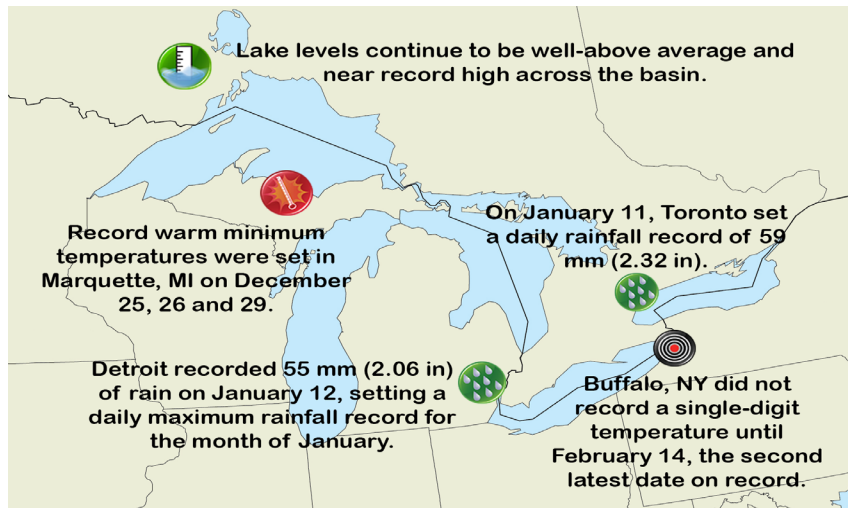


Great Lakes Significant Events – for December 2019 - February 2020



This winter the Great Lakes continued to experience water levels that were near or above record highs, with five monthly mean record highs broken and one tied. The high lake levels have contributed to issues of significant coastal erosion, flooding, and infrastructure damage, with concerns remaining high for the upcoming season.

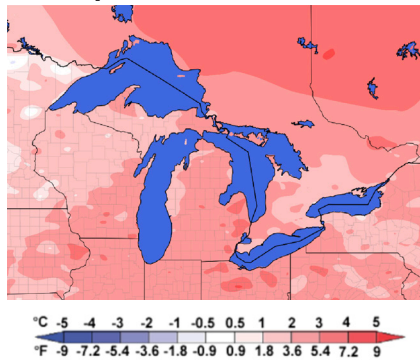
The last week of December was exceptionally warm across much of the basin, with many record high and record warm minimum temperature records set at locations such as Toronto and Hamilton International Airports, ON, Appleton and Oshkosh, WI and Chicago, IL.

Significant rainfall occurred across the lower Great Lakes from Chicago to Toronto on January 10-12. During this period, London, ON received 75.9 mm (3 in) of precipitation, which is the amount of precipitation received in London normally for the entire month of January.

A large lake-effect snow event occurred from February 27 through March 1 from Lake Huron to Lakes Erie and Ontario. East of Lake Erie, 88 cm (34.5 in) of snow was recorded while east of Lake Ontario, there was 122 cm (48 in) of snow.

Regional Climate Overview – for December 2019 - February 2020

Winter 2019 - 2020 Temperature Departure from Normal



Temperature and Precipitation

December was up to 4°C (7°F) warmer than normal while January was up to 7°C (13°F) warmer than normal. February temperatures ranged from 3°C (5°F) below normal in the west to 3°C (5°F) above normal in the southern Erie and Ontario basins. Most of the Great Lakes states had one of their top 10 warmest winters on record.

December precipitation was near or above average with the overall basin seeing 102% of average. January precipitation was below or near average for all basins except Erie, with the overall basin seeing 90% of average. February and winter were drier with the basin seeing 50% of average and 84% of average, respectively.

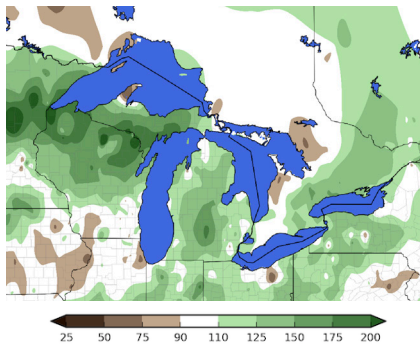
There was below-average ice cover due to warm air temperatures and lack of consecutive days below freezing. The fourth lowest maximum ice cover was set this year at 19.5% on Feb. 21 (the long-term average of annual max ice is 54%).

Lake	End of Feb 2020 Compared to:		Change since Dec 1st	
	Average	2019	2019/20	Average
Sup.	+33 cm	0 cm	-20 cm	-20 cm
Mich.-Huron	+94 cm	+38 cm	-4 cm	-8 cm
Erie	+86 cm	+25 cm	+20 cm	+3 cm
Ont.	+47 cm	+10 cm	+10 cm	+10 cm

Current Water Levels

Monthly mean water levels continue to be well-above average and near or above record high levels. Lakes Superior and Michigan-Huron set records in Jan. and Feb., while Lake St. Clair tied its record in Jan. 2020 and Lake Erie set a record in Feb. 2020. The lakes typically reach their seasonal low level in winter, while this usually occurs in March for Lake Superior. December and January were fairly wet and warmer temperatures reduced the amount of evaporation off the lakes, even with reduced ice cover. February was fairly dry, however water levels remain very high going into the spring.

Winter 2019 - 2020 Precipitation Percent of Normal

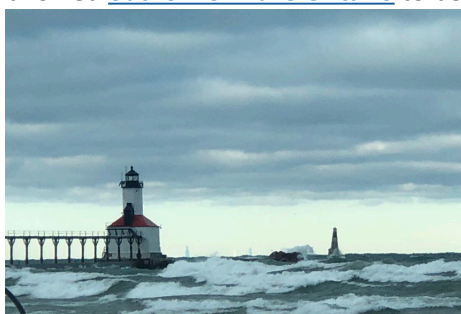


Regional Impacts – for December 2019 - February 2020

The economic impact from high lake levels continues around the basin. Rising waters on Lake Ontario led the town of [Goderich, ON](#) to spend more than \$1 million in order to protect its drinking water treatment plant, which sits only 30 m (98 ft) from the coast. With the likelihood that water levels remain high, [South Haven, MI](#) has estimated that they may need up to \$16 million to repair and protect their shoreline, marinas, and stormwater and utility systems.

A strong storm system from January 10-12 damaged the shorelines around Milwaukee and [Chicago](#), which later issued a [local disaster proclamation](#). The [Port of Milwaukee](#) sustained "catastrophic" damage when the break wall was partially destroyed after 60-70% of the port flooded. This system produced record-setting rainfall around [Macomb County, MI](#), overwhelming wastewater facilities which were then forced to release millions of gallons of partially treated sewage into waterways. Also, this storm also broke a 127-year rainfall record in [London, ON](#), leaving two kayakers stranded on the Thames River who were later rescued and the system also shut down the southbound lanes of the Don Valley Parkway.

Extremely high lake levels have continued throughout the winter. From February 4-11, [Geneva-on-the-Lake, OH](#) lost 10.7 m (35 ft) of shoreline from erosion. The opening of the [St. Lawrence Seaway](#) was delayed by almost two weeks from March 20 until April 1 in order to help reduce the levels on Lake Ontario. Relatively mild winter temperatures have allowed [outflow on Lake Ontario](#) to be at a maximum in order to reduce the potential for flooding later in the year.



Lake Michigan waves (credit: M. Dodson).



Flooding in Chicago (credit: M. Zuro).



Repair at the Soo Locks (credit: USACE).

Regional Outlook – for April - June 2020

Temperature and Precipitation

The temperature outlook from [American](#) and [Canadian](#) forecasters shows an enhanced chance for above-normal temperatures. The precipitation outlook from [American](#) forecasters has an enhanced chance for above-normal precipitation while the outlook from [Canadian](#) forecasters shows equal chances for above-, below- and near-normal precipitation. With conditions already being extremely wet across the basin, we will continue to see a fast response to any rainfall that occurs in terms of runoff and flooding as well as potential agricultural impacts such as slow planting.

Great Lakes Water Levels

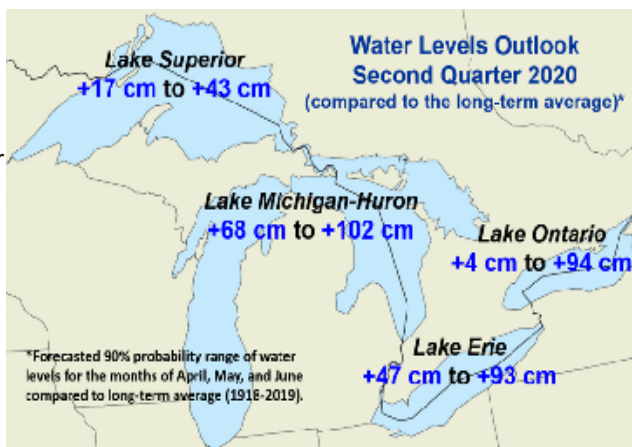
The risk for shoreline erosion and coastal flooding will remain as water levels begin or continue their seasonal rise this spring. The March forecast indicates that Lakes Erie and Ontario are expected to continue their seasonal rise

into the late spring or early summer. Lake Superior is forecast to continue its seasonal decline into March before beginning its rise in April. Lake Michigan-Huron is forecast to be

relatively steady over the next month before resuming its rise in April. During the second quarter of 2020, water levels are

[forecast](#) to remain well-above average and near or above record highs. Even under dry water

supply scenarios, water levels would likely remain above average.



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