SUMMARY

Precipitation during December was above normal throughout much of Ohio. Streamflow was above normal in the western half of the state and below normal in the eastern half. Reservoir storage increased and was above normal in both the Mahoning and Scioto river basins. Ground water generally rose in southern Ohio and declined in northern Ohio. Lake Erie level declined 0.13 foot and was 0.14 foot above the long-term December average.

Precipitation during the 2009 calendar year was below normal across much of the state, but above normal in the Northwest, Northeast and South Central regions. Streamflow was below normal throughout most of the state. Reservoir storage was above normal throughout most of the year. Even though ground water levels were below normal throughout the year in many aquifers, ground water supplies were adequate statewide. Lake Erie was above the long-term average throughout the year.

PRECIPITATION 2009 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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