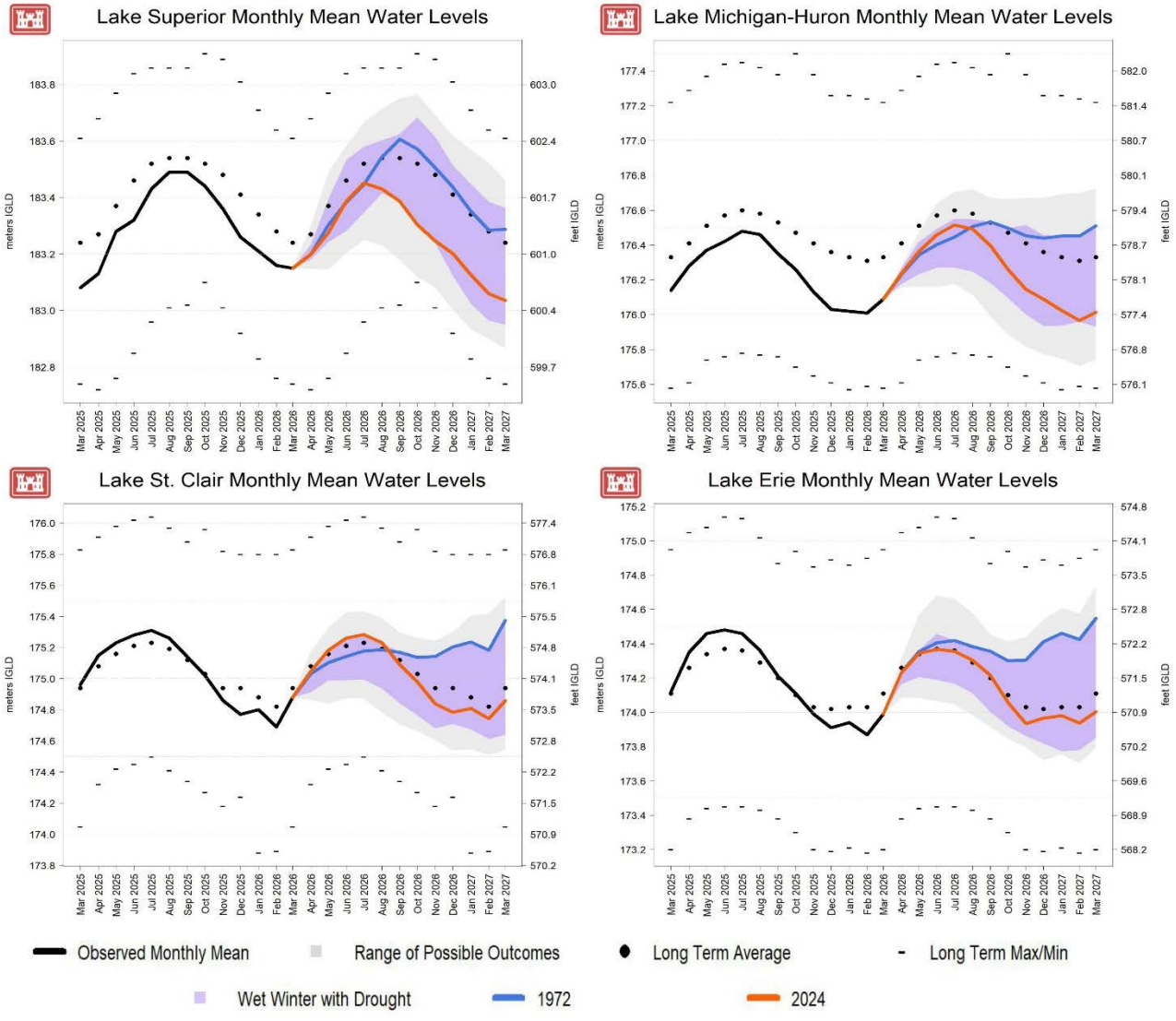
US Army Corps of Engineers ®
Detroit District

Great Lakes Water Level Future Scenarios

Volume 43 April 2026: Wet Winter with Concurrent Drought



*At this time, water level outlooks for Lake Ontario are still under development due to complexities of its weekly regulation process. An experimental version is shown later in this report. For the official 6-month forecast of all lakes, including Lake Ontario, see the Monthly Bulletin of Great Lakes Water Levels.

Overview

The April 2026 Water Level Future Scenario Product explores years following winters where cumulative precipitation was above average, despite concurrent drought conditions. In this scenario, winter months are defined as December through the end of March. This past winter, overall precipitation over the Great Lakes region was above normal (Figure 1). Precipitation directly impacts net basin supply (NBS), which is defined as the sum of over-lake precipitation, over-lake evaporation, and basin-wide runoff. Changes in NBS drive changes in water levels.

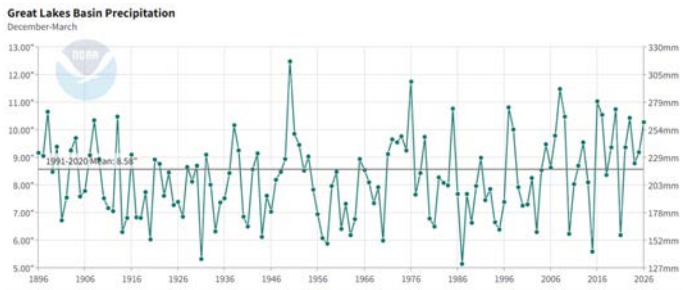


Figure 1: Cumulative precipitation over the Great Lakes Basin from December through March for 1895-2026. Data and plot available through the Climate at a Glance portal maintained by the National Oceanic and Atmospheric Administration's (NOAA) National Center for Environmental Information's (NCEI).

Despite increased precipitation, drought conditions persisted throughout the Great Lakes basin through the end of March. Here, drought is defined monthly using the Palmer Hydrological Drought Index (PHDI). NCEI's Climate at a Glance indicated lower-than-normal PDHI values from December 2025 through March 2026 when compared to the 1991-2020 average. Figure 2 provides a map depicting drought for the Midwest at the end of March 2026. Although Lake Ontario is not included in the map, its basin has limited drought.

This edition of the Water Level Future Scenarios incorporates the projection of water levels from spring 2026 through winter 2027 if NBS values are similar to other years that followed winters with above-average precipitation coupled with drought conditions. The graphics on Page 1 provide the projected monthly mean water surface elevations for each Great Lake under this possible scenario. The gray shaded region of the plot represents the full range of possible outcomes using historical NBS sequences from 1900 to 2025. The purple plume represents 12 NBS sequences for years that followed above-normal winter precipitation and coincident drought conditions. Two years are called out within the purple plume to provide specific examples of above-average winter precipitation with drought conditions: 1972 (blue line) and 2024 (orange line).

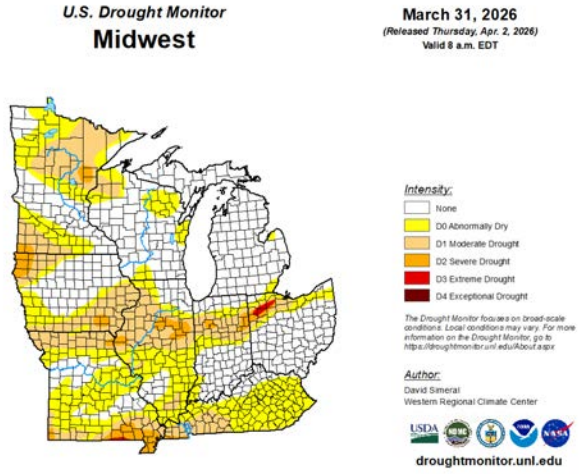


Figure 2: Drought status over the Midwest as of March 31, 2026. Map produced by the U.S. Drought Monitor.

Because Lake St. Clair is relatively small compared to the Great Lakes, its NBS is highly variable between months. Therefore, the analysis performed for this edition of the Great Lakes Water Level Future Scenarios focuses on observed conditions of Lakes Superior, Michigan-Huron, Erie, and Ontario. Nevertheless, Lake St. Clair is shown in the bottom lefthand panel of the graphics on Page 1 as a reference to what lake levels could be if NBS values followed a similar pattern to years with high winter precipitation and preexisting drought conditions across the entire Great Lakes basin.

An experimental version of the Lake Ontario graphic is provided as Figure 3. Unlike the other lakes featured on Page 1, it is important to note that

the years included in Lake Ontario's graphic do not extend beyond 2019. Therefore, the NBS sequence for 2024 is not displayed as a callout year or included in the range that the purple plume represents. Including years past 2019 could alter the spread of the purple plume.

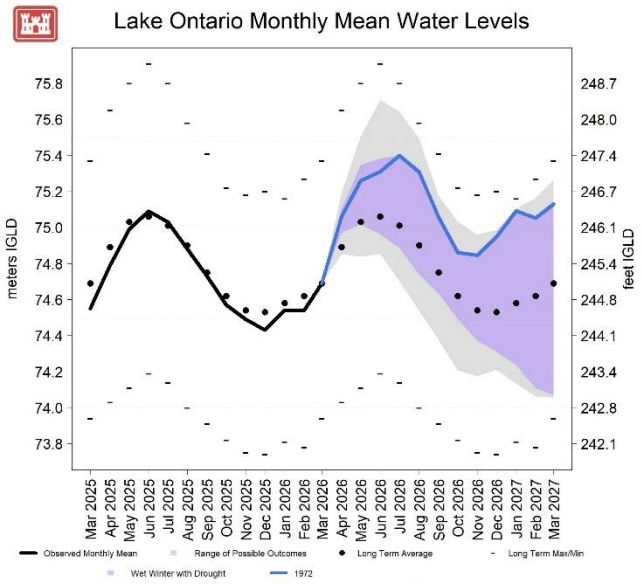


Figure 3: An experimental version of the Lake Ontario graphic with the new future scenario reflected.

Purple Plume

The purple plume represents what the water levels on each lake would look like if NBS conditions were similar to years following high precipitation winters and basin-wide drought conditions. This plume includes the years following 12 high precipitation winters during which drought persisted since 1900. Notably, the winters of 2024 and 2025 were similar enough to this past winter to be included in the purple plume. On all lakes, the purple plume is generally centered within the gray band. This indicates that similar NBS sequences would produce near- to below-average water levels through March 2027, depending on the lake. However, none of the NBS sequences, including those found in the historical record (gray band), produce water levels reaching record lows.

The plume only showcases a spread of water levels if NBS patterns exactly replicate these historical examples. However, variations do happen based on the weather and hydrologic conditions each lake basin experiences. In summary, the purple plume presents an example of water levels focused on a single condition (in this case, years following high precipitation, basin-wide drought winters).

1972 Scenario

The 1972 above-average winter precipitation with coincident drought scenario is depicted by the blue line on the Page 1 and Figure 3 plots. The blue line represents the water levels that could occur if similar NBS conditions are experienced through March 2027 as were experienced in April 1972 to March 1973. This scenario was selected to represent a time when the preceding winter was wetter than normal with concurrent drought conditions, as occurred during winter 2025-2026.

December 1971 NBS was above average for all lakes, but despite higher basin-wide precipitation being recorded in early 1972, only Lake Superior's NBS was higher than normal through March. Lake Erie's March NBS was also above normal. Lakes Michigan-Huron and Ontario maintained below-average NBS from January through March 1972. Altogether, winter 1972 NBS was above normal for Lakes Superior and Erie, while Lakes Michigan-Huron and Ontario were below normal. During this time, basin-wide PHDI values increased, indicating decreased drought severity.

If NBS sequences for the next year are similar to those of 1972, water levels for Lakes Superior and Michigan-Huron would likely be below their long-term average values through summer and remain near- or above-average through March 2027. On the other hand, Lakes Erie and Ontario would be higher than average through the end of next winter.

2024 Scenario

The 2024 above-average winter precipitation with concurrent drought scenario is depicted by the orange line on the Page 1 plot. The orange line represents the water levels that could occur if similar NBS conditions are experienced through

March 2027 as were experienced in April 2024 to March 2025. This scenario was highlighted because, similar to winter 2025-2026, it was characterized as wetter-than-normal and drought conditions in the preceding winter.

NBS values were well above average for all lakes in December 2023. Only Lake Superior NBS was below normal in January before all lakes recorded below-average NBS in February. In contrast, only Lake Superior exhibited above-average supplies in March 2024. Despite below-normal NBS in late winter for most lakes, winter 2024 NBS was above average for Lakes Superior, Michigan-Huron, and Ontario.

Similar NBS conditions to the 2024 scenario would result in water levels being just below long-term average for Lake Erie, while Lakes Superior and Michigan-Huron water levels would be below long-term averages through March 2027.

Summary & Climatic Outlook

Overall, wet winters and regional drought produced a variety of Great Lakes NBS patterns from springtime to the following winter, as is evidenced by the purple plumes. In some cases, such as 1972 for all lakes, high winter NBS values caused water levels to transition to above average. In other cases, water levels remained mostly below average for the following 12 months. All lakes have purple plumes that extend above long-term average water levels, but the two callout years straddle the long-term averages. Lake Michigan-Huron water levels remain below average under the purple plume supply scenario until early fall.

Although consecutive wet winters have occurred in the last few years, the water supplies received over the next 12 months will vary based on the weather and hydrologic conditions that occur across the lake's basins. This is displayed by the range of potential outcomes in the purple plume for just 12 years of NBS sequences. To see more graphics on NBS sequences for the last 2 years, visit the USACE Basin Conditions page.

The Climate Prediction Center's spring and early summer outlook indicates that temperatures will likely have equal chances of being above, below, or close to normal for each lake (Figure 4). The seasonal precipitation outlook indicates that precipitation will likely be above normal for the eastern half of the Great Lakes Basin, with higher chances of this above normal precipitation over eastern Michigan, northern Ohio, and western Pennsylvania (Figure 4).

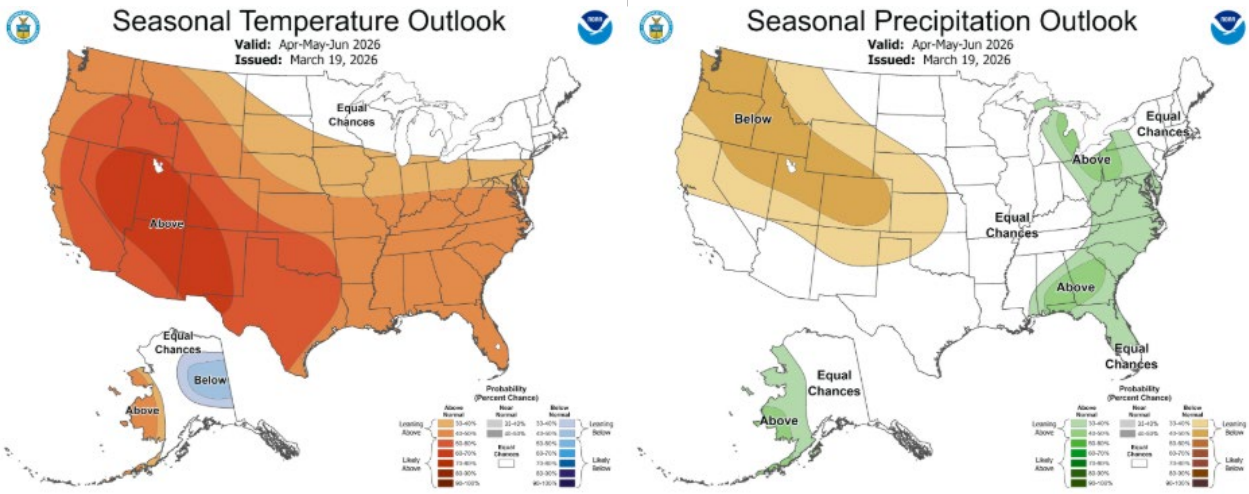


Figure 4. Climate Prediction Center's Seasonal Outlook for Temperature and Precipitation for April, May, and June 2026.