MONTHLY WATER INVENTORY REPORT FOR OHIO

December 2001

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

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PRECIPITATION during December was above normal across most of the state, but below normal in much of southeastern and northwestern Ohio. The average for the state as a whole was 2.77 inches, 0.19 inch above normal. Regional averages ranged from 3.71 inches, 0.89 inch above normal, for the Southwest Region to 2.19 inches, 0.12 inch below normal, for the Northwest Region. Celina (Mercer County) reported the greatest amount of December precipitation, 4.81 inches. Laurelville (Hocking County) reported the least amount, 1.68 inches.

Precipitation during December fell mostly as rain with some light snow occurring the last week of the month. Snow accumulations for December were below normal statewide as temperatures were generally above normal the first 3 weeks of the month. The one exception was in an area of the northeast Ohio snowbelt where heavy snow fell the last week of December with accumulations as much as 30 inches reported. The first 12 days of the month were rather dry with only some light, scattered showers producing 0.25 inch or less of precipitaion across most of the state. The next week was marked by on and off showers, some of which contained moderate to heavy rainfall. Total precipitation during this period was generally 1-2 inches with an area from southwestern to north-central Ohio receiving 2-3 inches. The heaviest rain during this period fell on December 17 when most of the state received 0.50-1.0 inch of rain. However, in an area from southwestern to northeastern Ohio, 1-2 inches fell and some minor flooding was reported in the western half of the state. Scattered snow showers passed through the state during the last week of December with only small amounts of precipitation recorded.

Precipitation for the 2002 water year is above normal across most of the state. The average for the state as a whole is 10.38 inches, 2.82 inches above normal. Regional averages range from 12.36 inches, 4.17 inches above normal, for the Southwest Region to 7.89 inches, 0.08 inch below normal, for the South Central Region (see Precipitation table, departure from normal, past 3 months column).

Precipitation for the 2001 calendar year was generally above normal in the western half of the state and below in the eastern half. The state average was 37.23 inches, 0.34 inch below normal. Regional averages ranged from 43.42 inches, 3.15 inches above normal, for the Southwest Region to 32.61 inches, 1.42 inches below normal, for the North Central Region. The Northeast Region averaged 32.63 inches and the South Central Region averaged 36.65 inches, 4.34 and 4.64 inches below normal, respectively (see Precipitation table, departure from normal, past 12 months column). This was the 16th driest year of record for the Northeast Region and the 18th driest year for the South Central Region. Springfield Waste Water Treatment Plant (Clark County) reported the greatest amount of precipitation for the year, 53.25 inches. Elyria (Lorain County) reported the least amount, 28.76 inches. An isohyetal map and regional averages with percentages of normal precipitation for the 2001 calendar year appear on the last page of this report.

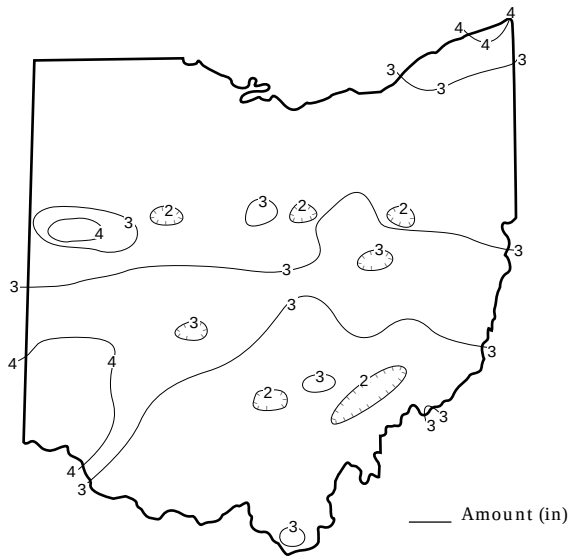
(continued on back)

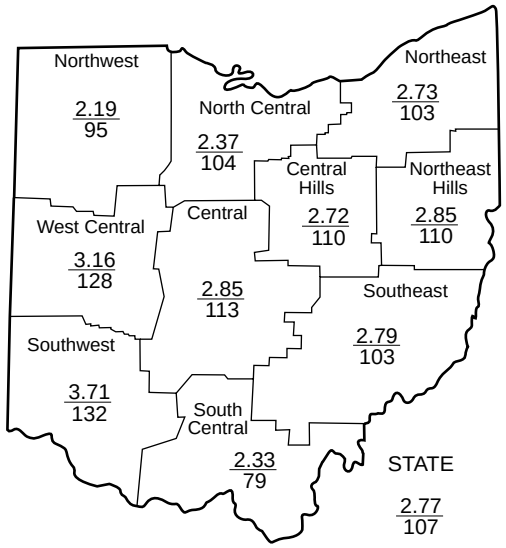
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) This Month	Past 3 Mos.	Past 6 Mos.	Past 12 Mos.	Past 24 Mos.	Palmer Drought Severity Index*
Northwest	-0.12	+4.01	+4.70	+3.30	+7.37	+3.0
North Central	+0.09	+3.69	+3.65	-1.42	+4.72	+2.6
Northeast	+0.09	+1.94	+0.35	-4.34	-0.16	+1.6
West Central	+0.69	+3.73	+8.27	+4.93	+7.60	+3.7
Central	+0.32	+3.17	+2.71	+0.83	+5.26	+1.5
Central Hills	+0.25	+3.46	+1.94	-2.82	+1.98	+1.6
Northeast Hills	+0.27	+2.55	-0.06	-2.92	-0.17	+0.5
Southwest	+0.89	+4.17	+7.95	+3.15	+6.36	+3.4
South Central	-0.63	-0.08	-3.24	-4.64	-3.38	-0.3
Southeast	+0.07	+1.52	+0.33	+0.51	+0.70	+0.8
State	+0.19	+2.82	+2.66	-0.34	+3.03	

*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



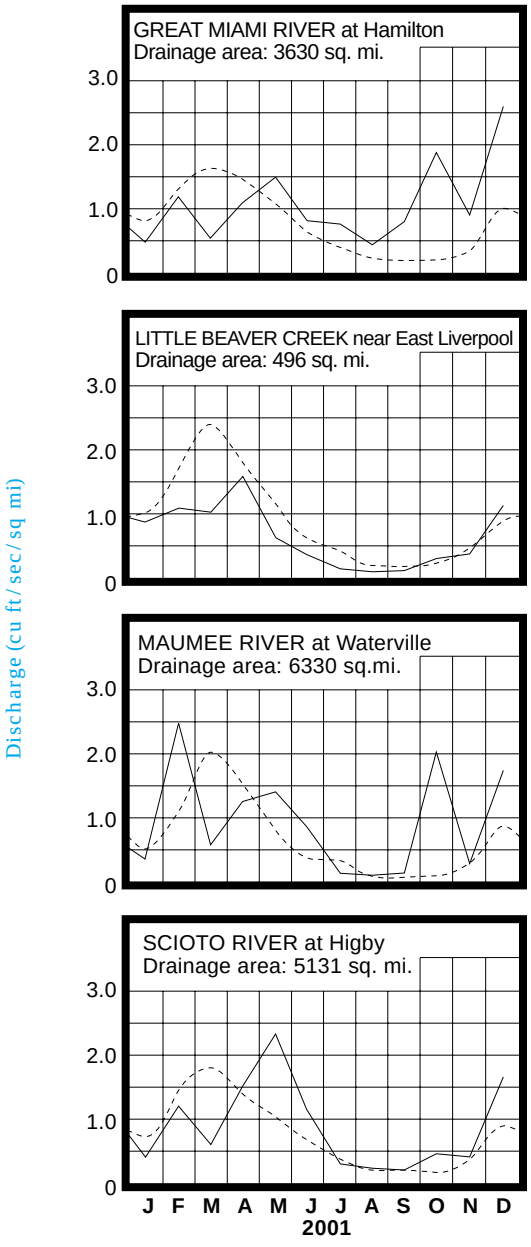


MEAN STREAM DISCHARGE

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	1,235	73	50	46	63
Great Miami River at Hamilton	3,630	9,302	253	334	254	119
Huron River at Milan	371	465	314	208	110	70
Killbuck Creek at Killbuck	464	475	127	123	83	67
Little Beaver Creek near East Liverpool	496	559	126	121	73	61
Maumee River at Waterville	6,330	11,000	203	281	209	115
Muskingum River at McConnelsville	7,422	10,120	142	118	84	78
Scioto River near Prospect	567	1,201	458	463	223	102
Scioto River at Higby	5,131	8,581	187	174	125	96
Stillwater River at Pleasant Hill	503	1,161	288	504	327	113

MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

STREAMFLOW during December was above normal across most of the state, except in extreme northeastern Ohio where it was below normal. Some flows were high enough to be considered excessive in the western half of the state.

Flows at the beginning of the month were above normal statewide as a result of the widespread precipitation that occurred during the last week of November. Flows declined steadily during the first several days of December. Low flows for the month occurred during December 12-13 statewide. Flows increased following precipitation that entered the state beginning late on December 12. Flows then increased sharply after heavy rains that fell on December 17. Greatest flows for the month occurred statewide following these rains, generally between December 18-20 when some basins in the western half of the state experienced minor flooding. After these peaks, flows steadily declined through the remainder of the month as little precipitation fell across most of the state. By the end of December, flows had declined to below normal statewide.

Streamflow for the 2001 calendar year was above normal in the western half of the state and below normal elsewhere (see Mean Stream Discharge table, percent of normal, past 12 months column). Streamflow was below normal across much of the state from January-April. During May-June, streamflow was generally above normal across the southwestern two-thirds of the state, and below normal elsewhere. July flows were below normal across most of the state, but above normal in southwestern Ohio. On July 17 and 18, a series of strong thunderstorms containing copious amounts of rain crossed southwest Ohio resulting in deadly flash floods. August flows were generally below normal across the northeastern two-thirds of the state, and September flows were below normal across the eastern half of Ohio. Flows during October and December were above normal through most of the state while the November flows were above normal in the western half of the state.

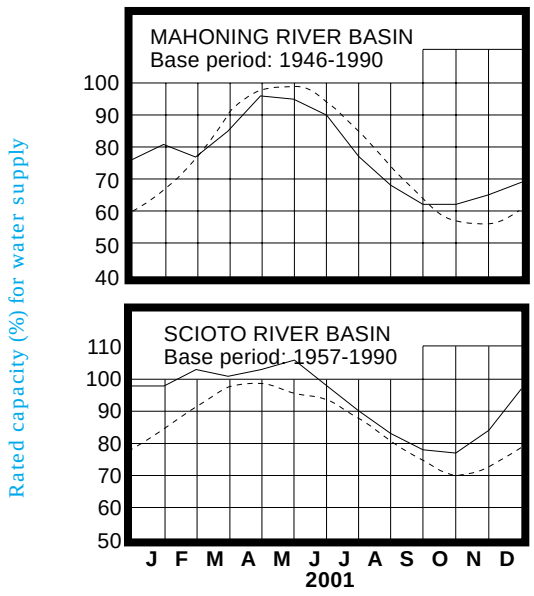
RESERVOIR STORAGE for water supply during December increased in both the Mahoning and Scioto river basins. Storage was above normal in both basins.

Reservoir storage at the end of December in the Mahoning basin index reservoirs was 69 percent of rated capacity for water supply compared with 65 percent for last month and 66 percent for December 2000. Month-end storage in the Scioto basin index reservoirs was 97 percent of rated capacity for water supply compared with 84 percent for last month and 64 percent for December 2000.

Surface water supplies were adequate throughout the 2001 calendar year. Storage in the Mahoning River basin was near or above normal during the first two months of the year. Storage dropped to below normal during March-September and then increased to above-normal levels during the last three months of the year. Storage in the Scioto River basin was above normal throughout the entire 2001 calendar year.

GROUND WATER levels during December rose statewide. The net changes in ground water levels across the state were more than usually expected for December. Levels in most consolidated aquifers rose slowly throughout most of the month. Levels in unconsolidated aquifers generally were steady or rose slightly during the first week of

RESERVOIR STORAGE FOR WATER SUPPLY



Normal – – – – Current ———

December, then declined until just after mid-month before rising in response to the precipitation of December 17 and 18. Levels in aquifers statewide had begun to decline as the month ended.

Ground water levels remain below normal across most of the state ranging up to nearly 2.75 feet below the long-term December average. However, levels in some aquifers in western Ohio are above normal as precipitation has been more favorable across much of this region during the past 8 months. Also, current levels are higher than last year's levels across much of the state.

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	17.65	-0.80	+1.13	+1.48
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.40	-0.24	+1.10	-0.28
Fr-10	Columbus, Franklin Co.	Gravel	45.83	-1.73	+0.51	-0.02
H-1	Harrison, Hamilton Co.	Gravel	21.23	+1.59	+1.09	+1.99
Hn-2a	Dola, Hardin Co.	Dolomite	6.74	+2.20	+0.39	+0.59
Po-1	Windham, Portage Co.	Sandstone	21.39	-0.78	+0.15	+0.07
Tu-1	Strasburg, Tuscarawas Co.	Gravel	16.00	-2.72	+0.48	-0.62

Ground water supplies during 2001 were adequate throughout most of the state, even though storage in many aquifers was below normal the entire year. The year started with ground water storage at below normal levels statewide. Below normal precipitation during the winter and spring months resulted in less than expected improvement in ground water storage during the recharge season. Aquifers in western Ohio fared better as precipitation was generally above normal during much of the next 8 months in this region of the state, reaching above normal levels during early autumn. Conversely, levels in eastern Ohio continued to remain below normal as precipitation was below normal through much of this region through September. Index observation well Tu-1, near Strasburg (Tuscarawas County), representing sand and gravel aquifers in eastern and northeastern Ohio, reached a record-low level during the latter months of 2001, continuing to reflect the below normal precipitation this region of Ohio has received during the past few years. However, ground water levels across most of the state have responded favorably to the above normal precipitation that has fallen during the last three months of the year, perhaps setting the stage for a favorable recharge season.

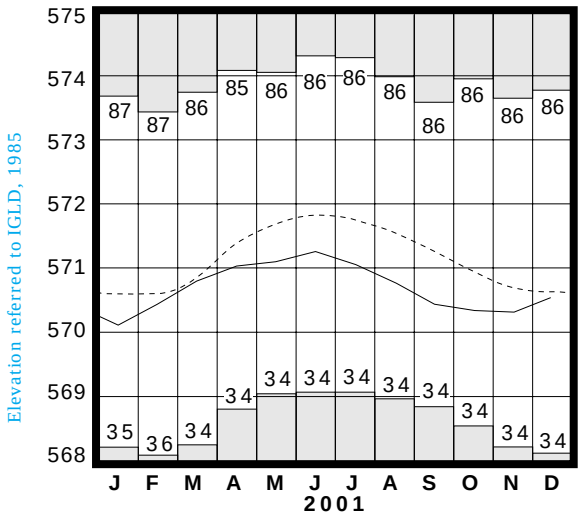
LAKE ERIE level rose during December. The mean level was 570.54 feet (IGLD-1985), 0.23 foot higher than last month's mean level and 0.09 foot below normal. This month's mean level is 0.13 foot higher than the December 2000 level and 1.34 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during December averaged 2.83 inches, 0.22 inch above normal, and the entire Great Lakes basin averaged 2.15 inches, which is 0.18 inch below normal. For calendar year 2001, the Lake Erie basin averaged 35.84 inches of precipitation, 0.84 inch above normal, while the entire Great Lakes basin averaged 34.14 inches, which was 1.78 inches above normal.

Lake Erie level was below normal throughout the entire 2001 calendar year. Lake levels during autumn 2001 reached their lowest point since 1966. The lower than average lake levels have had an impact on both recreational and commercial concerns. Cargo ships have reduced their loads, marinas have increased dredging and boaters have to pay close attention to navigational charts and channel buoys.

The USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should range between 5-9 inches below the long-term seasonal average for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as much as 5 inches above normal to nearly 16 inches below the normal seasonal levels.

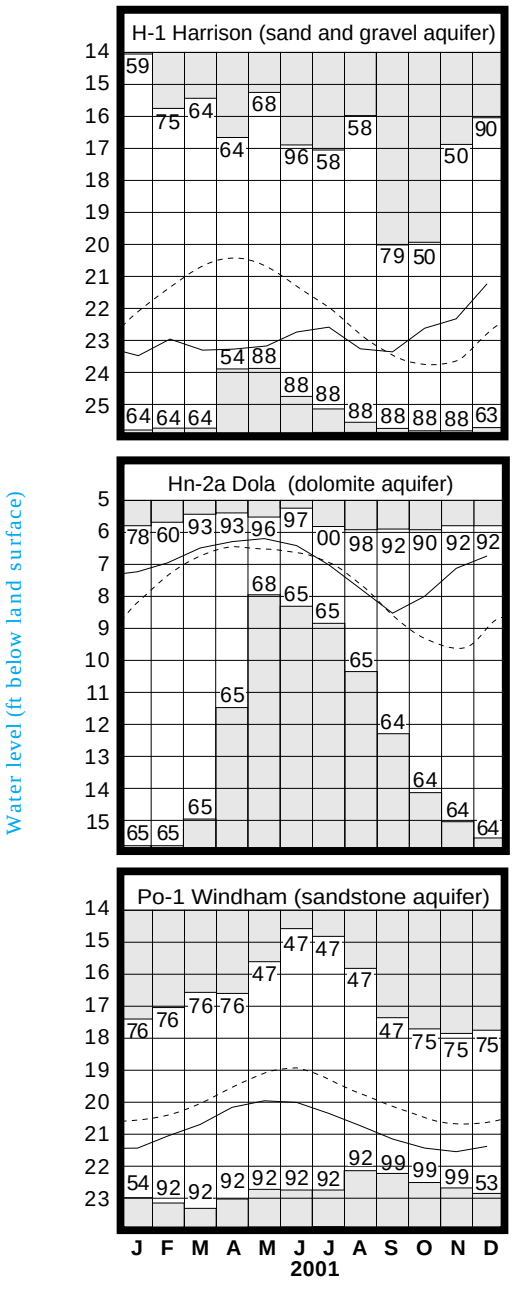
LAKE ERIE LEVELS at Fairport



Base period: 1900-1991

Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990. Po-1, 1947-1990

Record high and low, year of occurrence

Normal– – – – Current———

(Precipitation continued from front)

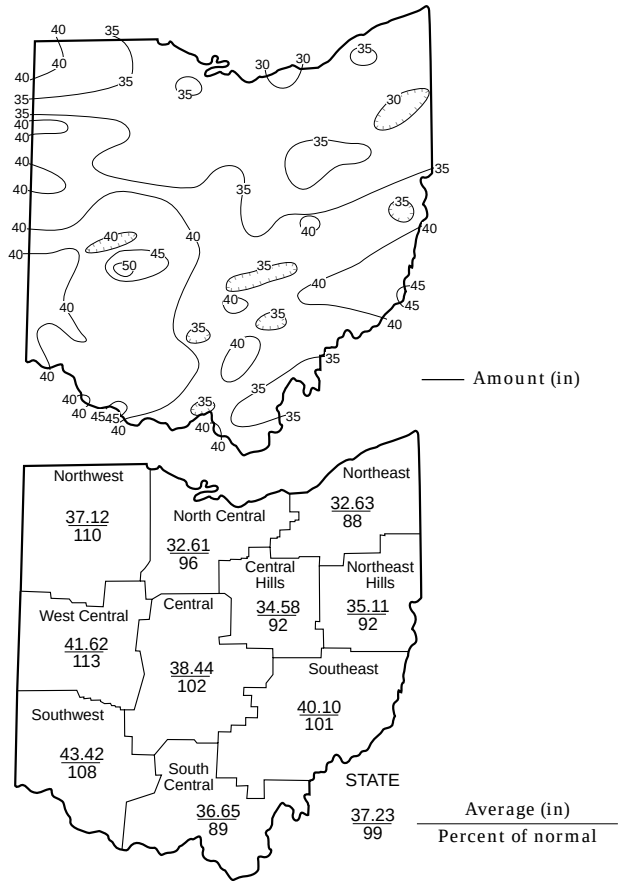
The 2001 calendar year got off to a dry start as January-March precipitation amounts were below normal across most of the state. For the state as a whole, it was the 9th driest January during the past 119 years of record with 8 of the state's 10 climatic regions ranking in the top 20 driest of their respective records. It was the 16th driest March for the state as a whole with 6 of the 10 regions ranking in the top 10 driest of their record. During April and May, precipitation was above normal across much of Ohio. Regionally, it was the 4th wettest May of record for the South Central Region and the 5th wettest for the Central and Northwest regions. June and July had below normal precipitation throughout most of the state. However, precipitation was notably above normal in west-central and southwestern Ohio during July. While it was the 7th driest July of record in the Northeast Region and tied for the 8th driest in the Central Hills Region, it was the 9th wettest July of record for the Southwest region and 13th wettest for the West Central Region. Precipitation during August and September was above normal across much of Ohio, but was below normal in some areas in the eastern half of the state. October rainfall was notably above normal statewide. For the state as a whole, it was the 9th wettest October of record. Regionally, it ranked as the wettest October of record for the Northwest Region, the 2nd wettest for the North Central region, the 5th wettest for the West Central and Southwest regions, and the 8th wettest for the Central Hills Region. Both November and December had above normal precipitation across most of the state with some areas of below normal precipitation, especially in northwestern and southeastern Ohio. Water supplies and agricultural crops fared well in most areas of the state during 2001.

SUMMARY

Precipitation during December was above normal across most of the state, but below normal in much of southeastern and northwestern Ohio. Streamflow was above normal across most of the state. Reservoir storage increased in both the Mahoning and Scioto basins and was above normal in both basins. Ground water levels rose statewide. Lake Erie level rose 0.23 foot and was 0.09 foot below the long-term December average.

Precipitation for the 2001 calendar year was generally above normal in the western half of the state and below normal in the eastern half. Streamflow was above normal in the western half of Ohio and below normal elsewhere. Reservoir storage ended the year above normal across the state. Ground water levels were below normal across much of the state the entire year, but rebounded to above normal in some aquifers in western Ohio during the last three months of the year. Lake Erie level was below normal throughout 2001.

PRECIPITATION 2001 CALENDAR YEAR



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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