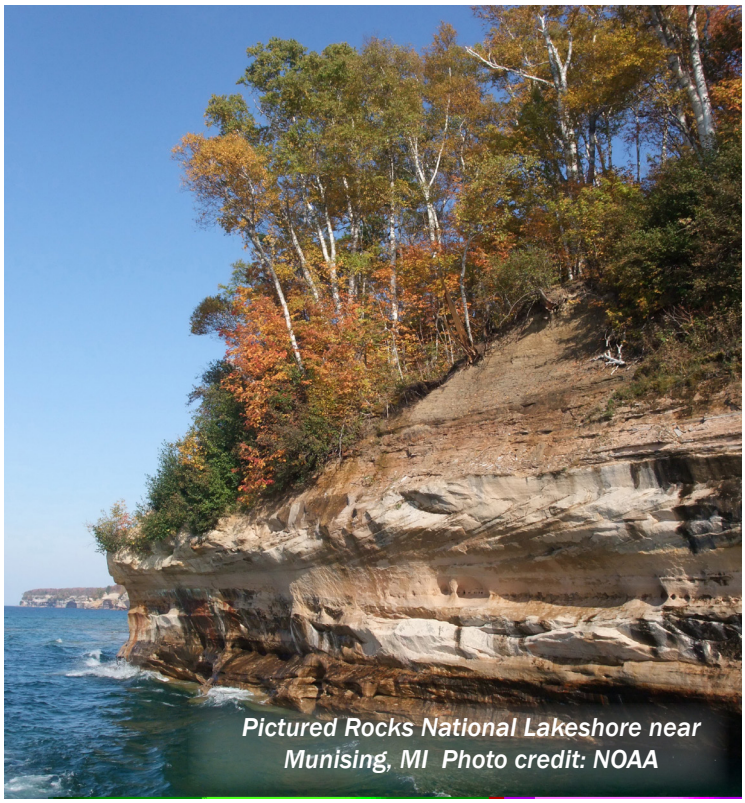
Water Levels of the Great Lakes

September 2016

The Great Lakes, their connecting waterways, and their watersheds, comprise the largest lake system, by surface water, on the planet. The monthly, seasonal, and annual surface water elevations of the lakes fluctuate in response to a variety of factors. This fact sheet provides a brief overview of historical Great Lakes water level patterns and current water levels, as well as the research NOAA conducts through its Great Lakes Environmental Research Laboratory (GLERL) on water budget components and seasonal water level forecasting.

Following El Niño: Will Water Levels Decline?

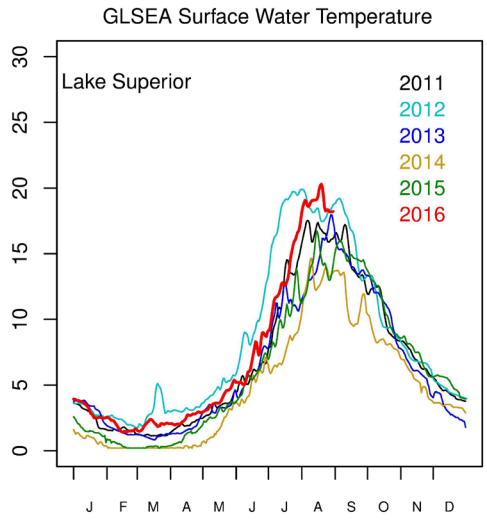


Pictured Rocks National Lakeshore near Munising, MI Photo credit: NOAA

As predicted during the waning of last winter's strong El Niño, **the summer of 2016 was warmer than average** with greatly varying precipitation in different parts of the Great Lakes basin. At summer's end, the Palmer Drought Index, a measure of long term drought, indicated conditions ranging from very moist in the west to severe drought in the eastern part of the basin.

Great Lakes water levels began their seasonal decline earlier than usual. Historically, this occurs in late summer to fall. Lake Erie levels started declining in June; Lake Michigan-Huron levels began to decline in August. Additionally, the lakes reached **unusually high surface water temperatures** – 4-6 degrees C above their average (1992-present) by September. This may lead to above average evaporation over the lakes this fall/early winter.

Looking ahead, the NOAA Climate Prediction Center (CPC) predicted (mid-August) warmer than average air temperatures for the fall over most of the basin. Winter in the Great Lakes region, according to CPC outlooks, may be wetter and colder than average. **Will above average winter precipitation come to pass, and overcome the expected greater than average fall over-lake evaporation?**



Above: Surface water temperatures for Lake Superior from NOAA CoastWatch's Great Lakes Surface Environmental Analysis (GLSEA) from 2011 through present. Temperatures are in degrees Celsius. Note that August 2016 surface water temperatures recently exceeded those of 2012.

FOR MORE INFORMATION

www.glerl.noaa.gov/data/now/wlevels/levels.html

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