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. Corps of Engineers, Detroit District.

CARTOGRAPHY: Douglas E. Keen

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water supply situation remains favorable throughout the state despite the below normal precipitation in January. Reservoir storage and streamflow declined for the month while ground-water storage showed net gains for the month. Lake Erie level rose slightly and continues to be noticeably above normal.

NOTES AND COMMENTS

NEW PUBLICATION

WATER, OHIO'S REMARKABLE RESOURCE, a 32 page booklet, is now available from the Ohio Department of Natural Resources (ODNR). The illustrated booklet will appeal to all ages as a general introduction to water and its management.

Jointly published by ODNR, the U.S. Geological Survey and the Ohio Cooperative Extension Service, the booklet presents water information in understandable terms. The publication explores some basic water facts and examines ways in which water is used for farming, household needs, business and industry, electric power generation, navigation, recreation, and fish and wildlife needs.

Teachers and students should find the booklet a valuable source of information. Schools in the state will receive a copy in the near future. Single copies of Water, Ohio's Remarkable Resource, are free from ODNR's Publications Center, Fountain Square-Bldg. B. Columbus, Ohio 43224.

DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

JANUARY 1983

monthly water inventory report for ohio

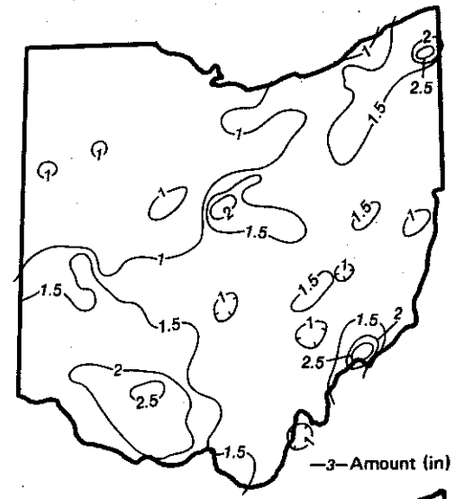
Compiled by Leonard J. Harstine

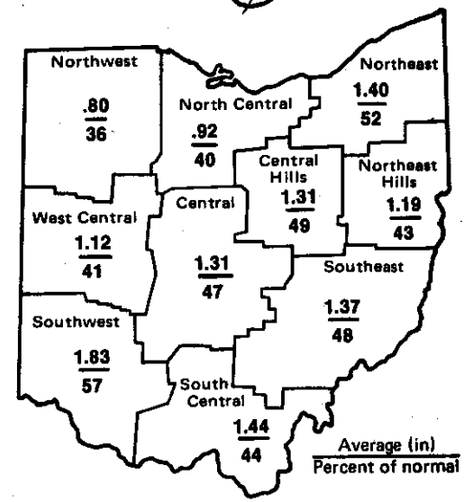
PRECIPITATION

PRECIPITATION for January was noticeably below normal throughout the state. The average for the state as whole was 1.27 inches, 1.49 inches below normal. Regional averages ranged from 1.83 inches, 1.40 inches below normal, for the Southwest region to 0.80 inch, 1.43 inches below normal, for the Northwest region. Departures from normal ranged from 1.85 inches below normal for the South Central region to 1.27 inches below normal for the Northeast region. Marietta, Washington County, reported the greatest amount of precipitation for the month, 2.92 inches and Upper Sandusky, Wyandot County, reported the least amount, 0.53 inch.

Generally, about two-thirds of the state southeast of a line running from Urbana to Cleveland received from 1 to 2 inches of precipitation for the month with some isolated stations and one area in the southwest receiving 2 to 2.9 inches. The northwestern one-third of the state received between 0.5 and 1 inch of precipitation for the month. The bulk of the month's precipitation occurred during the last fifteen days of the month. For many parts of Ohio there have been only traces of snow thus far this winter; even in the snowbelt east of Cleveland, snowfall is noticeably below normal. Thus far, the effect of the below normal precipitation for January on the overall water supply situation is minimal.

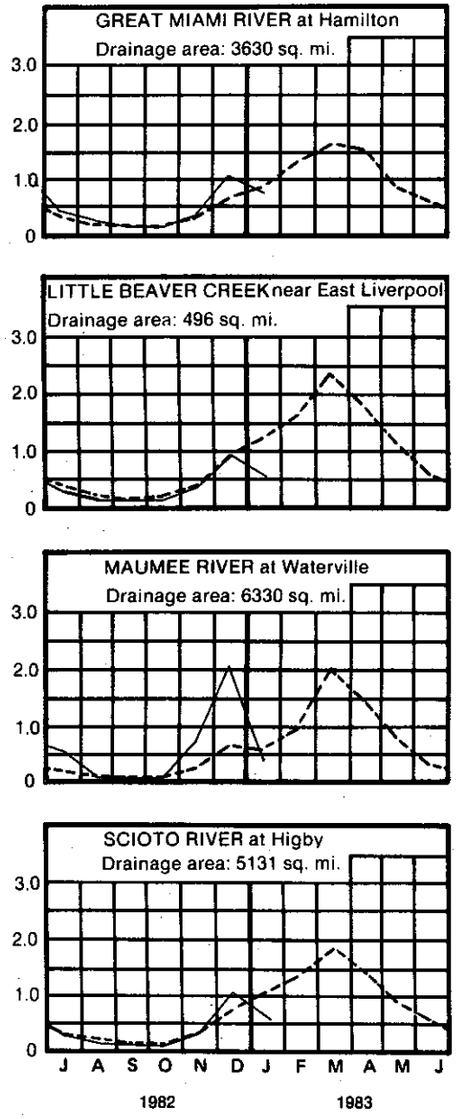
Cumulative precipitation for the first four months of the 1983 water year is above normal for most of the state; the only exceptions are in the West Central, Northeast Hills and South Central regions where it is below normal. The average for the state as a whole is 10.92 inches, 0.66 inch above normal. Regional averages range from 11.80 inches, 2.38 inches above normal, for the Northwest region to 9.26 inches, 1.19 inches below normal, for the Northeast Hills region.





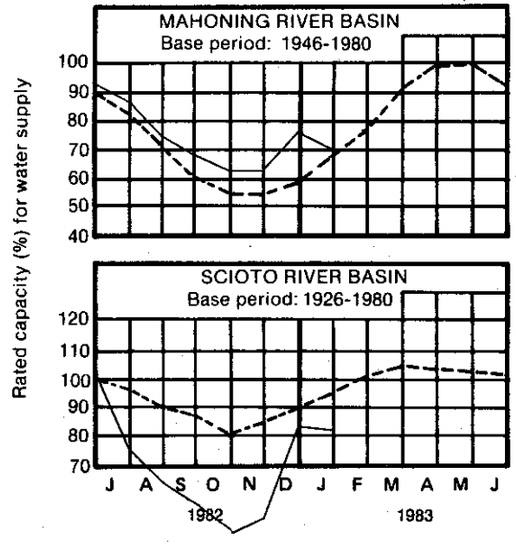
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

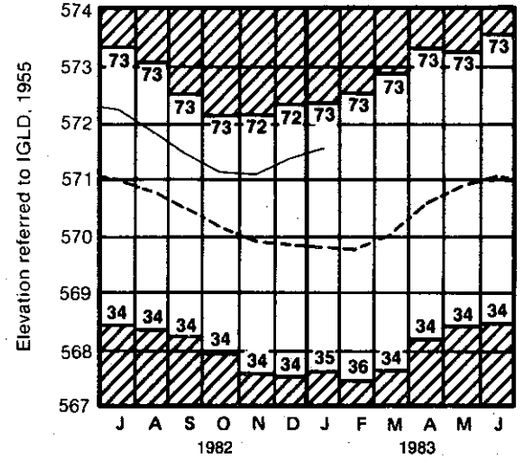
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for January declined slightly in both the Mahoning River basin and the Scioto River basin reservoirs as a result of the below normal precipitation throughout the state. Reservoir storage remained slightly above normal in the Mahoning basin reservoirs and continued to be below normal in the Scioto basin. Reservoir storage at the month end for the Mahoning basin index reservoirs was 70 percent of rated capacity for water supply compared to 76 percent for last month and 65 percent for January 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 82 percent of rated capacity for water supply compared to 83 percent for last month and 70 percent for January 1982.

STREAMFLOW for January showed marked declines throughout the state as a result of the below normal precipitation. Flows were generally on the lower side of the normal range for the month for most of the state; however, in the Little Beaver Creek flow was actually deficient for the month. Mean discharge and percent of normal for January at the index gaging stations were as follows: Great Miami River, 2,589 cfs, 80 percent; Little Beaver Creek, 263 cfs, 42 percent; Maumee River, 2,663 cfs, 69 percent; Scioto River, 2,885 cfs, 51 percent. Flows at the month end were deficient throughout the state.

LAKE ERIE LEVELS

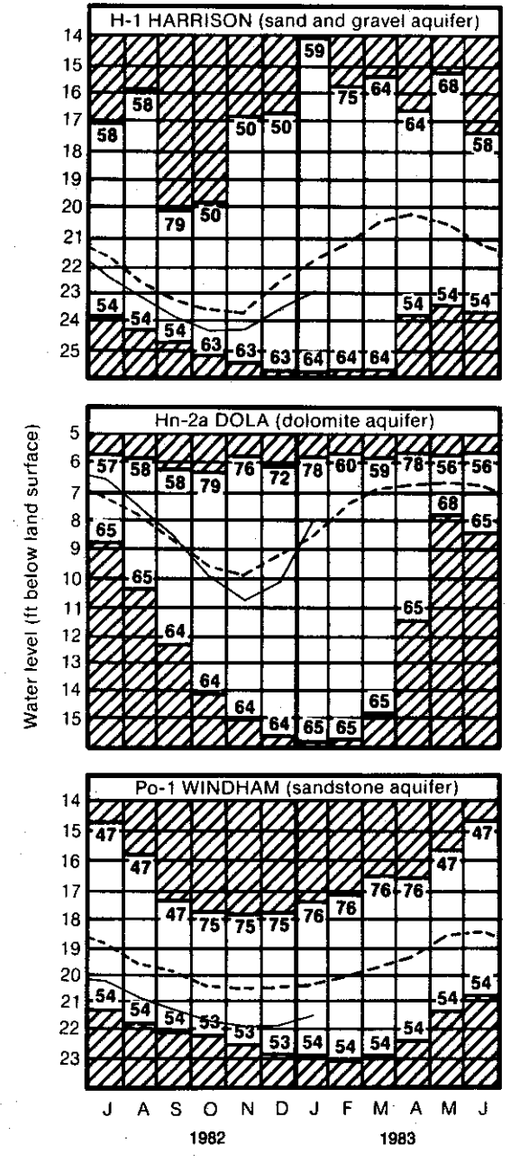


Base period: 1900-1980

LAKE ERIE mean level for January rose slightly and was 571.53 feet above IGLD (1955), 0.15 foot above last month's mean level and 1.71 feet above normal. The mean level is 0.43 foot above the mean level observed for January 1982 and 2.93 feet above Low Water Datum.

GROUND-WATER LEVELS for January continued to rise in wells representing rock aquifers in response to delayed recharge from above normal precipitation in December, and they declined in wells representing sand and gravel aquifers as a result of the below normal precipitation in January. However, ground-water levels in the index observation wells throughout the state showed net rises for the month and were 0.36 to 2.37 feet above those levels observed for last month. Water levels are generally below those levels observed for January 1982 in most areas of the state; the only exception is in observation well F-1 near West Rushville, Fairfield County, where the water level is 4 feet above the level observed last year. Ground-water levels are generally above normal in rock aquifers and below normal in sand and gravel aquifers. One exception is in observation well Po-1 at Windham, Portage County, representing a consolidated sandstone aquifer where the water levels have been below normal for the past two years. Thus far, the ground-water storage situation continues to improve despite the lack of precipitation in January.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1979. Hn-2a, 1955-1979
Po-1, 1947-1979

normal - - - - - current ———

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Streamflow and reservoir storage data:
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Lake Erie level data:
U.S. Corps of Engineers, Detroit District.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

the Northeast region, to 10.32 inches, 1.80 inches below normal, for the West Central region. Departures from normal range from 1.22 inches above normal for the Northwest region to 2.26 inches below normal for the South Central region.

SUMMARY

Precipitation for February was noticeably below normal throughout the state. Precipitation for January and February combined was only 46 percent of normal. Streamflow, reservoir storage and ground-water levels maintain a stable position for February. Lake Erie level declined slightly for the month.

The water supply situation for Ohio is maintaining a stable position for the present. However, continued lack of precipitation during the next two months could create a different situation. It would be adviseable for those in charge of water supplies throughout the state to be aware of their individual situations and plan accordingly.

NOTES AND COMMENTS

The purpose of this report is to disseminate current hydrologic data in brief form. Observation points have been selected which are considered to be sufficiently representative of water conditions in the state to permit an evaluation of the current water-supply situation. These key observation stations offer the best available data on the basis of (1) accuracy and length of record, (2) minimal artificial effects on data, and (3) availability of records. Data from these stations are collected by various agencies at the end of each month and processed immediately. Because of the time limitations involved, all data must be considered preliminary and may be subject to revision before publication in regular form by the agencies involved. The remarks in this report include the writer's opinions of the cause and significance of the phenomena reported therein. The reader is urged to examine the data and formulate his own evaluation. The author is indebted to the various agencies and individuals who make these data available.

More complete and detailed information can be obtained by writing to the Ohio Division of Water, Bldg. E, Fountain Square, Columbus, Ohio 43224.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

FEBRUARY 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for February was noticeably below normal throughout the state. The average for the state as a whole was 1.06 inches, 1.23 inches below normal. Regional averages ranged from 1.73 inches, 0.80 inch below normal, for the Southeast region to 0.64 inch, 1.20 inches below normal, for the North Central region. Other regions showing marked deficiencies for the month were; West Central, 1.53 inches below normal; Central, 1.48 inches below normal; Southwest, 1.91 inches below normal and South Central, 1.58 inches below normal. Marietta Lock, Washington County, reported the greatest amount of precipitation for the month, 2.98 inches. Rockford, Mercer County, reported the least amount for the month, 0.13 inch.

Precipitation for the month came in the form of light showers and snow flurries throughout the state during the month. Generally there was no precipitation during the third week. The western half of the state received less than one inch of precipitation for the month while the eastern half received between 1 and 2 inches. Only a few stations reported more than 2 inches. Chardon reported 11.3 inches of snow for the month making a total of 49.2 inches for the season thus far which is only about half that normally observed. Temperatures throughout the state for February were noticeably above normal and record highs were observed in some areas. For the most part it was a very dry February; what effect this may have on our future water supply situation remains to be seen.

Cumulative precipitation for the first two months of the 1983 calendar year is noticeably below normal throughout the state. The average for the state as a whole is 2.33 inches, 2.72 inches below normal. Regional averages range from 3.10 inches, 2.31 inches below normal, for the Southeast region to 1.50 inches, 2.59 inches below normal, for the Northwest region. Departures from normal range from 3.43 inches below normal for the South Central region to 2.22 inches below normal for the Central Hills region.

Cumulative precipitation for the first 5 months of the 1983 water year is below normal for most of the state; the only exceptions are in the Northwest, North Central, Northeast and Central Hills regions where precipitation is above normal for the water year thus far. The average for the state as a whole is 11.98 inches, 0.57 inch below normal. Regional averages range from 13.56 inches, 0.23 inch above normal for

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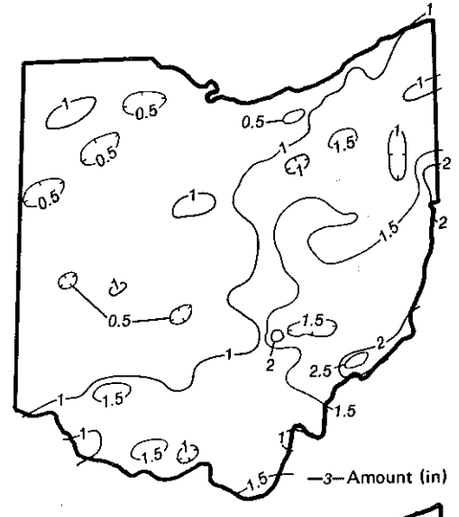
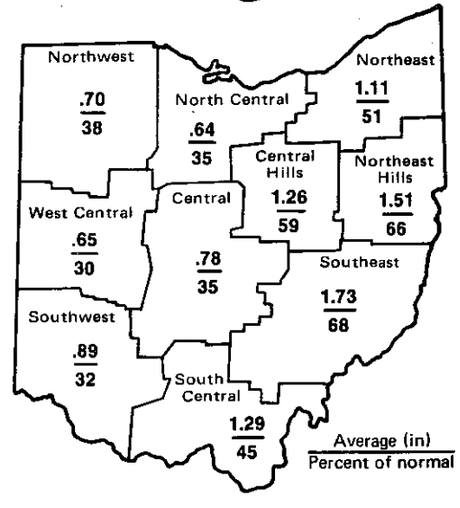
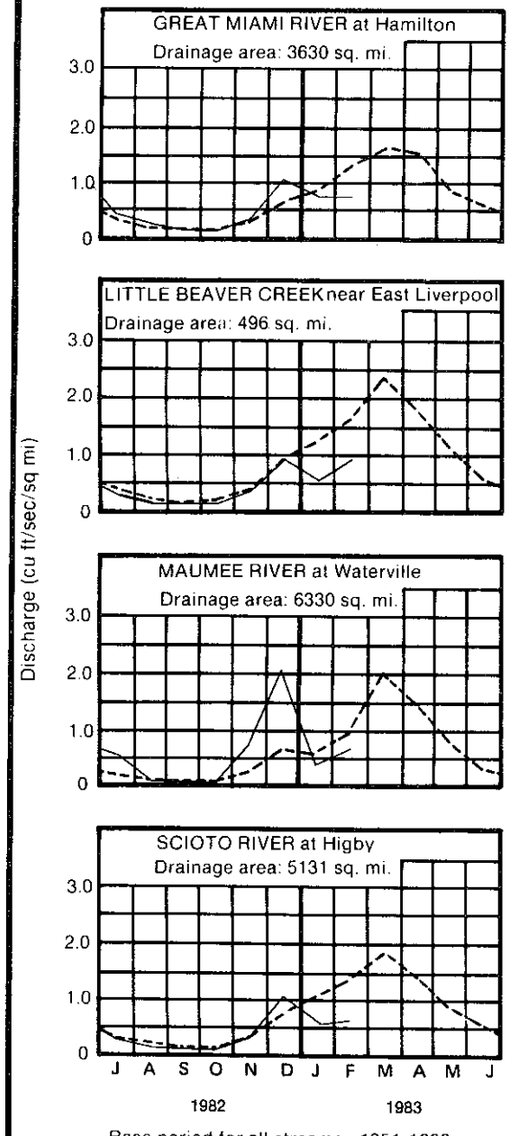




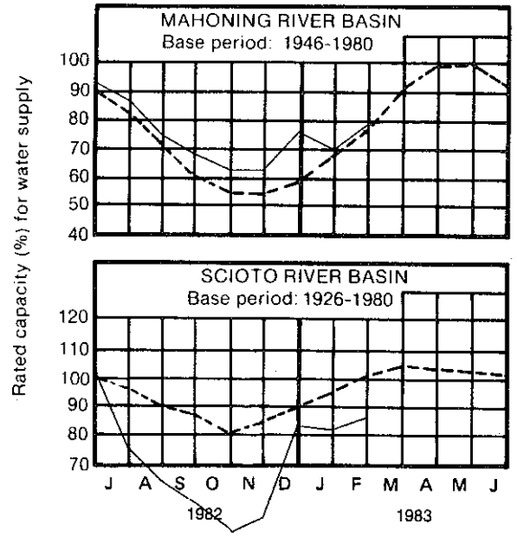
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

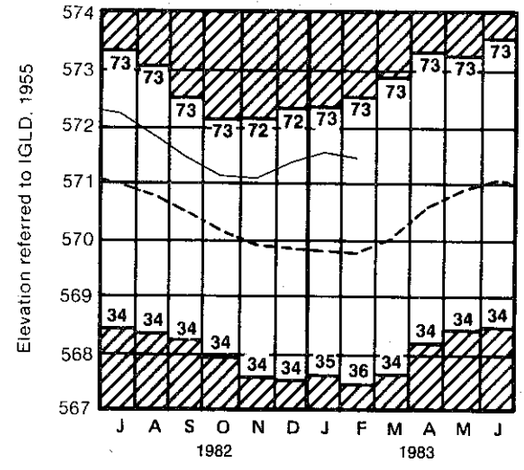
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for February rose in both the Mahoning River and the Scioto River basins. Storage remained slightly above normal in the Mahoning basin reservoirs and was noticeably below normal in the Scioto basin reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 79 percent of rated capacity for water supply compared to 70 percent for last month and 86 percent for February 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 86 percent of rated capacity for water supply compared to 82 percent for last month and 99 percent for February 1982.

STREAMFLOW for February increased slightly during the month throughout the state despite the below normal precipitation. Evidently there was some contribution to streamflow from moisture frozen in the ground during January. Also the contribution from ground-water to streamflow was greater than normal for February; usually this process is reversed during January and February. However, flows at the month end were noticeably deficient throughout the state. Mean discharge and percent of normal for February at the index gaging stations were as follows: Great Miami River, 2,560 cfs, 53 percent; Little Beaver Creek, 486 cfs, 59 percent; Maumee River, 4,336 cfs, 71 percent; Scioto River, 3,426 cfs, 48 percent.

LAKE ERIE LEVELS

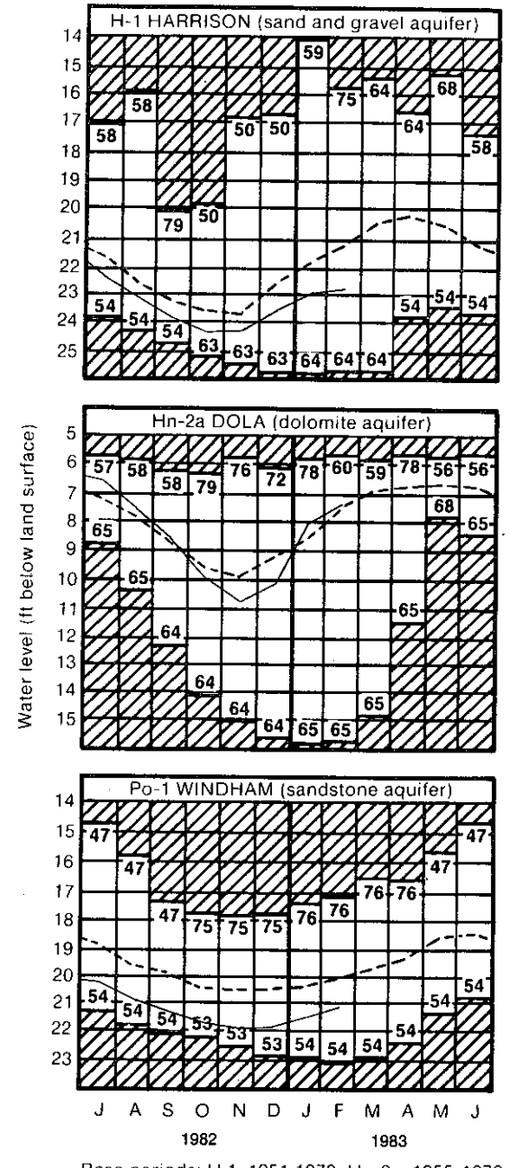


Base period: 1900-1980

LAKE ERIE mean level for February declined slightly in response to below normal precipitation during the past two months. The mean level for February was 571.46 feet above IGLD (1955), 0.07 foot below last month's mean level and 1.66 feet above normal. The mean level is 0.26 foot above the level observed for February 1982 and 2.86 feet above Low Water Datum.

GROUND-WATER LEVELS for February were generally stable during the month in response to the lack of recharge as a result of the below normal precipitation. Net rises in ground-water levels were only about one third that normally observed in February in most areas of the state. Generally, ground-water levels were below those levels observed for February 1982 and below normal. Water levels in some rock aquifers were slightly above normal in the central and northwestern portion of the state. Although the ground-water storage situation is still holding it's own, continued lack of recharge could change the situation very rapidly. Those in charge of water supplies depending on ground-water should keep in close contact with the situation and plan accordingly.

GROUND-WATER LEVELS



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Po-1, 1947-1979

normal - - - - - current ———

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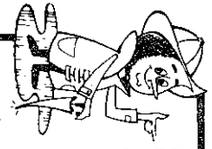


OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

Regional averages range from 16.90 inches, 0.49 inch above normal, for the Northeast region to 12.35 inches, 3.03 inches below normal, for the West Central region. Departures from normal range from 0.70 inch above normal, for the Northwest region to 4.73 inches below normal, for the South Central region.

SUMMARY

Precipitation for March was below normal for most of the state for the third consecutive month. Streamflow, reservoir storage and ground-water storage were generally below normal in the central and southern portion of the state and above normal in the northern portion. Lake Erie level rose slightly and remains noticeably above normal.

The below normal precipitation during the past three months has created a degree of uncertainty in the water supply situation for Ohio at the present time. Although there are no serious problems at the present time, those in charge of upground reservoirs have had little opportunity to divert water from streams to bring storages up to capacity; and below normal ground-water levels may create problems in marginal wells during the summer months. The situation could improve during April and May. However, those in charge of managing water supplies should be thinking of conservation measures and other means of augmenting their water supplies.

NOTES AND COMMENTS

Precipitation data used in this report, in addition to that collected by the Ohio Department of Natural Resources, Division of Water, are furnished by the following organizations: U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA); National Weather Service Flood Forecasting Centers at Cleveland Hopkins Airport; Charleston, W. Va.; Ann Arbor, Mich., Pittsburg, Pa.; and Louisville, Ky.; the NOAA First Order Weather stations at Akron-Canton Airport; Cincinnati Airport at Covington, Ky.; Columbus Airport; Dayton Airport; Toledo Airport and Youngstown Airport; the Northeast Ohio Sewer District, Cleveland; the Agricultural Weather Center at Purdue University, West Lafayette, Ind., the Miami Conservancy District at Dayton; U.S. Army Corps of Engineers, Muskingum area at Dover and Pittsburgh District, Pittsburgh, Pa., and numerous local National Weather Service observers who mail their records directly to a central collecting center at Ashville, N.C. These data are used for drawing the isohyetal map and in computing the regional averages published on the first page of this report. Percent-of-normal data are based on normals for Climatic Divisions as published by the U.S. Department of Commerce in their publication, Climatography of the United States No. 85 (by State), Monthly Averages of Temperature and Precipitation for State Climatic Divisions 1941-70.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

MARCH 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

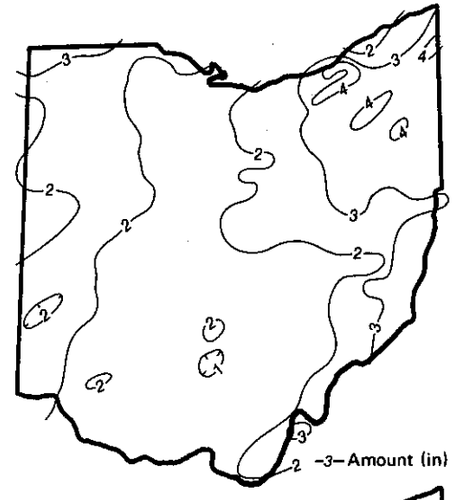
PRECIPITATION

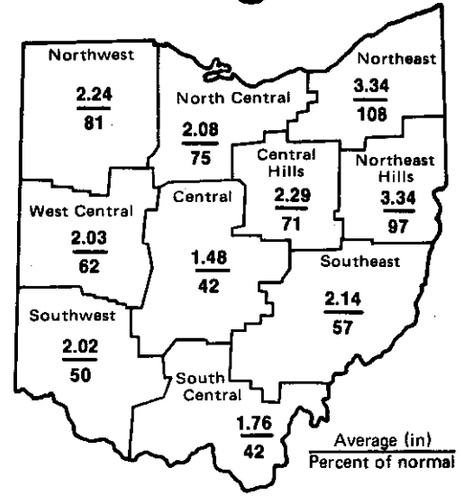
PRECIPITATION for March was below normal throughout most of the state for the third consecutive month; the only exception was in the Northeast region where precipitation was above normal. The average for the state as a whole was 2.27 inches, 1.14 inches below normal. Regional averages ranged from 3.34 inches, 0.26 inch above normal, for the Northeast region and 3.34 inches, 0.09 inch below normal, for the Northeast Hills region to 1.48 inches, 2.05 inches below normal, for the Central region. Precipitation for the Southwest and South Central regions were 2.01 and 2.47 inches below normal respectively. Maple Heights, a suburb of Cleveland, Cuyahoga County, reported the greatest amount of precipitation for the month, 4.54 inches, and Chillicothe-Mound City, Ross County, reported the least amount of the month, 0.84 inch.

Precipitation for the month came in the form of light showers in most areas throughout the state. Some heavier amounts accompanied by snow were observed in the northern portion of the state. The central portion of the state received between 1 and 2 inches of precipitation; the western portion received between 2 and 3 inches and the eastern portion received between 2 and 4.5 inches. Total precipitation for March was almost equal to that received in both January and February together. Although precipitation for the month was adequate in some areas, it was not sufficient to improve the overall water supply situation in most areas of the state.

Cumulative precipitation for the first three months of the 1983 calendar year remains noticeably below normal throughout the state. The average for the state as a whole is 4.60 inches, 3.86 inches below normal. Regional averages range from 6.04 inches, 2.49 inches below normal, for the Northeast Hills region to 3.57 inches, 4.99 inches below normal, for the Central region. Departures from normal range from 5.90 inches below normal, for the South Central region to 2.09 inches below normal, for the Northeast region.

Cumulative precipitation for the first six months of the 1983 water year remains below normal throughout most of the state; the only exceptions are in the Northwest, North Central and Northeast regions where cumulative precipitation is above normal for the water year thus far. The average for the state as a whole is 14.25 inches, 1.71 inches below normal.





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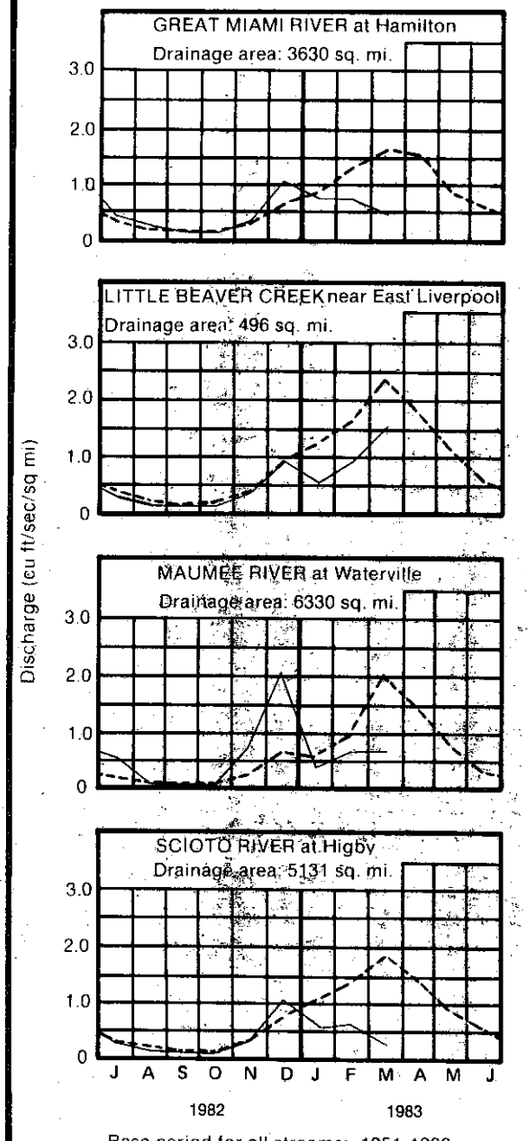
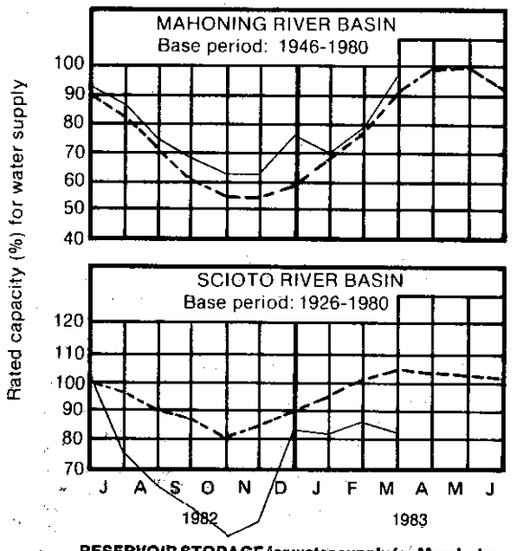
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

RESERVOIR STORAGE FOR WATER SUPPLY

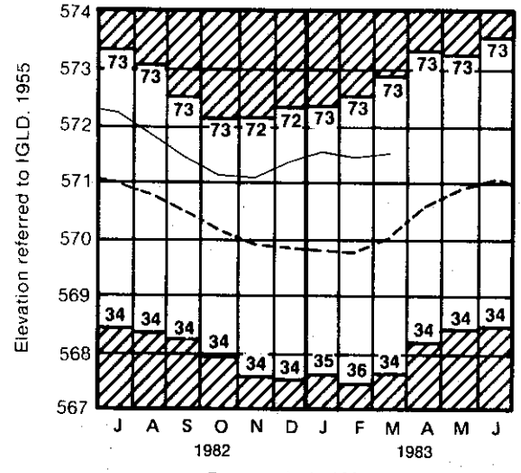


RESERVOIR STORAGE for water supply for March showed normal rises in the Mahoning River basin and decreased slightly in the Scioto River basin. Storage continued to be above normal in the Mahoning basin reservoirs and below normal in the Scioto basin reservoirs. In many areas, reservoir storage for water supply has been affected considerably by the lack of precipitation and runoff during the past three months. In most years, water is pumped from streams to replenish storage in upground reservoirs during the early months; however, little opportunity has been available to do so thus far this year. Reservoir storage at the month end for the Mahoning basin index reservoirs was 98 percent of rated capacity for water supply compared to 79 percent for last month and 97 percent for March 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 83 percent of rated capacity for water supply compared to 86 percent for last month and 92 percent for March 1982.

STREAMFLOW for March showed marked declines in the central and southern portions of the state for the third consecutive month in response to continued deficiencies in precipitation, whereas flows increased slightly in the northern portion of the state in response to slightly greater amounts of precipitation. Flows were generally deficient at the month end for most of the state; the only exception was for the Maumee River at Waterville, where it was noticeably above normal as a result of rainfall on the 27th and 28th.

Mean discharge and percent of normal for March at the index gaging stations were as follows: Great Miami River, 1,780 cfs, 29 percent; Little Beaver Creek, 778 cfs, 65 percent; Maumee River, 4,463 cfs, 35 percent; Scioto River, 1,507 cfs, 16 percent. It is significant to note that the mean discharge for the Scioto River at Higby is the third lowest for March since beginning of record in 1930. Previous low monthly mean discharges for March were 1,375 cfs in 1941 and 1,427 cfs in 1931.

LAKE ERIE LEVELS



Base period: 1900-1980

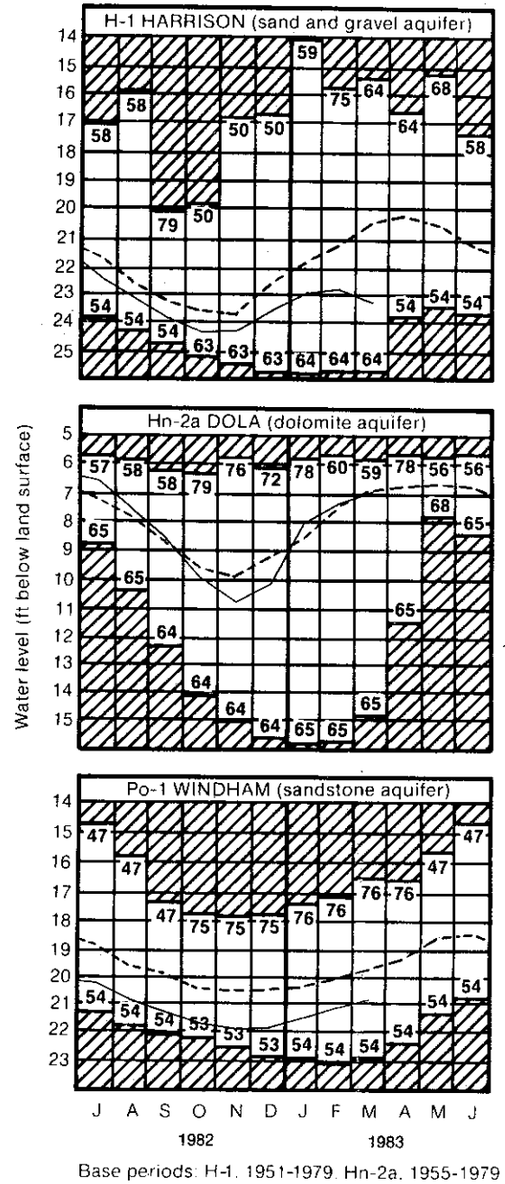
LAKE ERIE mean level for March rose slightly and was 571.56 feet above IGLD (1955), 0.10 foot above last month's mean level and 1.51 feet above normal. The mean level is 0.12 foot below the level observed for March 1982 and 2.96 feet above Low Water Datum.

GROUND-WATER LEVELS for March showed noticeable declines in most areas of the state in response to the below normal precipitation during the past three months. The only exceptions were in the northern portion of the state where moderate rises were observed in both consolidated and unconsolidated aquifers. Ground-water levels throughout the state are below those levels observed for March 1982. Generally, water levels are from 0 to nearly 3 feet below normal throughout the state. The only exception is observation well Fr-10 at OSU Farms, Franklin County, where the water level has been noticeably above normal for several years.

Prospects do not look good for ground-water storage during the coming months, especially in those aquifers which provide for only marginal supplies. Those who depend on ground-water and have experienced problems in the past should monitor their respective situations very closely and plan accordingly.

normal - - - - - current ———

GROUND-WATER LEVELS



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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

from 20.89 inches, 0.92 inch above normal, for the Northeast region to 16.13 inches, 3.02 inches below normal, for the West Central region. Departures from normal range from 1.56 inches above normal for the Northwest region to 3.78 inches below normal for the South Central region.

SUMMARY

Precipitation for April was noticeably above normal throughout the state. Streamflow, reservoir storage and ground-water storage showed marked improvements for the month. Lake Erie mean level rose and remains noticeably above normal.

The water supply situation for April has improved markedly throughout the state in response to recharge from the above normal precipitation. Surface water supplies have shown the greatest improvements while ground-water storage in general remains below normal.

NOTES AND COMMENTS

RESERVOIR STORAGE data are collected from various cooperating agencies by the U.S. Geological Survey, Water Resources Division, and furnished by them for this report. Base data are the total acre-feet of water contained in several storage reservoirs in (1) the Mahoning River basin and (2) the Scioto River basin, on the last day of each month. These data are shown graphically in this report in percent of rated capacity for water supply. The rated capacities at the spillway level as used in this report represent 25 years of record for the Mahoning River basin index reservoirs and 45 years of record for the Scioto River basin index reservoirs.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

APRIL 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for April was above normal throughout the state for the first time in four months. The average for the state as a whole was 4.54 inches, 0.92 inch above normal. Regional averages ranged from 5.96 inches, 2.33 inches above normal, for the Southeast region to 3.67 inches, 0.28 inch above normal, for the North Central region. Dennison, Tuscarawas County reported the greatest amount of precipitation for the month, 7.62 inches, and Painesville, Lake County, reported the least amount, 2.26 inches.

There were substantial amounts of precipitation during every week of the month throughout most of the state. The bulk of the month's precipitation came in the form of widespread showers throughout the state with periods of localized, intense thundershowers. The distribution of precipitation for the month followed the normal storm pattern, that is diagonally across the state in a line from Cincinnati to Youngstown, being heaviest to the south and diminishing toward the northwest. The area south of this line received between 4 to 7 inches while most areas to the north received between 3 to 5 inches of precipitation. Generally, most areas of the state received more precipitation this month than they did during the previous three months. Thus, the water supply situation has improved considerably throughout the state. The rains in April have helped to alleviate the threat of serious water problems which had persisted since the beginning of the year.

Cumulative precipitation for the first four months of the 1983 calendar year remains noticeably below normal throughout the state. The average for the state as a whole is 9.14 inches, 2.94 inches below normal. Regional averages ranged from 11.52 inches, 0.50 inch below normal, for the Northeast Hills region to 7.31 inches, 3.01 inches below normal, for the North Central region. The Central, West Central, Southwest, and South Central regions all remain more than 4 inches below normal for the calendar year thus far.

Cumulative precipitation for the 1983 water year is above normal for the Northwest, North Central, Northeast, Central Hills and Southeast regions and below normal for the West Central, Central, Northeast Hills, Southwest and South Central regions. The average for the state as a whole is 18.79 inches, 0.79 inch below normal. Regional averages range

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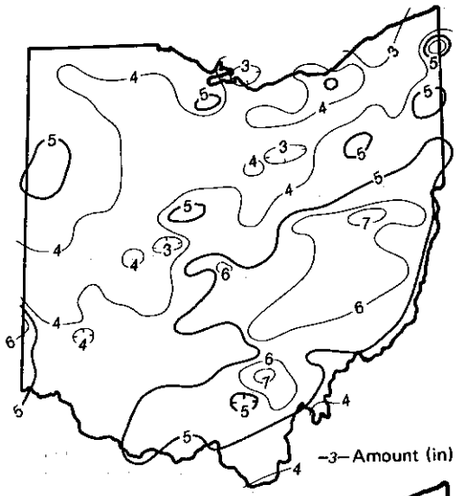
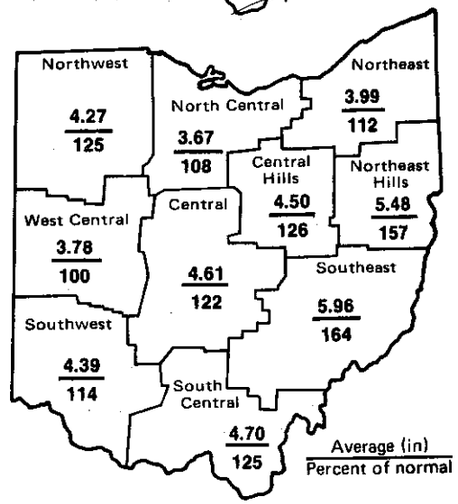
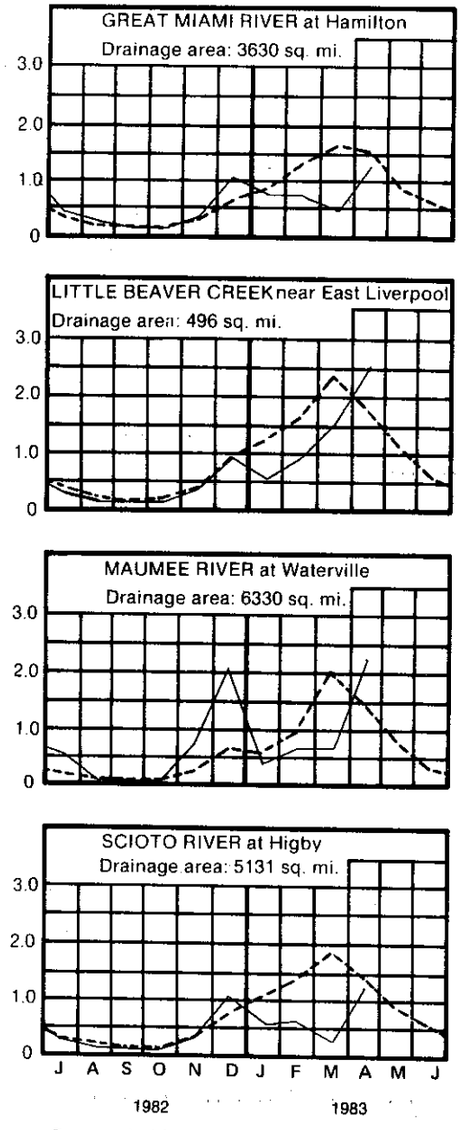


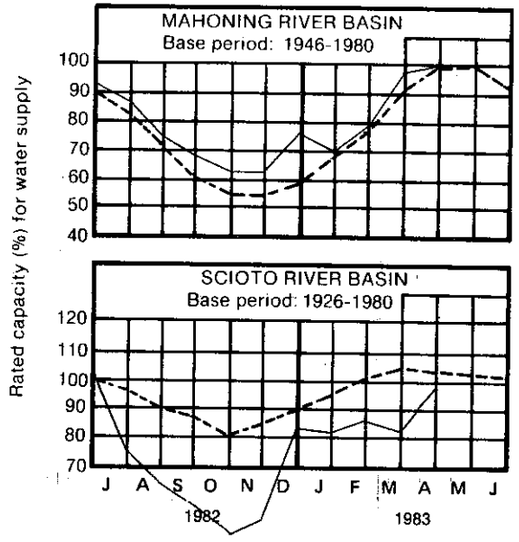


MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

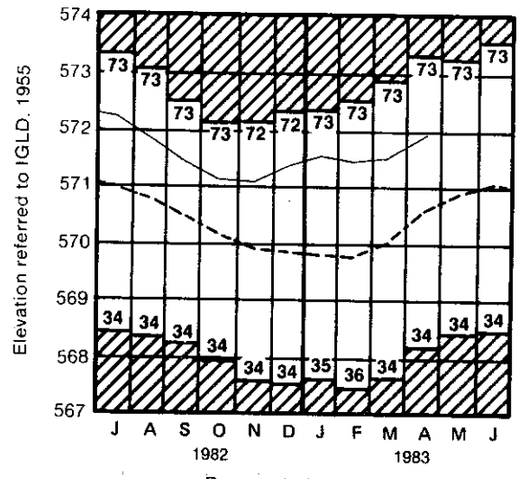
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for April increased slightly in the Mahoning River basin and increased significantly in the Scioto River basin in response to the above normal precipitation for the month. Reservoir storage remains slightly above normal in the Mahoning basin reservoirs and continues to be slightly below normal in the Scioto basin reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 102 percent of rated capacity for water supply compared to 98 percent for last month and 93 percent for April 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 100 percent of rated capacity for water supply compared to 83 percent for last month and 96 percent for April 1982. The above normal precipitation has helped to improve the reservoir storage situation throughout the state.

STREAMFLOW for April showed marked improvement throughout the state in response to the above normal precipitation. Flows increased and were generally above normal throughout the state. Mean discharge and percent of normal for April at the index gaging stations were as follows: Great Miami River, 4,880 cfs, 87 percent; Little Beaver Creek, 1,267 cfs, 138 percent; Maumee River, 14,490 cfs, 154 percent; Scioto River, 6,577 cfs, 88 percent.

LAKE ERIE LEVELS

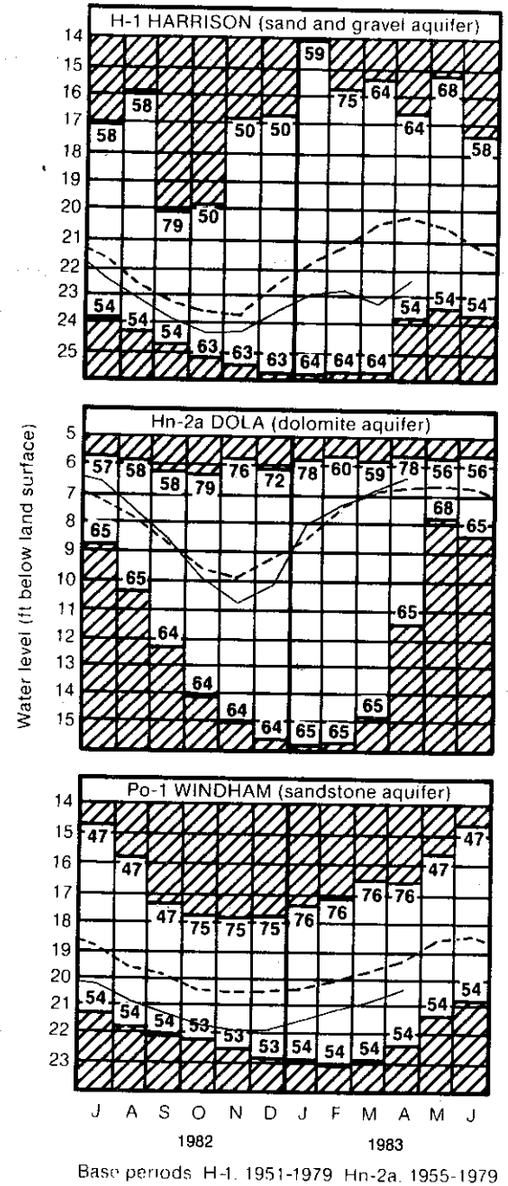


Base period: 1900-1980

LAKE ERIE mean level for April showed a moderate rise and was 571.98 feet above IGLD (1955), 0.42 foot above last month's mean level and 1.37 feet above normal. The mean level is 0.42 foot below the mean level observed for April 1982 and 3.38 feet above Low Water Datum.

GROUND-WATER LEVELS for April showed marked rises in response to the above normal precipitation throughout the state. Rises were greatest in the unconsolidated aquifers adjacent to streams. Water levels in consolidated aquifers will continue to show rises during May in response to delayed recharge from this month's precipitation. Water levels in general were noticeably below those levels observed for April 1982 and continue to be below normal in most areas. The only exceptions are in the central and northwestern portions of the state where water levels are above normal. Thus, the rains in April have helped to improve the ground-water storage situation throughout the state.

GROUND-WATER LEVELS



normal - - - - - current _____

Base periods H-1, 1951-1979 Hn-2a, 1955-1979
Po-1, 1947-1979

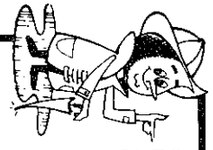
ACKNOWLEDGMENTS

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. Corps of Engineers, Detroit District.



OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

The water supply situation has improved markedly throughout the state in response to the above normal precipitation for both April and May. Precipitation for May was noticeably above normal throughout the state. Streamflow was excessive while reservoir storage and ground-water storage were at or above normal for most areas of the state. Lake Erie level showed a significant rise for the month and remained noticeably above normal.

NOTES AND COMMENTS:

STREAMFLOW data are furnished by the U.S. Geological Survey, Water Resources Division, Columbus, Ohio. These data are for the following four key streamgaging stations: (1) the Great Maimi River at Hamilton, (2) the Little Beaver Creek near East Liverpool, (3) the Maumee River at Waterville, (4) the Scioto River at Higby. Mean discharge and percent of normal at the index gaging stations are reported on a monthly basis in the text of this report. Discharge in cubic feet per second per square mile of drainage area above the index gaging station is presented in graphical form in this report. Since 1907, flow in the Scioto River has become increasingly affected by the construction of reservoirs on the main stem and several of its tributaries. The reservoirs and year completed are: Griggs, 1907; O'Shaughnessy, 1925; Delaware, 1951; Hoover, 1955; Deer Creek, 1968; Paint Creek, 1974 and Alum Creek, 1975. Normals as used in this report are based on the median for the reference period 1951-80. More detailed data on streamflow records throughout the state can be obtained by contacting the U.S. Geological Survey, Water Resources Division, 975 West Third Avenue, Columbus, Ohio 43212 (Phone 614-469-5553).

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

MAY 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

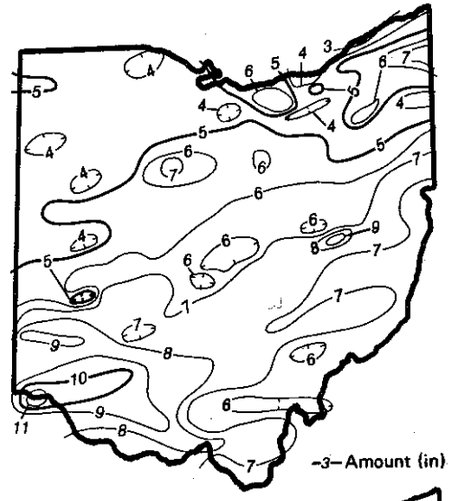
PRECIPITATION

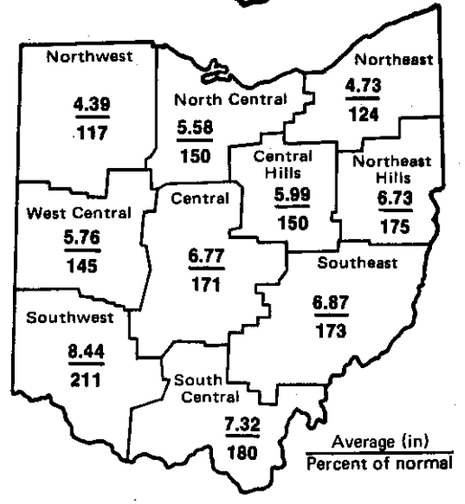
PRECIPITATION for May was noticeably above normal throughout the state for the second consecutive month. The average for the state as a whole was 6.26 inches, 2.35 inches above normal. Regional averages ranged from 8.44 inches, 4.44 inches above normal, for the Southwest region to 4.39 inches, 0.65 inch above normal, for the Northwest region. Fernbank, Hamilton County, reported the greatest amount of precipitation for the month, 11.60 inches, and Painesville Water Treatment plant, Lake County, reported the least amount for the month, 2.91 inches.

Although there were substantial amounts of precipitation during every week of the month, the bulk of the month's precipitation was received during the first three days. Amounts of 1 inch or more were reported by some stations on the 15th and 22nd. The distribution of the month's precipitation followed the normal pattern, being heaviest in the southern and eastern portions of the state and diminishing toward the northwest. More than half of the state received more than 5 inches of precipitation for the month. The rains of April and May have all but eliminated the drought conditions which had persisted during the first three months of the year. The water supply situation has improved markedly and conditions are normal for most of the state. Agriculture, however, has been set back because of wet field conditions, leaving little time for the farmers to complete spring plantings.

Cumulative precipitation for the first five months of the 1983 calendar year remains below normal for most areas of the state in spite of the rains of the past two months. The only exceptions are in the Northeast Hills and Southeast regions where precipitation is above normal for the first time this year. The average for the state as a whole is 15.40 inches, 0.59 inch below normal. Regional averages ranged from 18.25 inches, 2.38 inches above normal, for the Northeast Hills region to 12.40 inches, 1.60 inches below normal, for the Northwest region. Cumulative precipitation for the West Central region remains 2.54 inches below normal for the year.

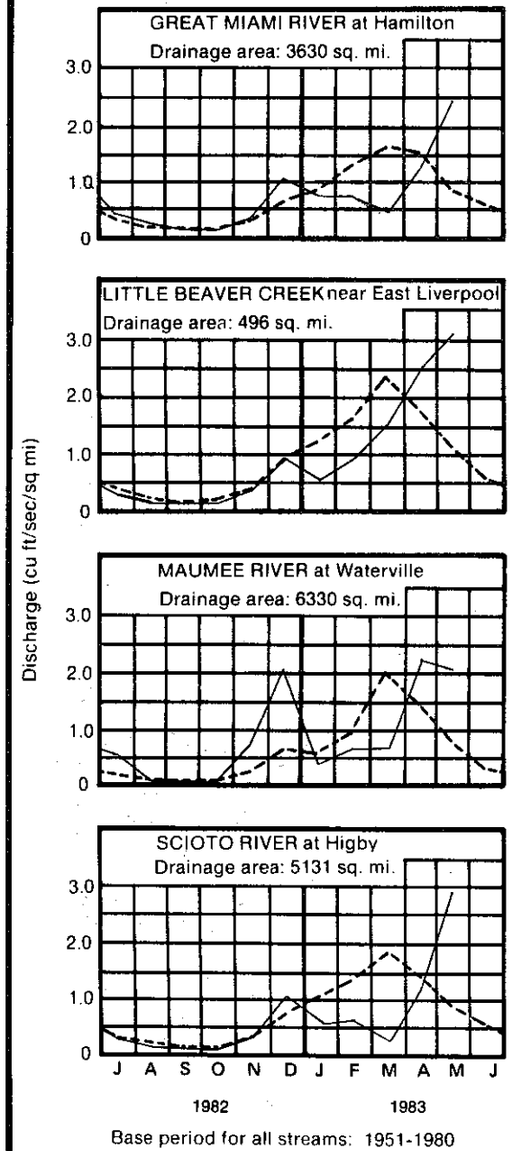
Cumulative precipitation for the first eight months of the 1983 water year is above normal for most of the state, the only exceptions are the West Central and South Central regions where precipitation remains below normal. The average for the state as a whole is 25.05 inches, 1.56 inches above normal. Regional averages ranged from 27.19 inches, 2.95 inches above normal, for the Southeast region to 21.89 inches, 1.23 inches below normal, for the West Central region.





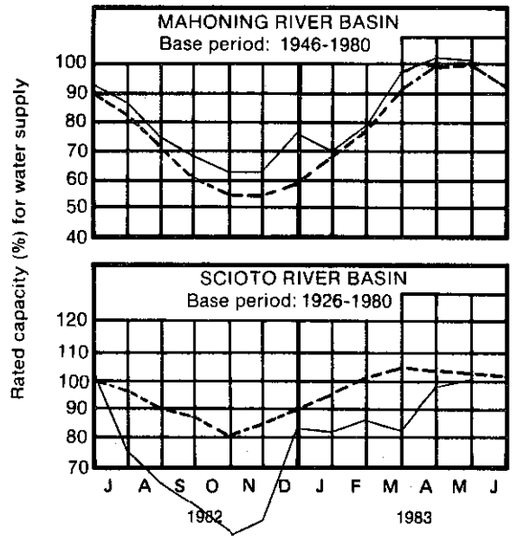
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

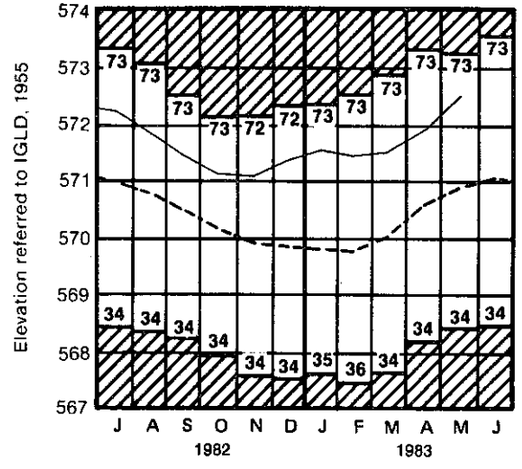
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for May decreased slightly in the Mahoning River basin and remained above normal while storage in the Scioto River basin increased slightly and remained below normal. At the month end reservoir storage for the Mahoning basin index reservoirs was 101 percent of rated capacity for water supply compared to 102 percent for last month and 91 percent for May 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 101 percent of rated capacity for water supply compared to 100 percent for last month and 91 percent for May 1982.

STREAMFLOW for May was excessive throughout the state. However it was generally excessive during the first ten days for most areas of the state and within the normal range of flow during the remainder of the month. Heavy rains on the 30th of April and during the first three days of May caused minor flooding in many areas of the state. Mean discharge and percent of normal for May at the index gaging stations were as follows: Great Miami River, 8,932 cfs, 290 percent; Little Beaver Creek, 1,546 cfs, 266 percent; Maumee River, 13,000 cfs, 257 percent; Scioto River, 14,940 cfs, 317 percent. The mean discharge for the Scioto River was the third highest monthly mean discharge for May for the period of record beginning in 1930. The monthly mean discharge for May for both the Little Beaver Creek and the Maumee River were the fourth highest for the period of record beginning in 1915 and 1898, respectively, and the fifth highest for the Great Miami River with record beginning in 1907.

LAKE ERIE LEVELS



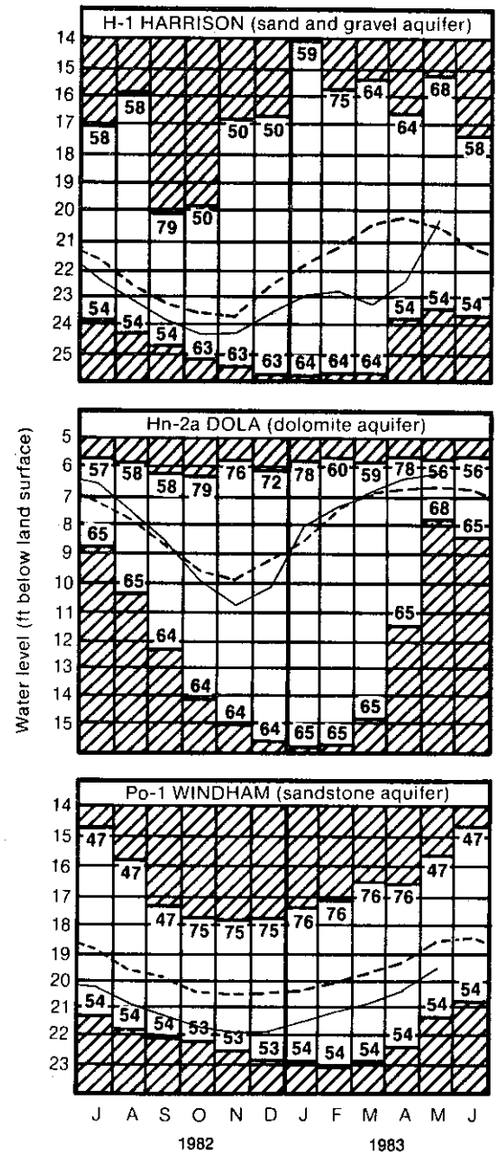
Base period: 1900-1980

LAKE ERIE water level rose significantly in response to the above normal precipitation over the drainage basin. The mean level for May was 572.51 feet above IGLD (1955), 0.53 foot above last month's mean level and 1.59 feet above normal. The lake level is 0.21 foot above the mean level observed for May 1982 and 3.91 feet above Low Water Datum.

GROUND-WATER LEVELS showed significant rises throughout the state for May in response to the above normal precipitation in both April and May. Water levels in consolidated aquifers continued to rise throughout the month while water levels in unconsolidated aquifers adjacent to streams rose markedly during the first week and declined during the remainder of the month. Water levels throughout the state were noticeably above those levels observed last month and for May 1982; the only exception was observation well Fr-10 at OSU farms, Franklin County, which has been noticeably above normal for several years. Generally, water levels throughout the state are above normal; the only exceptions are in consolidated aquifers in the southeastern and northeastern portions of the state. Index observation wells F-1 at West Rushville, Fairfield County, and Po-1 at Windham, Portage County, show water levels about 0.50 to 1.0 feet below normal.

normal - - - - - current ———

GROUND-WATER LEVELS



Base periods: H-1, 1951-1979. Hn-2a, 1955-1979. Po-1, 1947-1979

ACKNOWLEDGMENTS

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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. Corps of Engineers, Detroit District.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

Precipitation for June was below normal for most of the state. Streamflow, reservoir storage and ground-water storage remain near normal. Lake Erie level rose slightly and continues to be noticeably above normal. The water supply situation for June remains favorable throughout the state.

NOTES AND COMMENTS

LAKE ERIE LEVEL data are furnished by the U.S. Corps of Engineers, Detroit District, Detroit, Michigan. Data shown graphically in this report are mean monthly lake levels referenced to the International Great Lakes Datum (1955). Elevations are in feet above mean water level in the Gulf of St. Lawrence at Father Point, Quebec. Maximums, minimums, and normals as used in this report are for the period of record from 1900 to 1980. Lake survey chart depth and federal navigation improvement depths for Lake Erie are referred to the Lake Erie Low Water Datum plane, which is 568.60 feet above IGLD (1955).

NEW PUBLICATIONS

The Division of Water announces the availability of the following new publications.

THE GROUND-WATER RESOURCES OF AUGLAIZE COUNTY by Richard J. Kostelnick.

THE GROUND-WATER RESOURCES OF HARDIN COUNTY by James J. Schmidt.

THE GROUND-WATER RESOURCES OF HENRY COUNTY by James J. Schmidt.

THE GROUND-WATER RESOURCES OF WYANDOT COUNTY by James J. Schmidt.

These maps are four of a series of county ground-water resources maps being completed for each of Ohio's counties. The maps are designed as a guide to locating new ground-water supplies or as an aid for expanding supplies already established. They will be useful to homeowners, developers, and planners.

In addition, ground-water resources maps are available for the following 37 counties.

ALLEN	GEAUGA	PICKAWAY
ASHLAND	HANCOCK	PORTAGE
ASHTABULA	HARRISON	RICHLAND
AUGLAIZE	HOLMES	ROSS
CHAMPAIGN	KNOX	SANDUSKY
CLARK	LAKE	STARK
COLUMBIANA	LICKING	SUMMIT
CRAWFORD	LORAIN	TRUMBULL
CUYAHOGA	MAHONING	UNION
DEFIANCE	MARION	VAN WERT
DELAWARE	MEDINA	WAYNE
FAIRFIELD	MERCER	
FRANKLIN	MORROW	

The maps are available for $2.50 each plus $0.14 cents tax and $0.25 cents mailing charge from the Publications Center, Ohio Department of Natural Resources, Fountain Square, Columbus, Ohio 43224. Checks or money orders should be made payable to the ODNR Publications Center.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste, Governor — *Lt. Gov. Myrl H. Shoemaker, Director*

JUNE 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

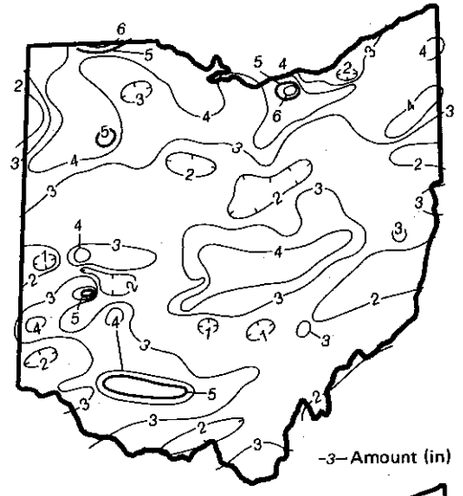
PRECIPITATION

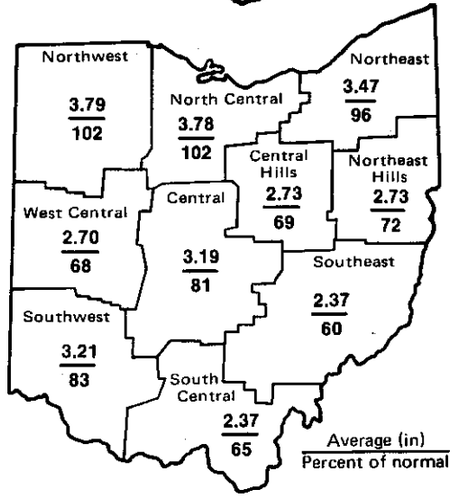
PRECIPITATION for June was below normal for most of the state; the only exceptions were in the Northwest and North Central regions where precipitation was above normal. The average for the state as a whole was 3.03 inches, 0.79 inch below normal. Regional averages ranged from 3.79 inches, 0.06 inch above normal, for the Northwest region to 2.37 inches for both the South Central and Southeast regions, 1.27 and 1.61 inches below normal respectively. Elyria, Lorain County, reported the greatest amount of precipitation for the month, 6.30 inches and Greenville, Darke County, reported the least amount, 0.56 inch.

There were nominal amounts of precipitation during every week of the month in most areas of the state. Heavy thunderstorms were observed across the central portion of the state on the 18th and 19th which produced in excess of 4 inches of precipitation at several locations in the area. Another heavy storm was observed in the northwestern portion of the state on the night of the 27th. Minor flooding was observed in both areas during these storm periods. The below normal precipitation had little effect on the water supply situation which remains favorable.

Cumulative precipitation for the first six months of the 1983 calendar year remains below normal for most of the state; the only exception is in the Northeast Hills region where precipitation is above normal. The average for the state as a whole is 18.43 inches, 1.38 inches below normal. Regional averages range from 20.98 inches, 1.32 inches above normal, for the Northeast Hills region to 16.04 inches, 3.81 inches below normal, for the West Central region.

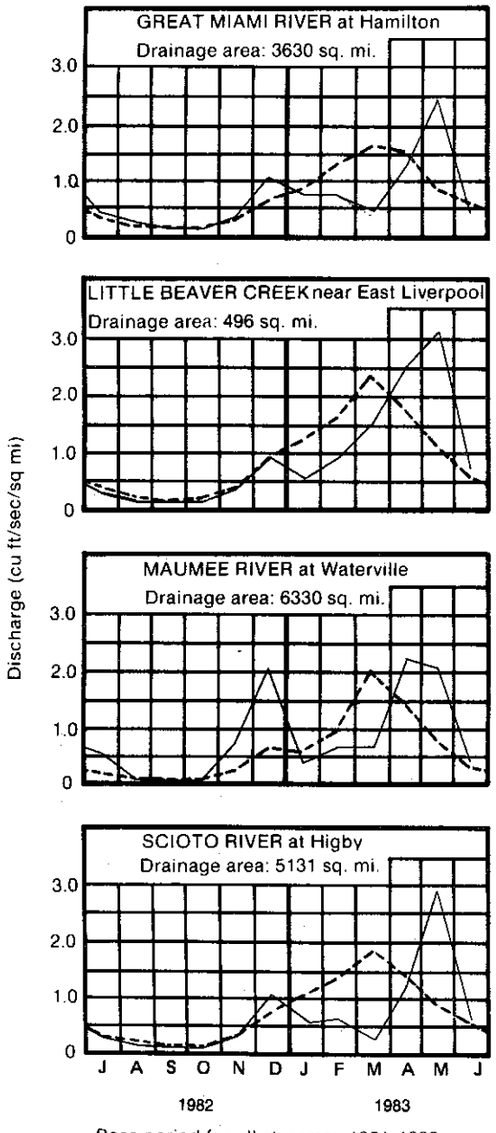
Cumulative precipitation for the first nine months of the 1983 water year remains above normal for most regions of the state; exceptions are in the West Central, and South Central regions where precipitation has been below normal for most of the water year. The average for the state as a whole is 28.08 inches, 0.77 inch above normal. Regional averages range from 30.37 inches, 0.63 inch above normal, for the Southwest region to 24.59 inches, 2.50 inches below normal, for the West Central region.





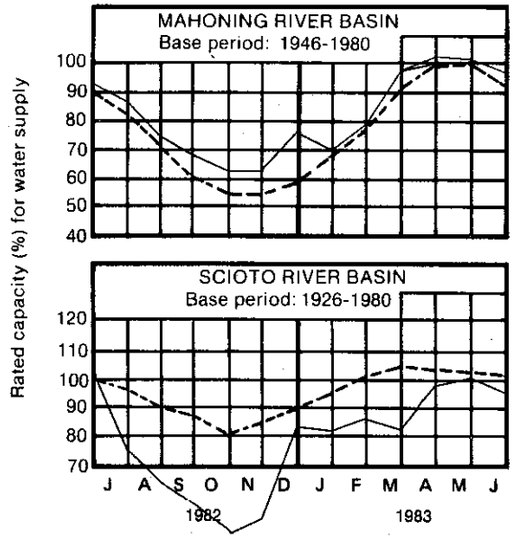
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

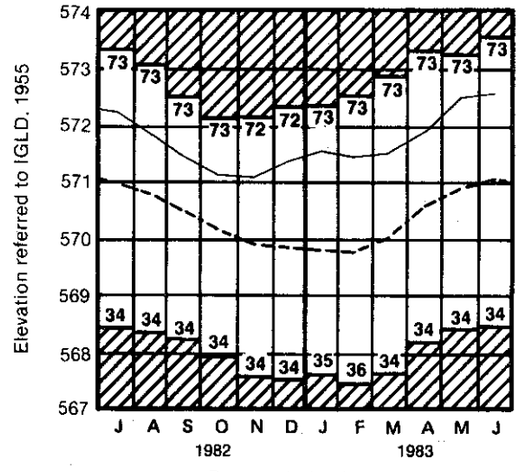
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for June declined in both the Mahoning River basin and the Scioto River basin. Storage at the month end remained slightly above normal for the Mahoning basin reservoirs and slightly below normal for the Scioto basin reservoirs. During the month, many reservoirs were used to temporarily hold back flood waters, thus averting serious flooding. Reservoir storage at the month end for the Mahoning basin index reservoirs was 97 percent of rated capacity of water supply compared to 101 percent for last month and 92 percent for June 1982. Storage at the month end for the Scioto basin index reservoirs was 96 percent of rated capacity for water supply compared to 101 percent for last month and 87 percent for June 1982.

STREAMFLOW for June was near normal throughout the state following excessive flows for May. Heavy rains caused minor flooding on the 18th and 19th in the central portion of the state and on the 26th and 27th in the northwestern portion. Mean discharge and percent of normal for June at the index gaging stations were as follows: Great Miami River, 1,731 cfs, 79 percent; Little Beaver Creek, 365 cfs, 123 percent; Maumee River, 2,937 cfs, 133 percent; Scioto River, 3,550 cfs, 118 percent.

LAKE ERIE LEVELS

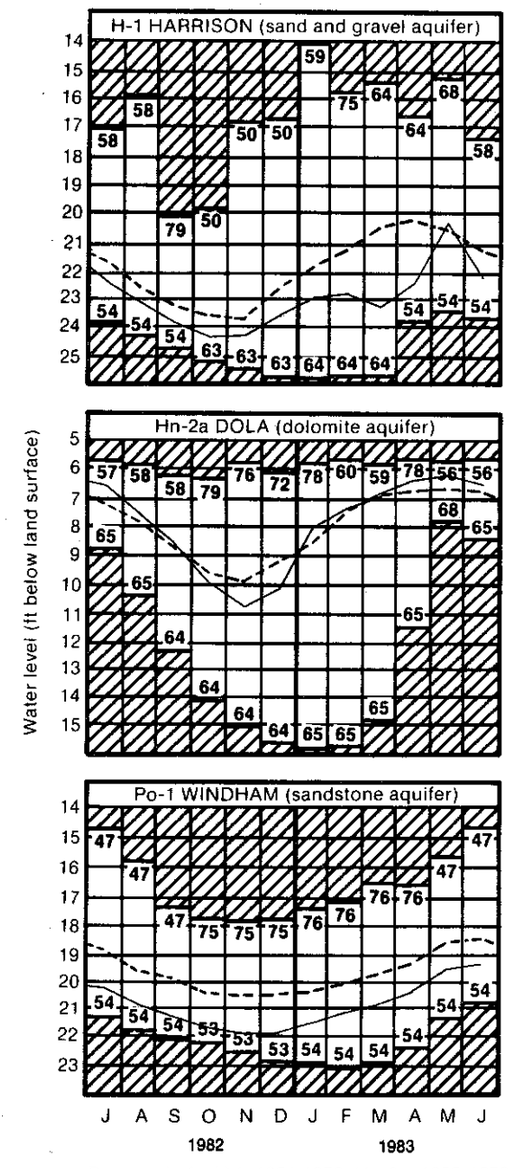


Base period: 1900-1980

LAKE ERIE mean level for June was 572.55 feet above IGLD (1955), 0.04 foot above last month's mean level and 1.50 feet above normal. The lake level is 0.20 foot above the mean level observed for June 1982 and 3.95 feet above Low Water Datum.

GROUND-WATER LEVELS for June showed greater than normal declines for most areas of the state. The only exception was in observation well Po-1 at Windham, Portage County, representing a sandstone aquifer, where the water level rose in response to delayed recharge from the heavy rains in May. Ground-water levels are generally above those levels observed last year in consolidated aquifers and below last year's levels in unconsolidated aquifers. Water levels are generally from slightly above normal to about 1 foot below normal in most areas of the state. The ground-water storage situation remains favorable throughout the state.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1979. Hn-2a, 1955-1979. Po-1, 1947-1979

normal - - - - - current ———

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Streamflow and reservoir storage data:
U.S. Geological Survey, Water Resources Division.

Lake Erie level data:
U.S. Corps of Engineers, Detroit District.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

west, and South Central regions. The average for the state as a whole is 31.79 inches, 0.50 inch above normal. Regional averages ranged from 34.31 inches, 1.71 inches above normal, for the Southeast region to 27.71 inches, 3.19 inches below normal, for the West Central region.

SUMMARY

Precipitation for the state as a whole was below normal for the second consecutive month. Streamflow, reservoir storage, and ground-water storage continue to be about normal. Lake Erie rose slightly and is only 0.77 foot below the all time record high for July. The water supply situation continues to be favorable throughout the state despite the below normal precipitation and unusually high temperatures.

NOTES AND COMMENTS

GROUND-WATER LEVEL data are derived from 7 index wells selected from approximately 110 ground-water level observation wells operated by the Ohio Department of Natural Resources, Division of Water. These key observation wells represent all types of aquifers common to Ohio. Water levels in these key wells change mainly in response to natural hydrologic factors affecting ground-water storage. These levels, therefore, reflect the relative natural storage of ground water and current replenishment or depletion. In this respect, these levels are considered to be typical of ground-water conditions in the state. Space does not allow presentation of the data for all 7 wells; data for key wells representing the three principal types of water-bearing formations are presented graphically in this report. However, the discussion of ground-water levels in this report is based on generalizations from the records for all 7 index wells. Basic data are the monthly averages of the lowest daily observed water levels in each observation well. Normals are averages for the respective base periods of record.

KEY GROUND-WATER OBSERVATION WELLS

Index well	Location (county)	Depth (ft)	Aquifer	Base period*
F-1	Fairfield	74	Sandstone	1947-79
Fa-1	Fayette	78	Limestone	1947-79
Fr-10	Franklin	75	Gravel	1947-79
H-1	Hamilton	124	Gravel	1951-79
Hn-2a	Hardin	51	Dolomite	1955-79
Po-1	Portage	55	Sandstone	1944-79
Tu-1	Tuscarawas	23	Gravel	1947-79

*Water years, both dates are inclusive.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

JULY 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for July was below normal throughout most of the state; exceptions were in the North Central, Central Hills, Northeast Hills, and Southeast regions where precipitation was slightly above normal. The average for the state as a whole was 3.71 inches, 0.27 inch below normal. Regional averages ranged from 4.75 inches, 0.37 inch above normal, for the Southeast region to 3.05 inches, 0.96 inch below normal, for the Southwest region. Despite the below normal precipitation which predominated throughout the state, many stations reported amounts which are noticeably above normal. Laurelville, Hocking County, reported the greatest amount of precipitation for the month, 11.54 inches, of which 5.63 inches fell on the night of the 17th and 18th. Hamilton, Butler County, reported the least amount for the month, 1.33 inches.

Most of the month's precipitation came in the form of heavy thunderstorms. The bulk of the month's precipitation came during the 1st, 3rd, and 4th weeks of the month. Heavy thunderstorms produced a sizeable portion of the month's precipitation on the night of June 30th and July 1st and again on the 17th and 18th. There was no measurable amount of precipitation reported from the 10th through the 16th.

The water supply benefits from the month's precipitation were decreased considerably by temperatures reaching into the 90's during every week of the month; 100 degree temperatures were reported along the Ohio River valley during the week of the 18th-24th. Evaporation, evapo-transpiration, and water use increase greatly under such conditions. Generally, water supplies decreased, but they remained favorable at the month end.

Cumulative precipitation for the first seven months of the 1983 calendar year remains below normal for most of the state; the only exceptions are in the Northeast Hills and the Southeast regions where it is above normal. The average for the state as a whole is 22.14 inches, 1.65 inches below normal. Regional averages ranged from 25.24 inches, 1.43 inches above normal, for the Northeast Hills region to 19.16 inches, 4.50 inches below normal, for the West Central region.

Cumulative precipitation for the first 10 months of the 1983 water year is above normal in the Northwest, North Central, Northeast, Central Hills, Northeast Hills and Southeast regions and below normal in the West Central, Central, South-

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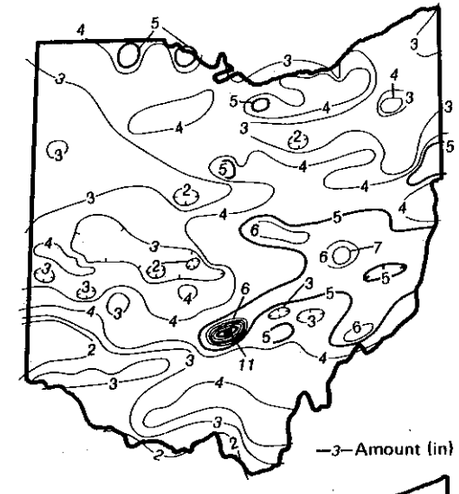
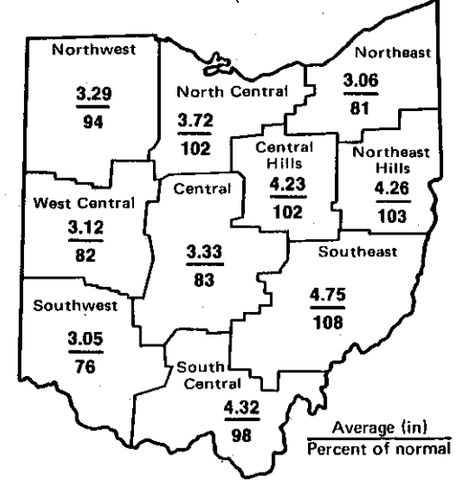
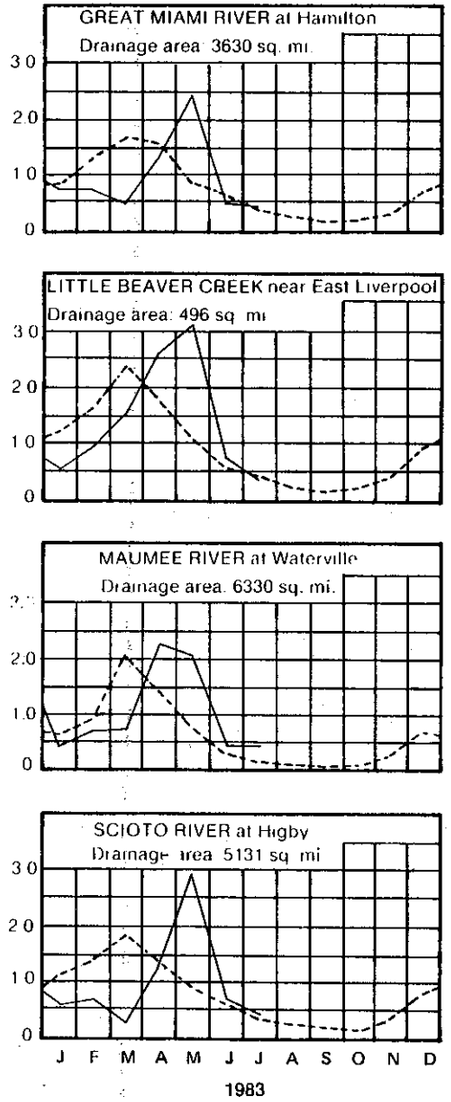




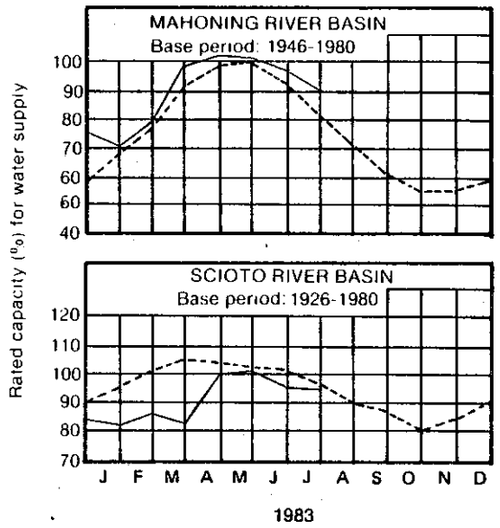
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams 1951-1980

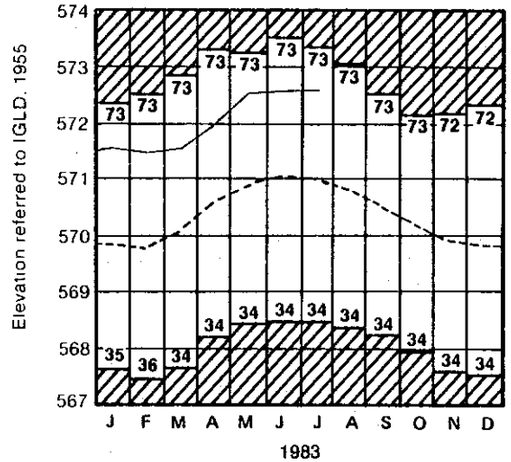
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for July declined in both the Mahoning River and the Scioto River basins. Storage at the month end continued to be above normal in the Mahoning basin reservoirs and was slightly below normal in the Scioto basin reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 90 percent of rated capacity for water supply compared to 97 percent for last month and 87 percent for July 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 95 percent of rated capacity for water supply compared to 96 percent for last month and 76 percent for July 1982.

STREAMFLOW for July was within the normal range of flow throughout the state. Streamflows throughout the state have maintained normal flows despite the below normal precipitation during the past two months. Mean discharge and percent of normal for July at the index gaging stations were as follows: Great Miami River, 1,526 cfs, 113 percent; Little Beaver Creek, 175 cfs, 83 percent; Maumee River, 2,895 cfs, 215 percent; Scioto River, 2,083 cfs, 123 percent. Cumulative runoff and departure from normal at the index gaging stations for the first 10 months of the 1983 water year is as follows: Great Miami River, 9.26 inches, 2.32 inches below normal; Little Beaver Creek, 12.74 inches, 1.33 inches below normal; Maumee River, 11.30 inches, 0.99 inch above normal; Scioto River, 9.65 inches, 2.01 inches below normal.

LAKE ERIE LEVELS

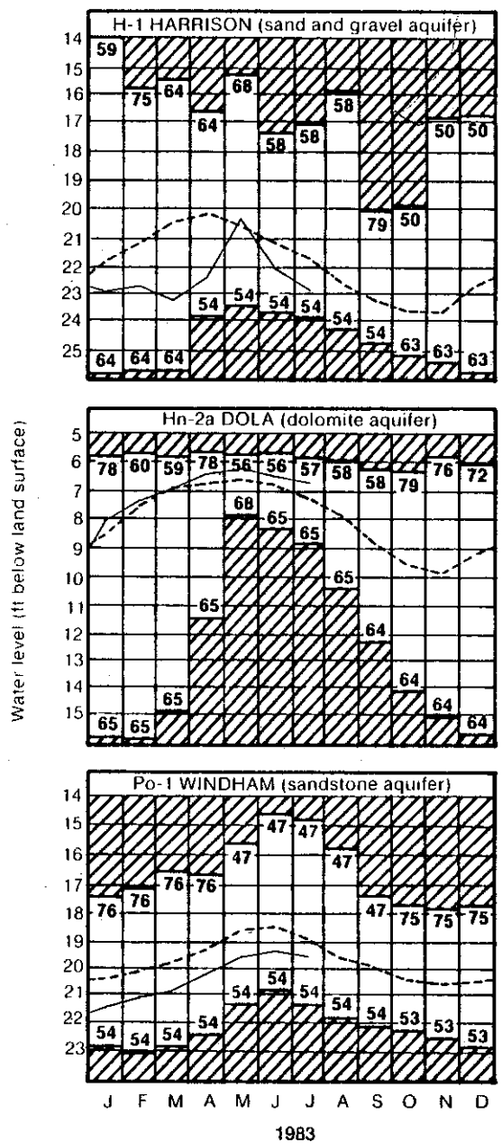


Base period 1900-1980

LAKE ERIE mean level for July rose slightly and was the highest since August 1976 and only 0.77 foot below the all time high for July set in 1973. The mean level for July was 572.57 feet above IGLD (1955), 0.02 foot above last month's mean level and 1.57 feet above normal. The mean level is 0.36 foot above the mean level observed for July 1982 and 3.97 feet above Low Water Datum.

GROUND-WATER LEVELS for July declined throughout the state. Generally, net declines were greater than usually observed for July. In some areas, water levels are above those levels observed for July last year and above normal and in others they are below those levels observed last year and below normal. The ground-water storage situation continues to be favorable throughout the state despite the below normal precipitation during the past two months.

GROUND-WATER LEVELS



Base periods: H-1, 1951-1979, Hn-2a, 1955-1979
Po-1, 1947-1979

normal - - - - - current ———

ACKNOWLEDGMENTS

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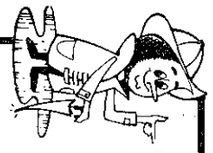
Precipitation data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service; The Miami Conservancy District; U.S. Army Corps of Engineers, Muskingum Area.

Streamflow and reservoir storage data:
U.S. Geological Survey, Water Resources Division.

Lake Erie level data:
U.S. Corps of Engineers, Detroit District.



OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

average for the state as a whole is 34.06 inches, 0.23 inch below normal. Regional averages range from 36.17 inches, 0.46 inch above normal, for the Southeast region to 28.67 inches, 5.13 inches below normal, for the West Central region.

SUMMARY

Precipitation for August was below normal for the state as a whole for the third consecutive month. Reservoir storage, streamflows and ground-water storage continue to be favorable despite the deficient precipitation. Lake Erie level declined slightly and was only 0.50 foot below the all-time high set for August in 1973.

NOTES AND COMMENTS

DROUGHT, a word agriculturists would rather not hear, has become a common event during the past two months. It is reported that for the farmers this is the worst drought we have seen in 47 years. Indeed, in so far as agriculture is concerned it has been both HOT and DRY. Along with the persistant lack of precipitation in most areas of the state, this has been the hottest summer since the drought of 1963-64. The Columbus Airport Weather Service Office reported 14 days in July and 12 days in August in which temperatures were 90° F or above; they reported a record 101° F on August 20th, the first time it has been above 100° in 28 years. The dry weather and extreme heat has had a definite effect on the polination of both corn and soybeans, thus production for both these crops has been drastically reduced.

There are generally three types of droughts: climatological, agricultural, and hydrological. We know that an agricultural drought results from the lack of rainfall during the growing season. A climatological drought is simply a mathematical deficiency in total expected rainfall over an extended period. A hydrological or water supply drought is caused by a lack of precipitation during the nominal water supply recharge period which generally begins in October and continues through April or May. Although the present drought conditions have made a mark on our water supplies, they have in no way caused any significant problems thus far. However, if the present droughty conditions should persist they will certainly have an effect on our water supplies in the future.

NOTE: We wish to apologize for the late delivery of the July report. Reorganization and changes in printing schedules caused much delay in August. We hope that we will be back on schedule this month.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste, Governor — *Lt. Gov. Myrl H. Shoemaker, Director*

AUGUST 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for August was below normal for most of the state; the only exception was in the North Central region where it was just normal. The average for the state as a whole was 2.27 inches, 0.73 inch below normal. This is the third consecutive month for which precipitation for the state has been below normal. Regional averages ranged from 3.06 inches, 0.06 inch below normal, for the Northeast region to 0.96 inch, 1.94 inches below normal, for the West Central region. Precipitation for the North Central region was 2.95 inches, 0.01 inch above normal. Wauseon, Fulton County, reported the greatest amount of precipitation for the month, 5.42 inches; other stations reporting more than 5 inches were: Ashtabula, Ashtabula County, 5.08 inches, and Lagrange, Lorain County, 5.35 inches. Rockford, Mercer County, reported the least amount of precipitation for the month, 0.19 inch.

Generally, there were nominal amounts of precipitation during every week of the month. About three-fourths of the state received between 0.19 inch and 3 inches of precipitation; the main exception was in the northeast section where between 3 and 5 inches was received. The below normal precipitation combined with the extreme hot temperatures produced significant drought conditions throughout the state. These drought conditions were extremely critical in the West Central, Central, and Southwest regions. Although the drought conditions have had devastating effects on agriculture, they have not created any serious water supply problems thus far. However, it is advisable for those in charge of water supplies to monitor their situations closely, particularly if the drought conditions continue to persist through the fall months.

Cumulative precipitation for the 1983 calendar year is below normal throughout most of the state; the only exception is the Northeast Hills region where it continues to be above normal. The average for the state as a whole is 24.41 inches, 2.38 inches below normal. Regional averages range from 28.05 inches, 1.35 inches above normal, for the Northeast Hills region to 20.12 inches, 6.44 inches below normal, for the West Central region.

Cumulative precipitation for the 1983 water year is above normal in the northern and eastern portions of the state and below normal in the central and western portions. The

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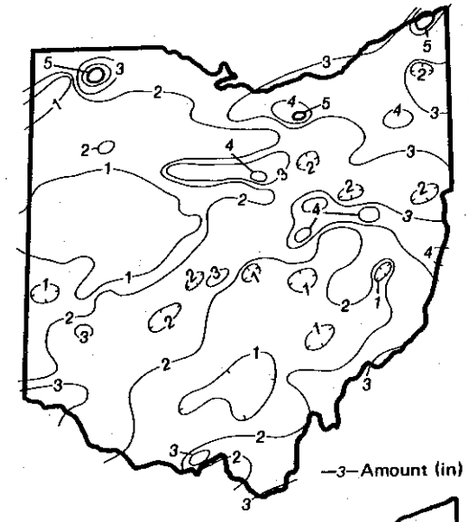
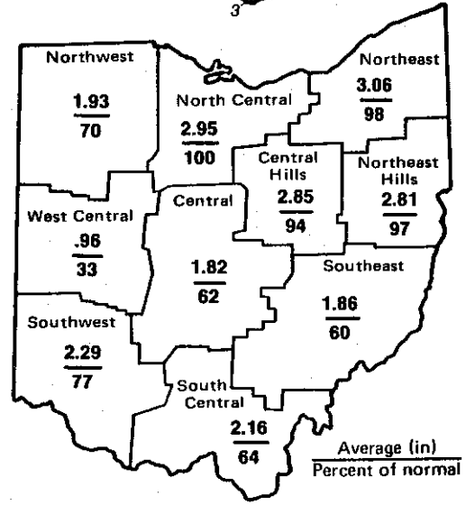
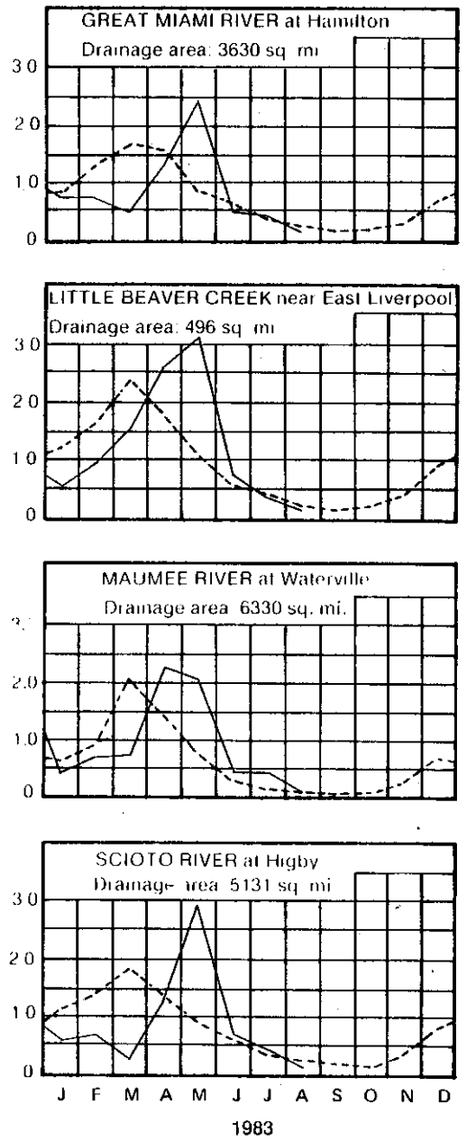




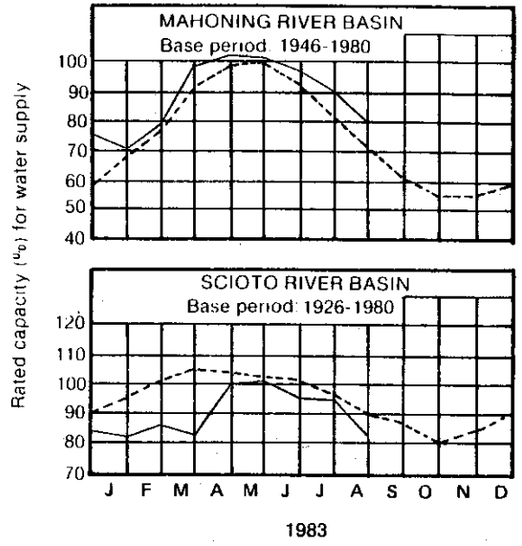
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams 1951-1980

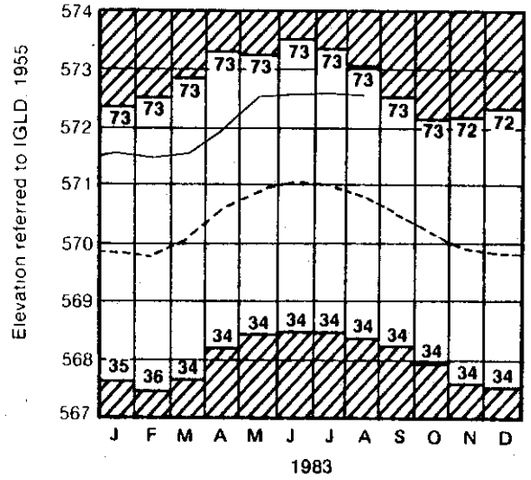
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for August declined throughout the state. Storage in both the Mahoning River and the Scioto River basins was noticeably below the storages observed last month but still above the storages observed for August 1982. Reservoir storage at the month end for the Mahoning basin index reservoirs was 80 percent of rated capacity for water supply compared to 90 percent for last month and 75 percent for August 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 83 percent of rated capacity for water supply compared to 95 percent for last month and 65 percent for August 1982.

STREAMFLOW for August remained within the normal range of flow observed for the period of record despite the continued precipitation deficiencies during the past three months. These flows most likely are being sustained by contributions from normal ground-water effluent flow to the streams. Mean discharge and percent of normal for August at the index gaging stations were as follows: Great Miami River, 705 cfs, 92 percent: Little Beaver Creek, 89.6 cfs, 81 percent; Maumee River, 683 cfs, 111 percent; Scioto River, 909 cfs, 74 percent.

LAKE ERIE LEVELS



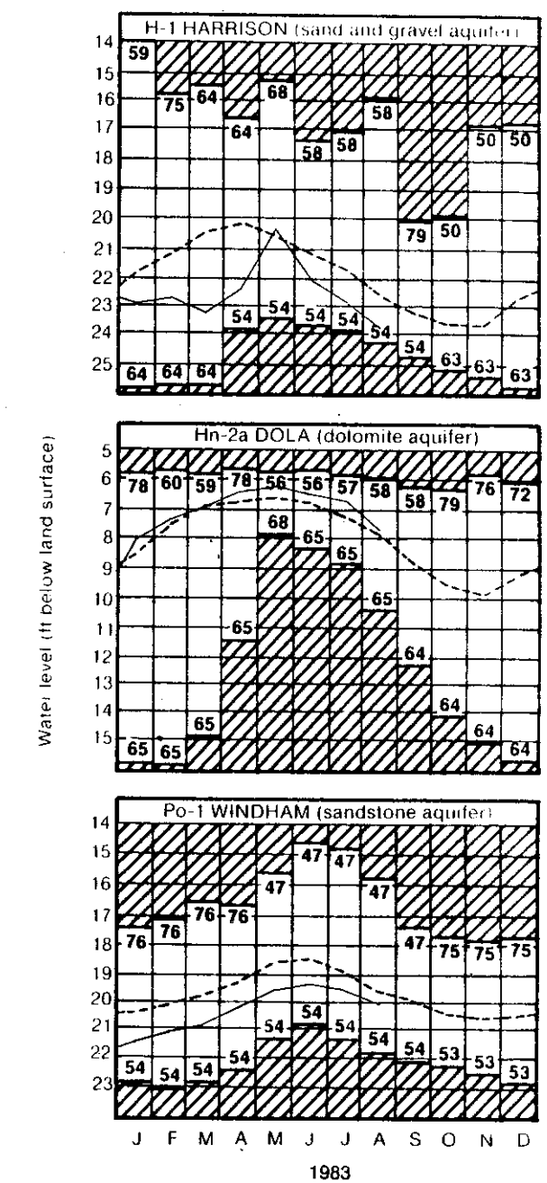
Base period 1900-1980

LAKE ERIE mean level for August declined slightly and was only 0.50 foot below the all-time high set for August in 1973. The mean level for August was 572.53 feet above IGLD (1955), 0.04 foot below last month's mean level and 1.72 feet above normal. The mean level is 0.68 foot above the level observed for August 1982 and 3.93 feet above Low Water Datum.

GROUND-WATER LEVELS for August declined steadily throughout the month in all areas of the state in response to the deficient precipitation. Net declines for the month in the index wells were greater than usually observed for August and in some areas the declines were significantly greater. Ground-water levels in general are below normal throughout the state; the only exceptions are in index well Fr-10 at the OSU Farms, Franklin County, where the water level has been noticeably above normal for several years and in index well Hn-2a, at Dola, Hardin County, in the northwestern portion of the state where precipitation has been above normal for the water year. Water levels in four of the seven index observation wells are above those levels observed for August 1982.

Ground-water storage has not been adversely affected by the persisting drought conditions thus far. However, if the drought conditions should continue through the fall months, they would certainly have an effect on ground-water supplies. There have been no reports thus far of water shortages in so far as ground-water supplies are concerned.

GROUND-WATER LEVELS



Base periods H-1 1951-1979, Hn-2a, 1955-1979
Po-1, 1947-1979

normal - - - - - current

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

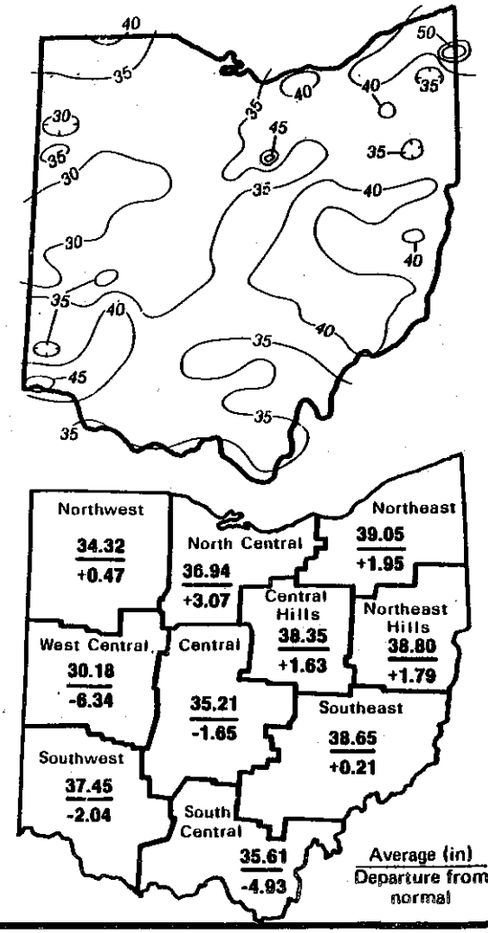
situation throughout the state. Those in charge of water supplies should monitor their respective situation closely and plan accordingly.

SUMMARY

The water supply situation in general remained favorable throughout the 1983 water year despite the lack of recharge during the recharge period and the drought conditions which persisted during the last four months. Precipitation for September was generally below normal; exceptions were in the northeast where it was normal. Reservoir storage, streamflow, and groundwater storage declined and was generally below normal. Lake Erie level declined sharply but remained markedly high.

PRECIPITATION

1983
WATER YEAR



ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

SEPTEMBER 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

PRECIPITATION

PRECIPITATION for September was generally below normal throughout the state; exceptions were in the North Central, Northeast, Central Hills, and Northeast Hills regions where precipitation was above normal. The average for the state as a whole was 2.41 inches, 0.34 inch below normal. This is the fourth consecutive month for which precipitation for the state as a whole was below normal. Regional averages ranged from 3.84 inches, 1.02 inches above normal, for the Northeast region to 1.19 inches, 1.80 inches below normal, for the South Central region. Chardon, Geauga County, reported the greatest amount of precipitation for the month, 5.85 inches, and Gallipolis, Gallia County, reported the least amount, 0.51 inch.

Generally, the bulk of the month's precipitation fell in the first three weeks of the month. About half of the state south and west of a line running from Napoleon through Columbus to Marietta received between 0.51 and 2.0 inches of precipitation and the northeast half received between 2 and 5.85 inches. The effects of the drought conditions which continue to persist throughout a large portion of the state are beginning to make their mark on the water supply situation. Several communities and private water users have had to deal with water shortage problems during the month. If the present drought conditions continue through the fall months they will definitely have an effect on water supplies throughout the state.

Cumulative precipitation for the first nine months of the 1983 calendar year is below normal throughout the state; the only exception is the Northeast Hills region where precipitation for the calendar year is above normal. The average for the state as whole is 26.82 inches, 2.72 inches below normal. Regional averages range from 30.73 inches, 1.37 inches above normal, for the Northeast Hills region to 21.63 inches, 7.65 inches below normal, for the West Central region.

Precipitation for the 1983 water year which began October 1, 1982 and ended September 30, 1983, averaged 36.47 inches, 0.57 inch below normal. Precipitation for the water year was above normal in the northern and eastern portions of the state and below normal for the western and southern portions. Regional averages ranged from 39.05 inches, 1.95 inches above normal, for the Northeast region to 30.18 inches, 6.34 inches below normal, for the West Central region. Andover, Ashtabula County, reported the greatest amount of precipitation for the water year, 52.32 inches, and St. Marys, Auglaize County, reported the least amount, 26.16 inches. An isohyetal map of regional averages and departures from normal for the 1983 water year appear on the last page of this report.

The water supply situation for the 1983 water year was generally favorable throughout the year despite the fact that precipitation was below normal for 8 of the 12 months. Precipitation during the nominal water supply recharge period, October-March, was below normal and water supplies were beginning to show the effects of the lack of recharge. However, the nominal recharge period was extended through April and May due to excessive precipitation in these months and water supplies recovered and remained favorable throughout the remainder of the water year despite the droughty conditions which developed during the nominal ground-water depletion period. The drought conditions which developed throughout the summer were still prevalent at the end of September and began to have a definite effect on the water supply

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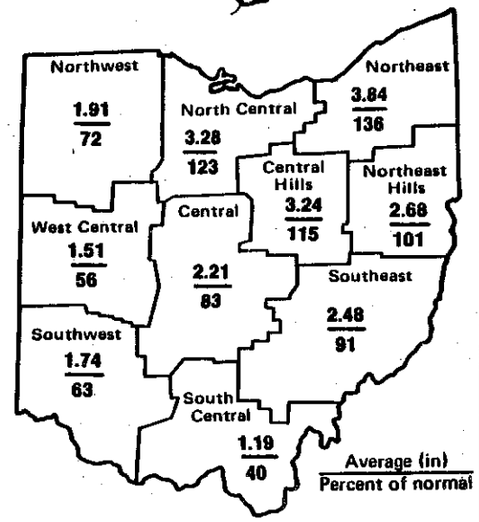
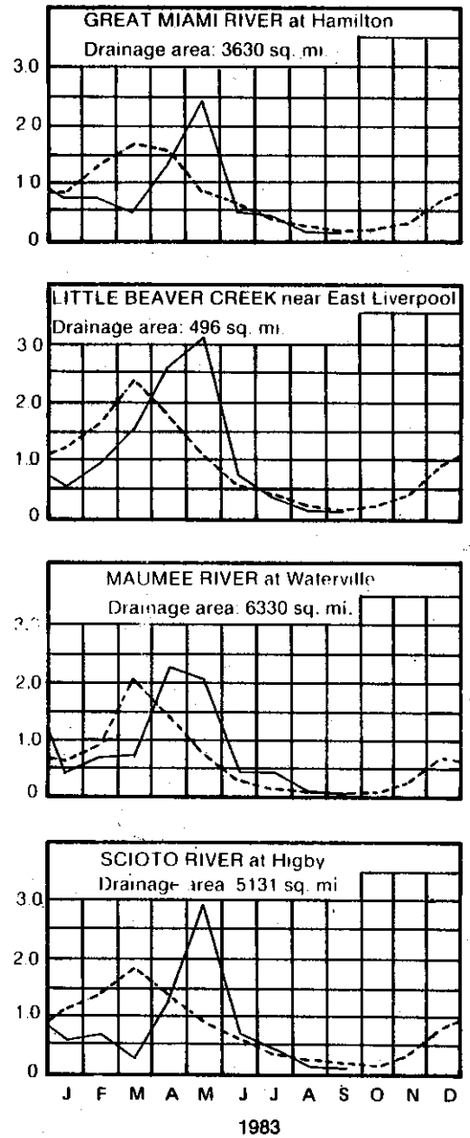


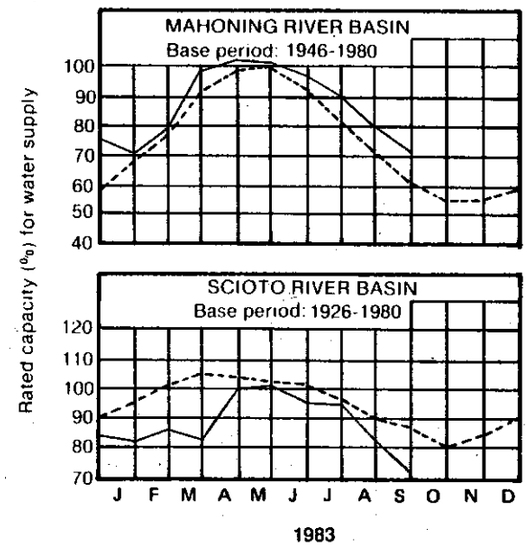
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams: 1951-1980

RESERVOIR STORAGE FOR WATER SUPPLY

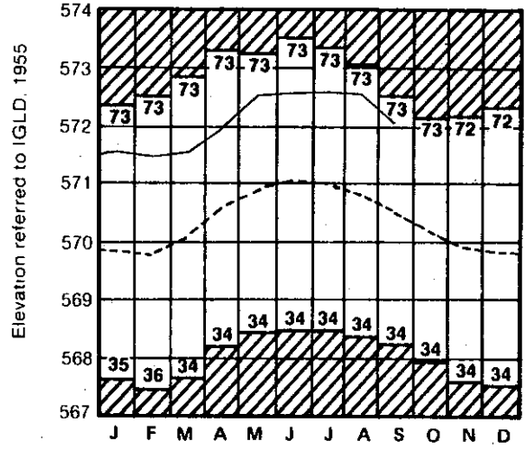


RESERVOIR STORAGE for water supply for September declined in both the Mahoning River and the Scioto River basins. Storage in the Mahoning River basin continued to be above normal while in the Scioto River basin it dropped noticeably below normal in response to the below normal precipitation. Reservoir storage at the month end for the Mahoning basin index reservoirs was 72 percent of rated capacity for water supply compared to 80 percent for last month and 69 percent for September 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 72 percent of rated capacity for water supply compared to 83 percent for last month and 56 percent for September 1982. Reservoir storage for the 1983 water year was above normal in the Mahoning basin and noticeably below normal in the Scioto basin except for April, May, June and July when it was near normal.

STREAMFLOW for September was generally normal throughout most of the state; the only exception was in the Great Miami River where it was deficient for the month. Streams throughout the state have maintained normal flows during the past two or three months despite the lack of precipitation. Mean discharge and percent of normal for the index gaging stations were as follows: Great Miami River, 520 cfs, 78 percent; Little Beaver Creek, 86.3 cfs, 110 percent; Maumee River, 331 cfs, 85 percent; Scioto River, 775 cfs, 74 percent.

Streamflow during the 1983 water year was normal for the first three months, October, November, and December, and then fell noticeably below normal during January, February and March, whereas, it usually shows significant increases during these months. Following this, flows increased and were excessive in May in response to heavy rains in both April and May. Flows decreased as usual during the remainder of the water year and were near normal despite the lack of precipitation during these months. Mean discharge and percent of normal for the water year for the index gaging stations were as follows: Great Miami River, 2,580 cfs, 79 percent; Little Beaver Creek, 480 cfs, 88 percent; Maumee River, 5,347 cfs, 105 percent; Scioto River, 3,786 cfs, 82 percent.

LAKE ERIE LEVELS



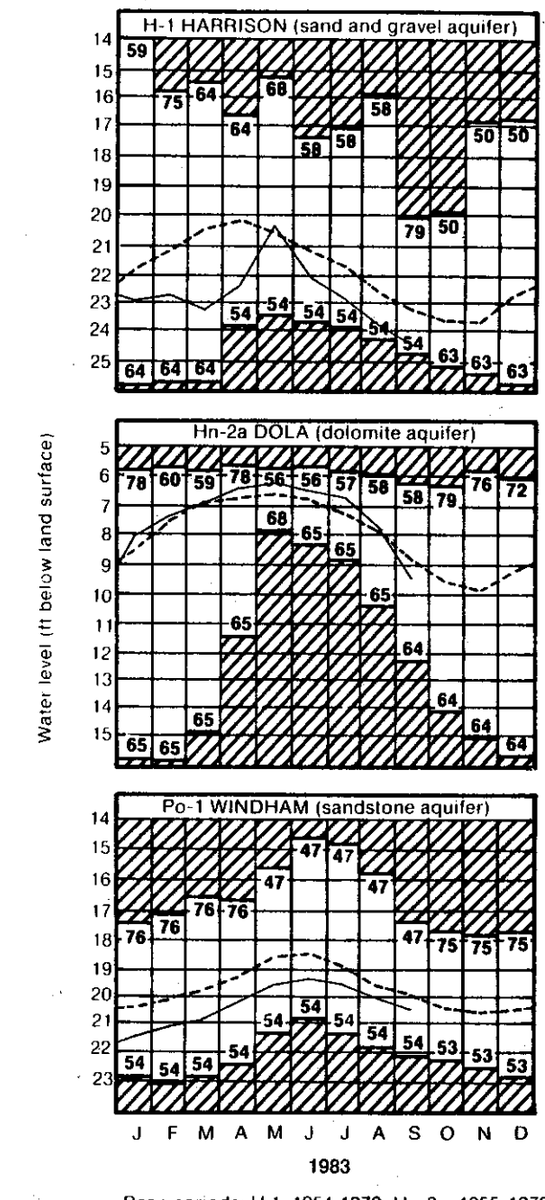
Base period 1900-1980

LAKE ERIE level showed a significant decline for September. The mean level for September was 572.04 feet above IGLD (1955), 0.49 foot below last month's mean level and 1.52 feet above normal. The mean level is 0.58 foot above the mean level observed for September 1982 and 3.44 feet above Low Water Datum. The lake level was generally above those levels observed for the 1982 water year and was the highest since 1976 for August.

GROUND-WATER LEVELS for September showed marked declines throughout the state. The declines were generally greater than usually observed due to the drought conditions which continue to persist throughout most of the state. Ground-water levels in the index observation wells were noticeably lower than those observed last month. Levels in the central and southern portions of the state were lower than observed for September 1982, while water levels in the northern portion of the state were above the levels observed a year ago. Water levels in general are above normal throughout the state. Observation wells F-1 at West Rushville, Fairfield County, and H-1 near Harrison, Hamilton County, show water levels at near record low levels for September.

Generally, ground-water levels were noticeably below normal at the beginning of the 1983 water year. Recharge was not nearly as great as usually expected and at the end of the nominal recharge period, water levels had only recovered to about normal. Water levels declined rather rapidly in response to the drought conditions which persisted throughout the remainder of the water year, the nominal water supply depletion period. Even so, ground-water storage for water supply was favorable throughout the water year. However, if the drought conditions should continue, the situation could become serious in some areas of the state.

GROUND-WATER LEVELS



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normal - - - - - current ———

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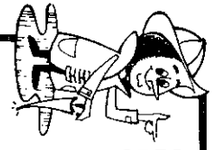
U.S. Geological Survey, Water Resources Division.

Lake Erie level data:
U.S. Corps of Engineers, Detroit District.



OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

PRECIPITATION—*continued*

Precipitation for the first month of the new water year was noticeably above normal throughout the state. Water supplies throughout the state showed evidence of good recharge from the above normal precipitation. Thus, the new water year is off to a good start following a year of extreme drought conditions.

NEW PUBLICATIONS

The Division of Water announces the availability of the following new publications.

THE GROUND-WATER RESOURCES OF LOGAN COUNTY by James J. Schmidt.

THE GROUND-WATER RESOURCES OF SHELBY COUNTY by Richard J. Kostelnick.

These maps are two of a series of county ground-water resources maps being completed for each of Ohio's 88 counties. The maps are designed as a guide to locating new ground-water supplies or as an aid for expanding supplies already established. They will be useful to homeowners, developers and planners.

In addition, ground-water resources maps are available for the following 40 counties.

ALLEN	HARDIN	PORTAGE
ASHLAND	HARRISON	RICHLAND
ASHTABULA	HENRY	ROSS
AUGLAIZE	HOLMES	SANDUSKY
CLARK	KNOX	SENECA
COLUMBIANA	LAKE	STARK
CRAWFORD	LICKING	SUMMIT
CUYAHOGA	LORAIN	TRUMBULL
DEFIANCE	MAHONING	UNION
DELAWARE	MARION	VAN WERT
FAIRFIELD	MEDINA	WAYNE
FRANKLIN	MERCER	WYANDOT
GEAUGA	MORROW	
HANCOCK	PICKAWAY	

The maps are available for $2.50 each plus $.14 tax and $.25 mailing charge from the Publication Center, Ohio Department of Natural Resources, Fountain Square, Columbus, Ohio 43224. Checks or money orders should be made payable to the ODNR Publications Center.

SUMMARY

Precipitation for October was noticeably above normal throughout the state for the first time since May. Streamflow, reservoir storage and ground-water storage showed signs of improvement in response to the above normal precipitation. Lake Erie level declined but remained noticeably above normal. Generally, the water supply situation has improved. The above normal precipitation was most effective in relieving the stress on the water supply situation which had persisted during the past several months.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

OCTOBER 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

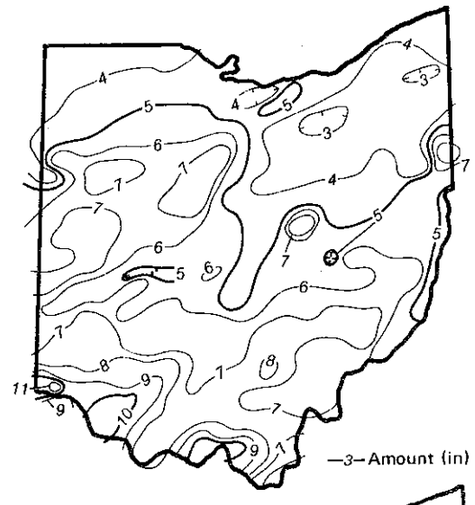
PRECIPITATION

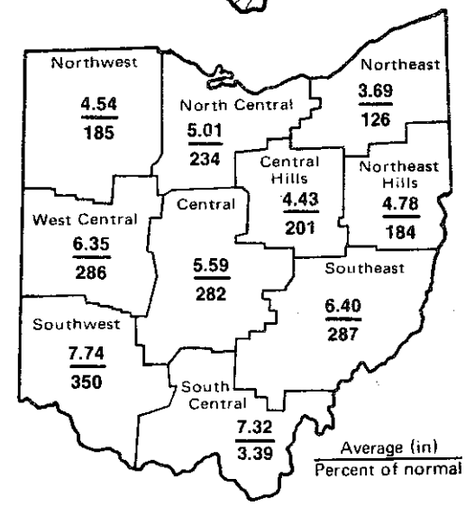
PRECIPITATION for October was above normal throughout the state for the first time since May. The average for the state as a whole was 5.59 inches, 3.28 inches above normal. This is only the second time in 43 years that the state average for October has been greater than 5 inches; the state average for 1954 was 5.72 inches. Regional averages ranged from 7.74 inches, 5.53 inches above normal, for the Southwest region to 3.69 inches, 0.77 inch above normal, for the Northeast region. Fernbank, Hamilton County, reported the greatest amount of precipitation for the month, 11.02 inches, and Chippewa Lake, Medina County, reported the least amount, 2.74 inches. A large number of stations, mostly in the southern portion of the state, reported record high amounts of precipitation for October for their respective periods of record; generally this was limited to the past four decades.

Although there were sizeable amounts of precipitation during every week of the month, the bulk of it was receive during the last 15 days. About three-fourths of the state received in excess of 5 inches while the remaining one-fourth, most generally the northeast portion, received between 3.5 and 5 inches. Only two stations reported less than 3 inches. The rains came mostly in the form of long duration, low intensity type storms which allowed for the greatest absorption to the soil moisture zone and percolation to ground-water storage. The above normal precipitation for the month has all but wiped out the drought conditions which have persisted during the past four months and relieved the stress on water supplies throughout the state.

Cumulative precipitation for the 1983 calendar year thus far was above normal for the state as a whole for the first time this year. The average for the state as a whole is 32.41 inches, 0.56 inch above normal. Precipitation for the 1983 calendar year is above normal in the North Central, Central Hills, Northeast Hills, Southwest, and Southeast regions and below normal in the Northwest, Northeast, West Central, Central, and South Central regions. Regional averages range from 35.93 inches, 2.75 inches above normal, for the Southeast region to 27.86 inches, 1.25 inches below normal, for the Northwest region.

This is the first month of the 1984 water year which began on October 1, 1983 and ends on September 30, 1984. The water year is a common reference period for both surface water and ground-water reports. October is also considered to be the beginning of the nominal recharge period in the annual cycle of replenishment and depletion of water supplies.





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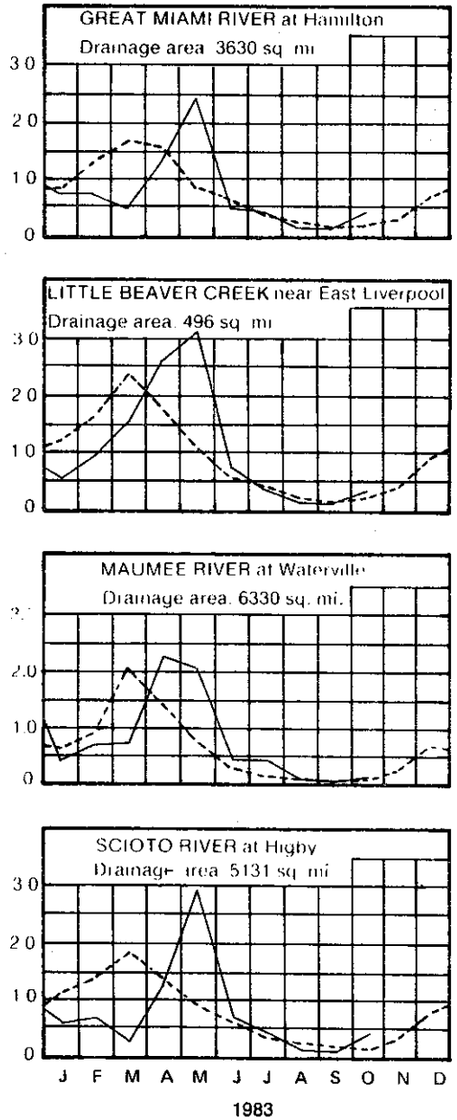
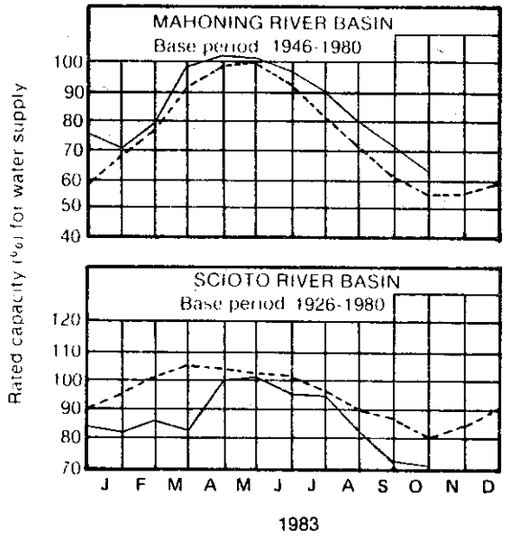
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams 1951-1980

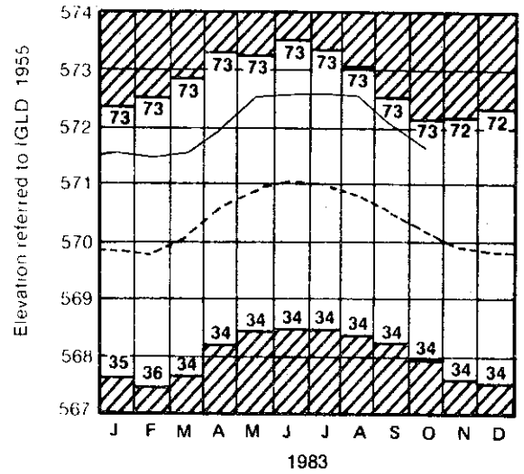
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for October decreased in both the Mahoning River and the Scioto River basins. Storage in the Mahoning River basin showed normal declines for October and remained above normal while storage in the Scioto River basin declined only slightly but remained below normal. Reservoir storage at the month end for the Mahoning basin index reservoirs was 64 percent of rated capacity for water supply compared to 72 percent for last month and 63 percent for October 1982. Storage at the month end for the Scioto basin index reservoirs was 71 percent of rated capacity for water supply compared to 72 percent for last month and 47 percent for October 1982.

STREAMFLOW for October was above normal in the northern portion of the state and excessive in the southern portion in response to above normal precipitation throughout the state. Mean discharge and percent of normal for the index gaging stations were as follows: Great Miami River, 1,438 cfs, 212 percent; Little Beaver Creek, 187 cfs, 172 percent; Maumee River, 1,234 cfs, 222 percent; Scioto River, 2,310 cfs, 304 percent. Runoff was twice that normally observed in the respective drainage basins above the index gaging stations.

LAKE ERIE LEVELS



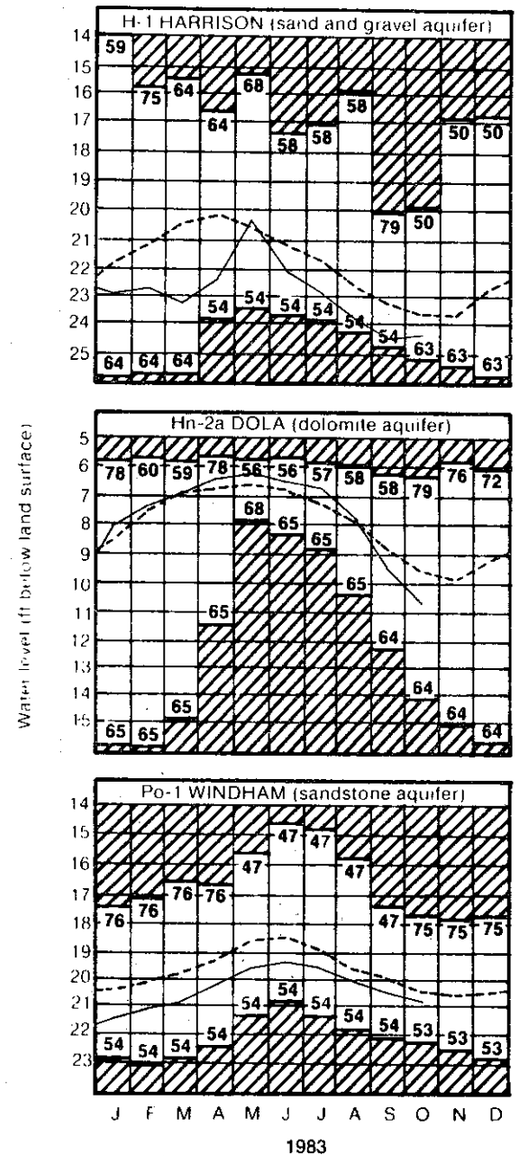
Base period 1900-1980

LAKE ERIE mean level declined for the second consecutive month and was 571.63 feet above IGLD (1955), 0.41 foot below last month's mean level and 1.43 feet above normal. The lake level is 0.52 foot above the level observed for October 1982 and 3.03 feet above Law Water Datum.

GROUND-WATER LEVELS for October generally declined during the first 20 days of the month and rose during the last ten days in response to recharge from the above normal precipitation. Water levels in most of the index observation wells showed net declines for the month; exceptions were in observation wells representing consolidated aquifers in the central portion of the state which showed net rises for the month. Water levels are generally from 1 to 2 feet below normal for October. They are below those levels observed for October 1982 in the southwest, northwest and central portions; in the northeast and southeast, water levels are above those levels observed last October.

The fact that water levels throughout the state showed some recharge during the first month of the new recharge season is most encouraging following three months when water levels declined to near record lows as a result of the extreme drought conditions which persisted throughout the summer months. The above normal precipitation which fell during the second half of the month helped to alleviate the stress on ground-water supplies throughout the state.

GROUND-WATER LEVELS



Base periods H-1 1951-1979, Hn-2a 1955-1979
Po-1 1947-1979

normal - - - - - current _____

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. Corps of Engineers, Detroit District.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

SUMMARY

Precipitation for November was noticeably above normal throughout the state for the second consecutive month. The average for the state was 4.68 inches, 1.94 inches above normal. Streamflow, reservoir storage and ground-water storage showed much improvement and are generally above normal. The above normal precipitation in both October and November has contributed much to improve the water supply situation throughout the state.

NOTES AND COMMENTS

In September we reported that for the farmers this was one of the worst droughts we have experienced in 47 years. Indeed, it was one of the hottest and driest summers since the 1963-64 drought. These conditions were also having their effects on the water supplies throughout the state. Reservoir storages were declining to noticeably low levels and ground-water storages were reaching record low dimensions. If these conditions had continued they definitely would have had a serious effect on our water supplies in many areas of the state. Fortunately, from experiences of the past, water supply managers have built in safety factors, added additional supplies and were prepared to use conservation measures in order to assure ample water supplies if the situation arose.

Since then the tables have turned; nature has bestowed upon us an abundance of rain and our water resources are being replenished. The new water year (October 1, 1983-September 30, 1984) is off to a great start. Precipitation for both October and November has been the 2nd and 5th highest amounts in 43 years. Reservoirs are being filled to capacity and recharge to ground-water storage is running at near record pace. In central Ohio, reservoir storage for water supply is above normal for the first time in 2½ years. Ground-water levels are generally above normal throughout the state. The first two weeks of December appear to augur well for continued improvements in the overall water supply situation for the foreseeable future.

ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

NOVEMBER 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

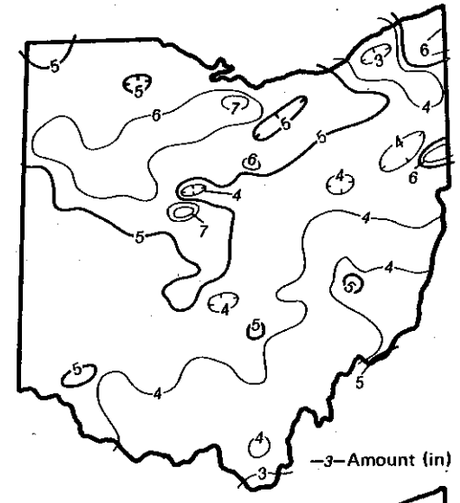
PRECIPITATION

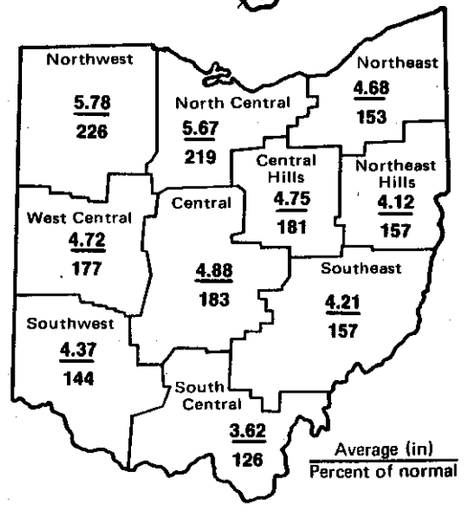
PRECIPITATION for November was noticeably above normal throughout the state for the second consecutive month. The average for the state as a whole was 4.68 inches, 1.94 inches above normal. Regional averages ranged from 5.78 inches, 3.22 inches above normal, for the Northwest region to 3.62 inches, 0.75 inch above normal, for the South Central region. Norwalk, Huron County, reported the greatest amount of precipitation for the month, 7.26 inches, and Chardon, Geauga County, reported the least amount, 2.81 inches.

There were sizable amounts of precipitation during every week of the month throughout the state. Amounts of more than one inch were observed for many areas of the state on the 11th, 15th and 28th. Generally, the rains were of light intensity which was most beneficial for infiltration and percolation to the ground-water aquifers. Most of the state received between 3 and 5 inches of precipitation; exceptions were in the northwestern and north-central areas which received between 5 and 7 inches. The above normal precipitation in both October and November has contributed much toward replenishing our water supplies which had declined to serious levels throughout the state.

Cumulative precipitation for the 1983 calendar year thus far is above normal throughout most of the state for the second consecutive month; exceptions are in the West Central and South Central regions where it remains 1.46 inches and 0.19 inch below normal respectively. The West Central and South Central regions showed the greatest deficiencies during the year, 7.65 and 6.10 inches below normal at the end of September. The average for the state as a whole is 37.09 inches, 2.50 inches above normal. Regional averages range from 40.14 inches, 4.27 inches above normal, for the Southeast region to 32.70 inches, 1.46 inches below normal, for the West Central region.

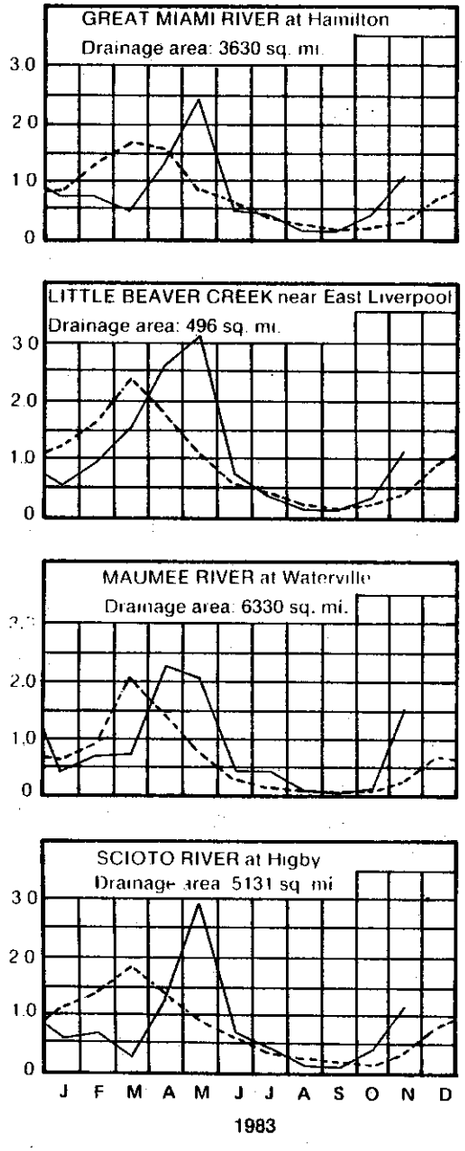
Cumulative precipitation for the first two months of the 1984 water year is above normal throughout the state. The average for the state as a whole is 10.27 inches, 5.22 inches above normal. Regional averages range from 12.11 inches, 6.87 inches above normal, for the Southwest region to 8.37 inches, 2.40 inches above normal, for the Northeast region.





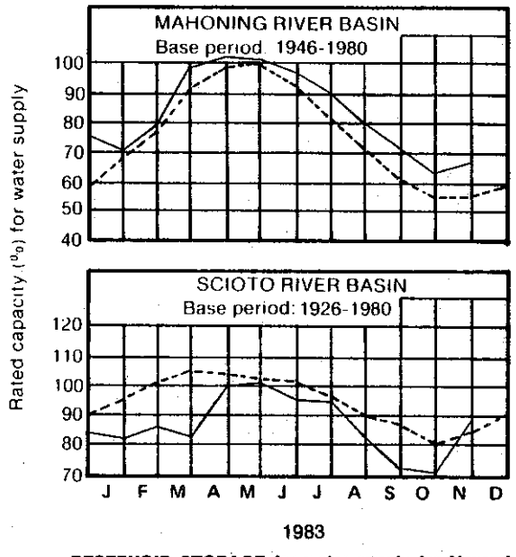
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams 1951-1980

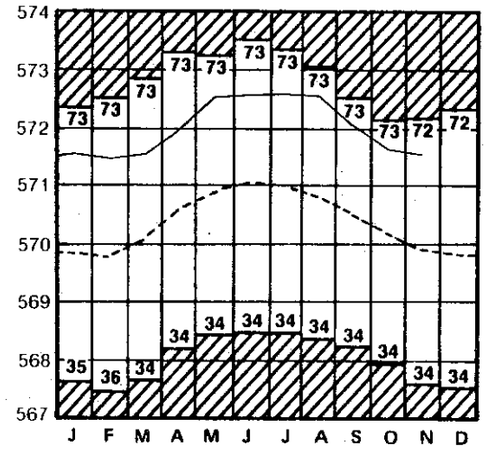
RESERVOIR STORAGE FOR WATER SUPPLY



RESERVOIR STORAGE for water supply for November increased significantly in both the Mahoning River and the Scioto River basins in response to runoff from the above normal precipitation in both October and November. Storage in the Mahoning basin index reservoirs continued to be above normal while in the Scioto basin index reservoirs it was above normal for the first time since May 1981. Reservoir storage at the month end for the Mahoning basin index reservoirs was 67 percent of rated capacity for water supply compared to 64 percent for last month and 63 percent for November 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 89 percent of rated capacity for water supply compared to 71 percent for last month and 52 percent for November 1982.

STREAMFLOW for November was generally above normal during the first half of the month and was excessive during the remainder of the month in response to the above normal precipitation in both October and November. Mean discharge for the Maumee River at Waterville, 9,637 cfs, was the second highest for November for the period of record. Mean discharge for the Scioto River and the Great Miami River index gaging stations were 4th and 5th highest of record for November, respectively. Mean discharge and percent of normal for the index gaging stations were as follows: Great Miami River, 4,026 cfs, 366 percent; Little Beaver Creek, 571 cfs, 283 percent; Maumee River, 9,637 cfs, 596 percent; Scioto River, 5,949 cfs, 366 percent. Cumulative runoff at the index gaging stations is about 1 inch above normal for the water year thus far at all the index gaging stations.

LAKE ERIE LEVELS



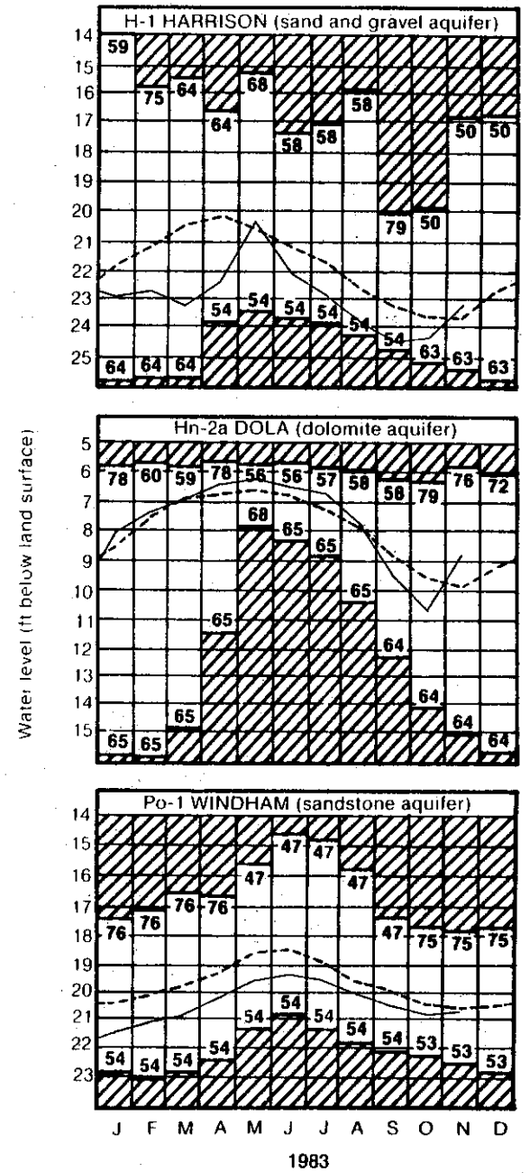
Base period 1900-1980

LAKE ERIE mean level declined only slightly and was 571.57 feet above IGLD (1955), 0.06 foot below last month's mean level and 1.65 feet above normal. The mean level is 0.49 foot above the mean level observed for November 1982 and 2.97 feet above Low Water Datum.

GROUND-WATER LEVELS for November showed marked rises throughout the state in response to the above normal precipitation during the first two months of the 1984 recharge season. These rises are significant in that water levels usually continue to decline or remain stable during November. The fact that the precipitation came in low intensity type showers allowed for greater infiltration and percolation to ground-water storage. Ground-water levels throughout the state showed net rises from 0.37 foot to 2.39 feet above the levels observed last month. Ground-water levels are above normal and generally above those levels observed for November 1982; exceptions are in the eastern portion of the state where water levels remain below normal.

Recharge to ground-water storage is off to a good start in the first two months of the new water year. This is significant in view of the fact that the whole state had experienced severe drought conditions during the previous four months and ground-water storage had reached seriously low levels throughout most of the state at the end of September. Additional recharge can be expected during December from delayed recharge from heavy rains during the last week of the month. Thus, ground-water storage has improved significantly since the last of September.

GROUND-WATER LEVELS



Base periods H-1 1951-1979, Hn-2a, 1955-1979
Po-1, 1947-1979

normal - - - - - current ———

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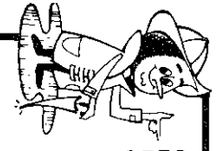


OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
FOUNTAIN SQUARE
COLUMBUS, OHIO 43224

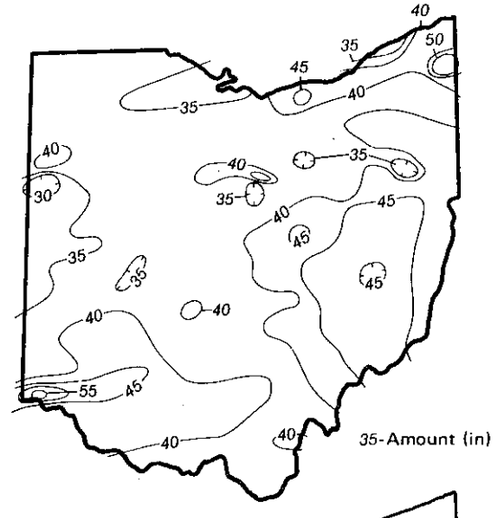
SUMMARY

Precipitation for December was above normal for the third consecutive month. Reservoir storage, streamflow and ground-water storage is at or above normal throughout most of the state. Lake Erie rose slightly and remains markedly above normal. The water supply situation throughout the state was very favorable at the year end.

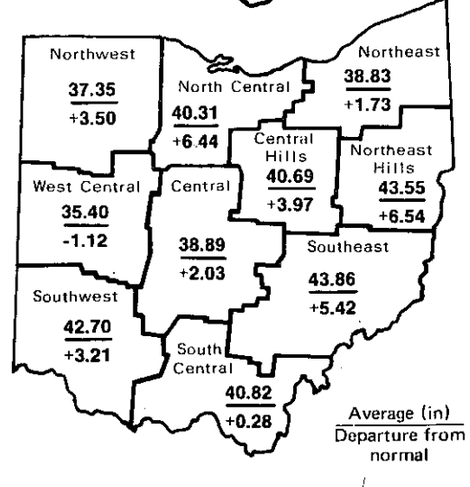
PRECIPITATION

1983

CALENDAR YEAR



35-Amount (in)



ODNR
OHIO DEPARTMENT OF NATURAL RESOURCES

Richard F. Celeste
Governor

Lt. Gov. Myrl H. Shoemaker
Director

DECEMBER 1983

monthly water inventory report for ohio

Compiled by Leonard J. Harstine

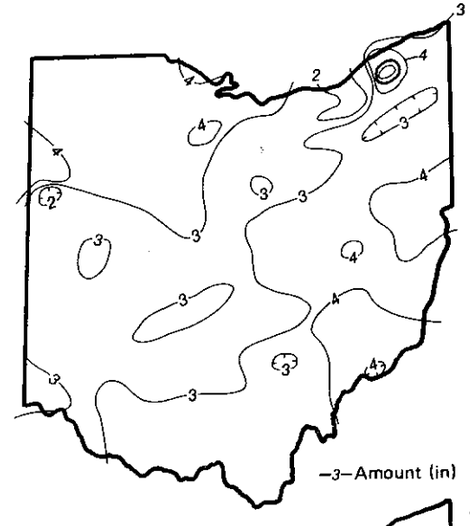
PRECIPITATION

PRECIPITATION for December was above normal throughout the state except in the Southwest region where it was normal. This is the third consecutive month of above normal precipitation. The average for the state as a whole was 3.26 inches, 0.81 inch above normal. Regional averages ranged from 3.92 inches, 1.50 inches above normal, for the Northeast Hills region to 2.70 inches, 0.34 inch above normal, for the West Central region. Chardon, Geauga County, reported the greatest amount of precipitation for the month, 6.01 inches, and Brecksville, Cuyahoga County, reported the least amount, 1.69 inches.

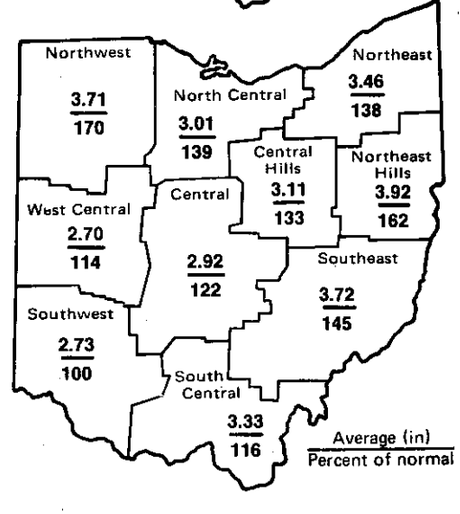
There were nominal amounts of precipitation during every week of the month in most areas of the state. The bulk of the month's precipitation came in the form of light rain or snow flurries. Heavier amounts of snow fell in the snowbelts in the northern portion of the state; however, snowfall thus far this year is only about half that normally observed. Record-breaking temperatures were experienced at many locations throughout the state on Christmas Eve and Christmas Day; the Columbus Airport Weather Service Office reported a record -12° F for both the 24th and 25th and a record -5° F for the 26th. The low for the state was -15° F reported by the Toledo Airport WSO. Freezing rain, sleet and ice covered the state on the 28th. A considerable amount of moisture remained frozen on the ground which will provide good recharge to water supplies during the usual January thaw.

Precipitation for the 1983 calendar year was above normal throughout the state except in the West Central region where it was below normal. The average for the state as a whole was 40.35 inches, 3.31 inches above normal. Regional averages ranged from 43.86 inches, 5.42 inches above normal, for the Southeast region to 35.40 inches, 1.12 inches below normal, for the West Central region. Andover, Ashtabula County, reported the greatest amount of precipitation for the year, 52.21 inches, and Rockford, Mercer County, reported the least amount, 28.12 inches. An isohyetal map and regional averages and departures from normal for the 1983 calendar year appear on the last page of this report.

The 1983 calendar year started with precipitation below normal throughout the state during the first three months. As a result, recharge to water supplies was significantly reduced. However, precipitation for April and May was noticeably above normal and extended the nominal recharge season resulting in marked improvements in the water supply situation. Precipitation for the next four months was generally below normal and drought conditions persisted throughout the state. The severe drought conditions resulted in the worst year for agriculture in 47 years. The summer proved to be both hot and dry. In central Ohio, temperatures were in the 90's nearly half the days for both July and August; Columbus Airport WSO reported a record 101° F for August 20th. Record high temperatures were observed at many locations throughout the state. These high temperatures affected pollination of both corn and soybeans and yields were drastically reduced in many areas of the state. By the end of the summer, water supplies were being rapidly depleted throughout the state and some areas were experiencing serious water shortages. Then the rains came. Precipitation for both October and November reached near record amounts and was above normal for December. Recharge to water supplies was phenomenal and the year ended with water supplies above normal for most areas of the state. Thus, the new water-supply recharge season was off to a great start.

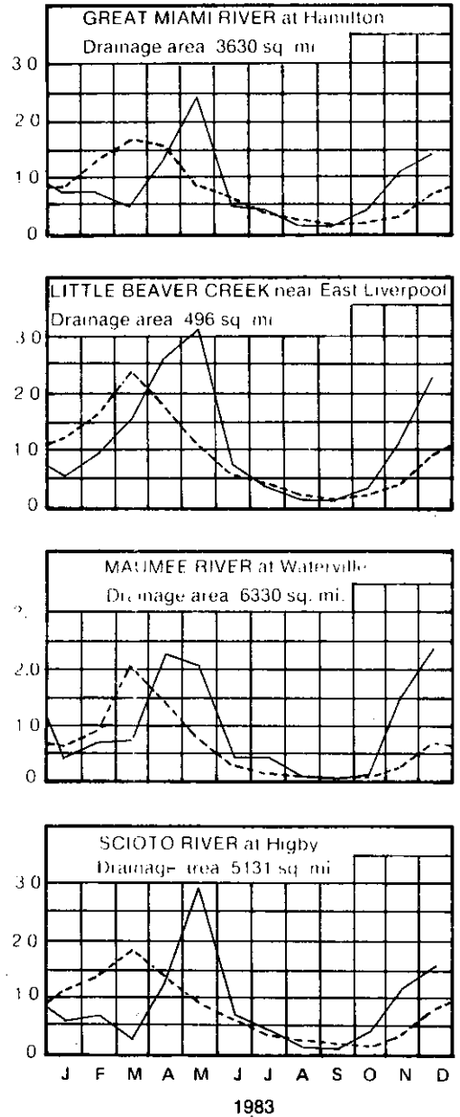


–3– Amount (in)



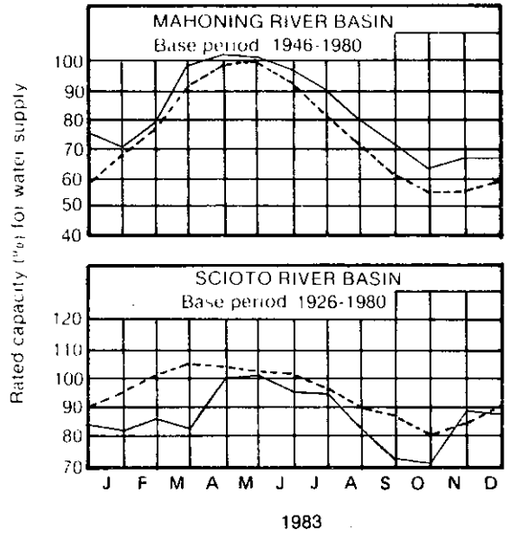
DIVISION OF WATER

MEAN STREAM DISCHARGE



Base period for all streams 1951-1980

RESERVOIR STORAGE FOR WATER SUPPLY

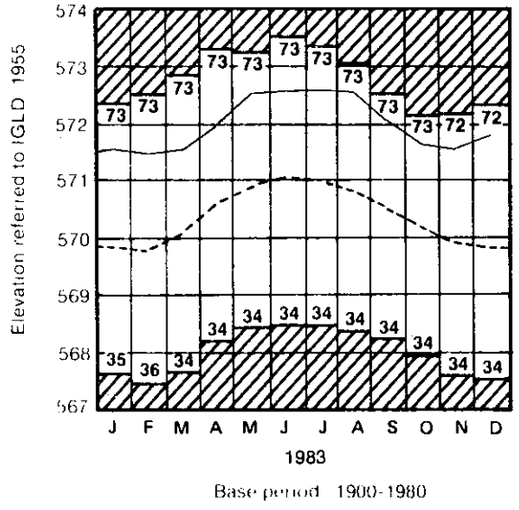


Cumulative precipitation for the first three months of the 1984 water year is above normal throughout the state. The average for the state as a whole is 13.53 inches, 6.03 inches above normal. Regional averages ranged from 14.84 inches, 6.87 inches above normal, for the Southwest region to 11.83 inches, 3.36 inches above normal, for the Northeast region.

RESERVOIR STORAGE for water supply remained about the same as last month in both the Mahoning River and the Scioto River basins. Storage at the month end remained above normal in the Mahoning basin reservoirs and was slightly below normal in the Scioto basin reservoirs. Reservoir storage at the month end for the Mahoning basin index reservoirs was 67 percent of rated capacity for water supply compared to the same for last month and 76 percent for December 1982. Reservoir storage at the month end for the Scioto basin index reservoirs was 88 percent of rated capacity for water supply compared to 89 percent for last month and 83 percent for December 1982.

STREAMFLOW for December increased significantly throughout the state. Flows in the northern portion of the state were excessive for the month, while they were noticeably above normal in the southern portion of the state. Mean discharge and percent of normal for December at the index gaging stations were as follows: Great Miami River, 5,266 cfs, 221 percent; Little Beaver Creek, 1,135 cfs, 244 percent; Maumee River, 15,214 cfs, 342 percent; Scioto River, 8,033 cfs, 198 percent. Cumulative runoff and departures from normal for the first three months of the 1984 water year at the index gaging stations were as follows: Great Miami River, 3.37 inches, 1.85 inches above normal; Little Beaver Creek, 4.36 inches, 2.66 inches above normal; Maumee River, 4.69 inches, 3.11 inches above normal; Scioto River, 3.55 inches, 2.09 inches above normal.

LAKE ERIE LEVELS

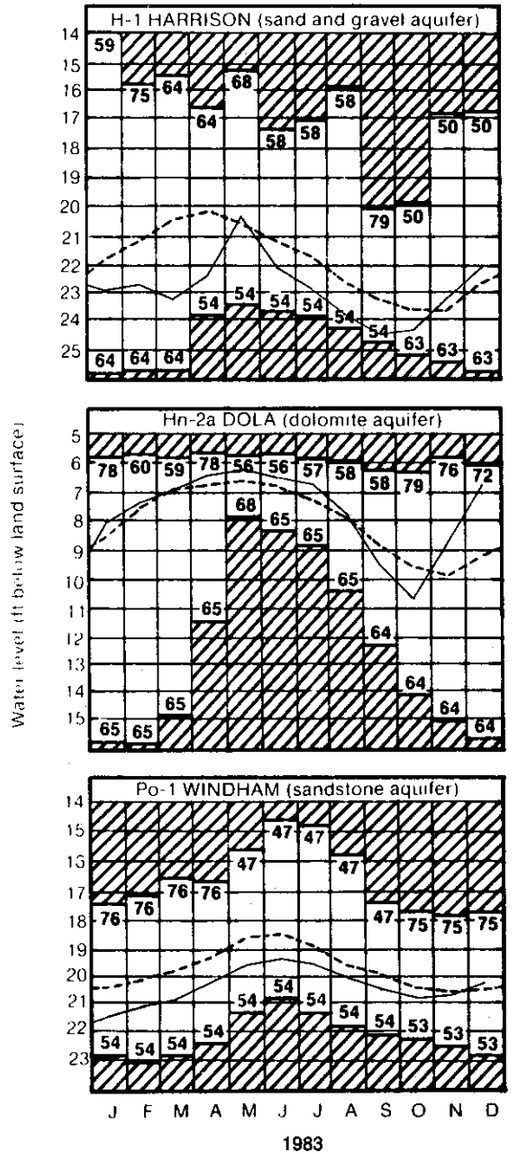


Base period 1900-1980

LAKE ERIE mean level rose slightly during December whereas it usually declines. The mean level was 571.80 feet above IGLD (1955), 0.23 foot above last month's mean level and 1.95 feet above normal. The lake level is 0.42 foot above the level observed for December 1982 and 3.20 feet above Low Water Datum.

GROUND-WATER LEVELS showed significant rises throughout the state during December. Greatest rises occurred in consolidated aquifers in response to delayed recharge from above-normal precipitation in the previous month. Rises during December were 2 to 8 times that usually observed. Ground-water levels are noticeably above normal throughout most areas of the state; one exception is Tu-1 north of Strasburg, Tuscarawas County, where it remained below normal. Ground-water levels are generally from 1 to 3.5 feet above the levels observed for December 1982. The above-normal precipitation during the past three months has produced significant recharge to ground-water storage throughout the state. Thus, the ground-water supply situation has improved tremendously since September.

GROUND-WATER LEVELS



Base periods H-1 1951-1979, Hn-2a. 1955-1979
Po-1. 1947-1979

normal - - - - - current ———