



MONTHLY WATER INVENTORY REPORT FOR OHIO

July 2002

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

Compiled By David H. Cashell and Scott Kirk

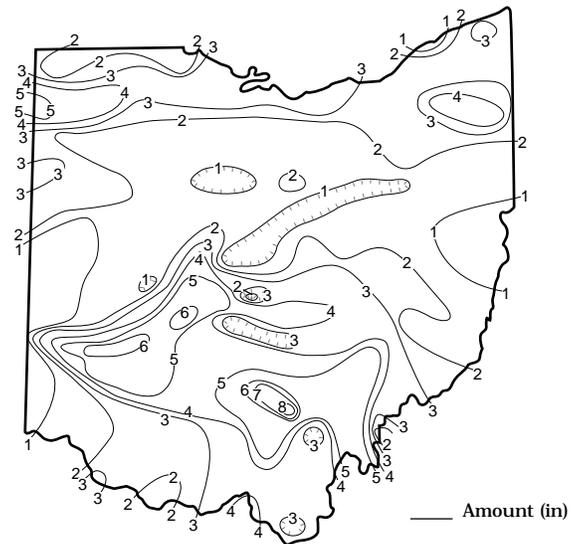
Hydrologists
Water Inventory Unit

PRECIPITATION during July was noticeably below normal across much of the state. The average for the state as a whole was 2.61 inches, 1.47 inches below normal. Regional averages ranged from 4.16 inches, 0.25 inch below normal, for the South Central Region to 1.10 inches, 3.03 inches below normal, for the Northeast Hills Region. For the state as a whole this tied as the 16th driest July during the past 120 years. Regionally, it was the 3rd driest July of record for the Central Hills Region, the 4th driest for the West Central and Northeast Hills regions, and the 18th driest for the North Central Region. McArthur (Vinton County) reported the greatest amount of July precipitation, 8.13 inches. Laurelville (Hocking County) reported 7.66 inches for the month. Pike Island Dam (Belmont County) reported the least amount of precipitation, a meager 0.20 inch. Several other stations scattered throughout the state also reported less than 1 inch of precipitation for July.

Much of July was dry with temperatures averaging above normal across the state. Most of the precipitation during the month fell as widely scattered showers and thunderstorms. The first half of the month was noticeably drier than the second half statewide. Scattered showers and thunderstorms crossed the state during July 9-10 with generally less than 0.50 inch of rain falling across much of the state. However, the rains across southeastern Ohio were heavier and more widespread with storm totals typically in the 1-3 inch range with areas in Hocking and Vinton counties reporting as much as 6 inches. Small stream and urban flooding was reported from southeastern Ohio. Widely scattered showers and thunderstorms during the next two weeks produced 0.25-0.50 inch of rain in a few areas, but most of the state received little or no rain. Scattered thunderstorms on July 23 brought 0.25 inch or less of rain to most of the southeastern half of the state, but an area of heavier rain fell across parts of central and southeastern Ohio. Storm totals ranged from 1-3 inches in the area of heavier rain. Isolated thunderstorms during the last week of July dropped generally 0.25-1.0 inch of rain with the greatest amounts occurring in northern and southwestern Ohio. Once again, some areas, especially in eastern Ohio, received little or no rain throughout this period.

Precipitation for the 2002 water year remains above normal across most of the state, but is slightly below normal in the Northeast Hills Region. The average for the state as a whole is 33.87 inches, 2.28 inches above normal. Regional averages range from 40.51 inches, 5.94 inches above normal, for the Southwest Region to 30.87 inches, 2.54 inches above normal, for the Northwest Region.

PRECIPITATION JULY

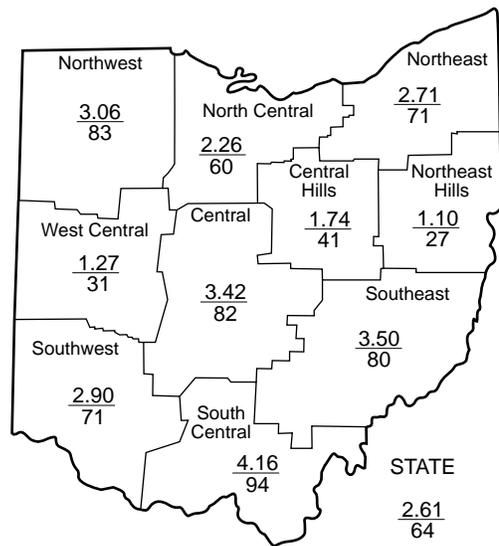


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PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.61	-2.01	-1.18	+4.06	+3.43	-2.6
North Central	-1.48	-1.32	-0.23	+3.46	-2.04	-2.4
Northeast	-1.13	-0.56	+0.80	+1.24	-6.32	-2.1
West Central	-2.84	-2.54	-0.15	+5.24	+5.09	-1.5
Central	-0.73	+0.05	+0.39	+1.77	+1.38	-1.5
Central Hills	-2.51	-1.44	-0.23	+1.76	-3.36	-2.4
Northeast Hills	-3.03	-1.97	-2.09	-2.03	-6.73	-2.7
Southwest	-1.20	+1.45	+3.35	+7.81	+5.07	-0.8
South Central	-0.25	+1.55	+3.63	+1.18	-0.53	-1.7
Southeast	-0.85	+1.23	+1.62	+1.46	+1.12	-1.2
State	-1.47	-0.56	+0.59	+2.59	-0.30	

*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.)	This Month		% of Normal Past		
		Mean Discharge (CFS)	% of Normal	3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	34	17	127	102	82
Great Miami River at Hamilton	3,630	1,551	83	148	142	150
Huron River at Milan	371	8	7	68	89	83
Killbuck Creek at Killbuck	464	84	43	108	91	77
Little Beaver Creek near East Liverpool	496	80	34	86	78	68
Maumee River at Waterville	6,330	652	24	85	103	111
Muskingum River at McConnelsville	7,422	2,351	48	197	142	79
Scioto River near Prospect	567	28	18	79	104	105
Scioto River at Higby	5,131	1,732	63	121	101	95
Stillwater River at Pleasant Hill	503	80	49	113	128	144

STREAMFLOW during July was below normal statewide. Flows were low enough to be considered deficient across most of the state. July flows were markedly less than the June flows statewide.

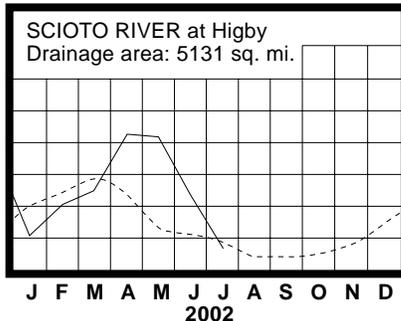
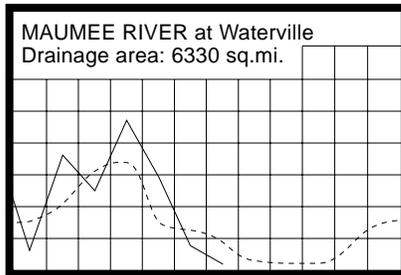
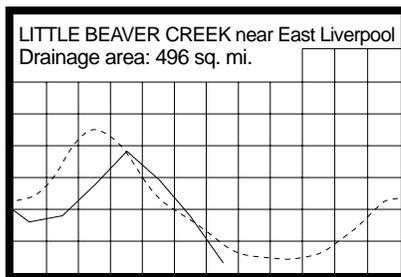
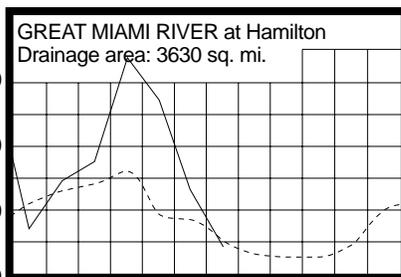
Flows were below normal across most of the state at the beginning of July. Flows generally decreased throughout the month with temporary increases noted following local precipitation. Greatest flows for the month occurred at the beginning of July across central and southeastern Ohio. Flows increased through much of Ohio beginning on July 10 as a result of precipitation during July 9-10. Increases were most notable in southeastern Ohio as this area received the greatest amount of rainfall during this period. Localized downpours resulted in some urban and small stream flash flooding, especially in Fairfield, Pickaway, Ross, Hocking and Vinton counties. Flows decreased during the next two weeks, except for temporary increases noted in the eastern half of the state following isolated precipitation around July 18. Temporary increases were also noted in northeastern, central and southeastern Ohio following scattered thunderstorms on July 23. Some of rain on the 23rd was locally heavy, resulting in urban flooding, especially across Franklin, Licking and Fairfield counties. Low flows for the month occurred just prior to this rain in the northern third of the state while the remainder of Ohio generally experienced low flows at the end of July. Greatest flows in northern and southwestern Ohio occurred near the end of the month due to isolated showers and thunderstorms during the last week of July. Flows at the end of the month were noticeably below normal statewide.

RESERVOIR STORAGE for water supply during July decreased in both the Mahoning and Scioto river basins. Storage at the end of the month remained above normal in both basins.

Reservoir storage at the end of July in the Mahoning basin index reservoirs was 88 percent of rated capacity for water supply compared with 100 percent for last month and 97 percent for July 2001. Month-end storage in the Scioto basin index reservoirs was 90 percent of rated capacity for water supply compared with 97 percent for last month and 87 percent for July 2001.

MEAN STREAM DISCHARGE

Discharge (cu ft/sec/sq mi)

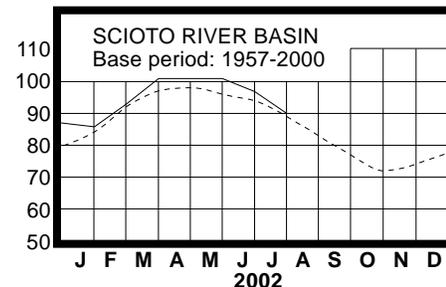
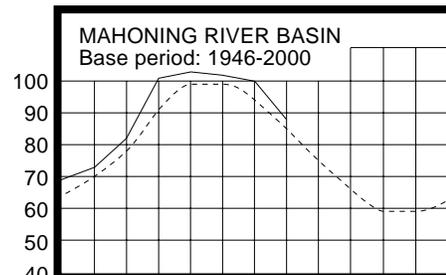


Base period for all streams: 1971-2000

Normal - - - - Current - - - -

RESERVOIR STORAGE FOR WATER SUPPLY

Rated capacity (%) for water supply



J F M A M J J A S O N D 2002

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	14.92	+0.50	-2.09	+0.68
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.71	-2.89	-2.40	-2.54
Fr-10	Columbus, Franklin Co.	Gravel	45.25	-1.97	-1.15	+0.24
H-1	Harrison, Hamilton Co.	Gravel	22.80	-0.75	-1.48	-0.21
Hn-2a	Dola, Hardin Co.	Dolomite	7.22	-0.39	-0.84	-0.21
Po-1	Windham, Portage Co.	Sandstone	19.06	+0.43	-0.16	+1.29
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.37	-1.63	-1.31	+0.51

GROUND WATER levels during July declined statewide. As is typical for this time of the year, ground water levels declined steadily throughout the month. However, net declines in water levels were noticeably greater than usually expected for July across most of the state.

Following the below normal precipitation and above normal temperatures during July, ground water levels have returned to below normal throughout most of the state following a month or two at above normal levels. Only a few consolidated aquifers remained above normal at the end of July. July's levels range from 0.50 foot above normal to nearly 3 feet below normal. Current levels are higher than the July 2001 levels in the eastern half of the state, but they are lower than last year's levels in the western half of Ohio. Although storage remains adequate across most of the state, the recent dry conditions have had an unfavorable impact on the ground water situation in Ohio. Ground water levels can be expected to further decline seasonally through late autumn. Water supply managers with ground water sources are urged to monitor their respective situations closely throughout the summer and autumn months. According to the Palmer Drought Severity Index, about 50 percent of the state was experiencing moderate drought conditions near the end of July.

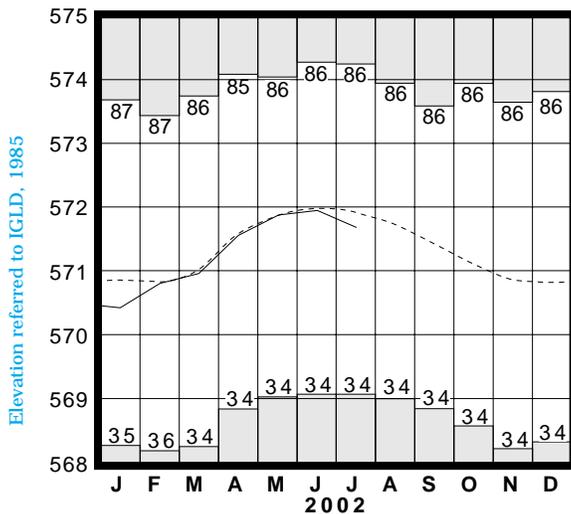
Agriculture continues to be adversely impacted by the weather. After a wet late spring that delayed planting, the recent hot and dry conditions across much of the state have had an adverse impact on hay, pasture and crop development. The Ohio Agricultural Statistics Service reports that near the end of July, soil moisture was rated as being short or very short in 81 percent of the state and adequate in 19 percent of the state.

LAKE ERIE level declined during July. The mean level was 571.69 feet (IGLD-1985), 0.26 foot lower than last month's mean level and 0.23 foot below normal. This month's mean level is 0.69 foot higher than the July 2001 level and 2.49 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during July averaged 2.51 inches, which is 0.82 inch below normal. The entire Great Lakes basin averaged 2.53 inches during July, which is 0.61 inch below normal. For calendar year 2002 through July, the Lake Erie basin has averaged 21.75 inches, 1.30 inches above normal, while the entire Great Lakes basin has averaged 19.19 inches, 1.29 inches above normal.

In addition, 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 about 4 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 7 inches above normal to as much as 14 inches below the normal seasonal level.

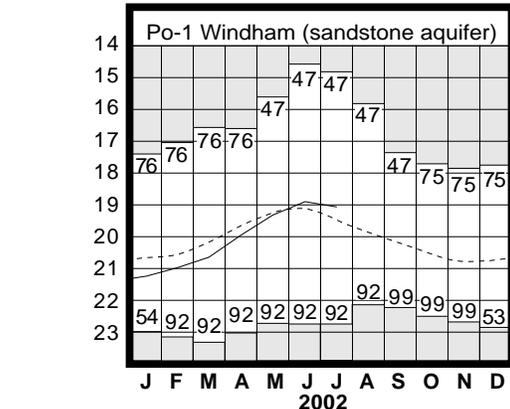
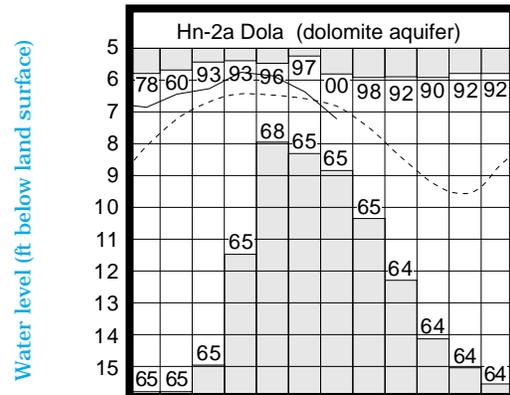
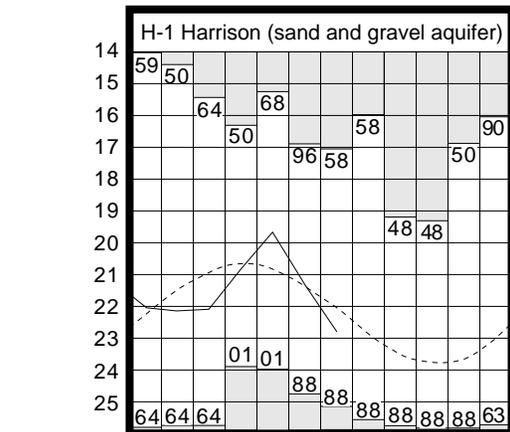
LAKE ERIE LEVELS



Base period: 1918-2000

□ Record high and low, year of occurrence

GROUND-WATER LEVELS



Base periods: H-1, 1951-2000. Hn-2a, 1955-2000.

Po-1, 1947-2000 □ Record high and low, year of occurrence

Normal - - - - Current ———

(Precipitation continued from front)

Precipitation for the 2002 calendar year is generally below normal in the northern half of the state and above normal in the southern half. The average for the state as a whole is 23.49 inches, 0.07 inch above normal. Regional averages range from 29.48 inches, 4.00 inches above normal, for the South Central Region to 19.83 inches, 0.91 inch below normal, for the Northwest Region.

SUMMARY

Precipitation during July was noticeably below normal across most of the state, ranking among the driest Julys in the Central Hills, Northeast Hills and West Central regions. Streamflow was below normal and noticeably deficient statewide. Reservoir storage decreased in both the Mahoning and Scioto basins, but remained above normal in both basins. Ground water levels declined statewide and were below normal across most of Ohio. Lake Erie level declined 0.26 foot and was 0.23 foot below normal.

NOTES AND COMMENTS

Miami And Erie Canal Brochure Available

A brochure revealing points of interest along the Miami & Erie Canal was recently completed. The brochure was a collaborative effort between the Ohio Department of Natural Resources (ODNR), Division of Water and the Miami & Erie Canal Corridor Association. The brochure focuses on the Miami & Erie Canal from Delphos (Allen County) south to Piqua (Miami County). A brief historical overview of the canal and a map depicting 40 of the more historically significant stops along the canal route are contained in this brochure. Along with this brochure, one can take a self-guided tour of the canal and imagine what it was like to travel the canal more than 100 years ago. To obtain a copy of the brochure, please contact The ODNR, Division of Water, St. Marys Field Office, 834 Edgewater Drive, St. Marys, Ohio, 45885, phone (419) 394-5950; or the Miami & Erie Canal Corridor Association, 2355 Ada Road, Lima, Ohio, 45801, phone (419) 221-1232. The brochure can also be viewed on ODNR's website at: <http://www.dnr.state.oh.us/water/canals>.

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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