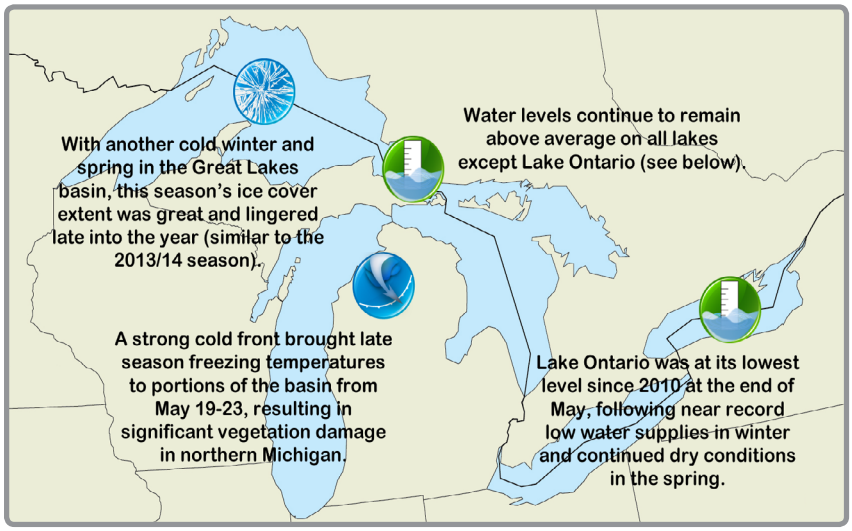
Quarterly Climate Impacts and Outlook

Great Lakes Region

June 2015

Great Lakes Significant Events - *for March - May 2015*

Overall, the Great Lakes basin experienced dry and cool conditions during spring 2015. The dryness was most prominent in March and April and drought conditions spread throughout the basin. However, May did bring some precipitation and drought relief to most areas in the basin.



Water supplies in the Lake Ontario basin in March were near record lows for the second straight month, delaying the typical seasonal lake level rise. In combination with the generally dry conditions that followed, Lake Ontario experienced well below average water levels in April and May and by the end of May was 18 cm (7.1 in) below average - the lowest it's been since 2010. Water supplies were closer to normal on lakes Superior, Michigan-Huron, and Erie over the quarter, and water levels continue to remain above average for those lakes.

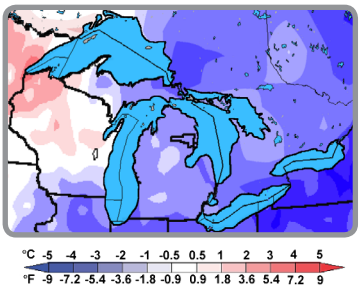
The last two winters (2013/14 and 2014/15) were the first time since the 1970s there has been two consecutive years where at least three of the Great Lakes were more than 95% ice covered. Also, ice was present late into the season on some lakes. Ice cover on Lake Superior lingered until May 28, which is only the 4th time in the 40 year period of record that ice cover has remained on Lake Superior through late May.

A strong low pressure system brought unseasonably cold temperatures into the basin from May 19-23. Some locations across Ontario, northern Minnesota, Wisconsin, and Michigan experienced freezing temperatures - some as low as -5.5°C (22°F) - resulting in significant vegetation damage in some areas. Just days prior, this same system brought freezing precipitation and snow to areas in Ontario. While snowfall totals were not substantial, some areas reported several hours of freezing precipitation during this late season winterlike storm.

Regional Climate Overview - *for March - May 2015*

Air Temperature

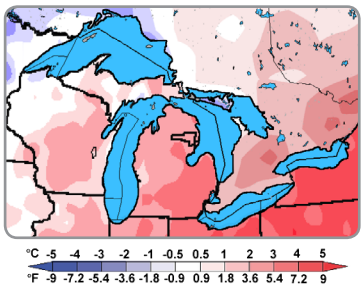
March 2015 Temp: Dep. from Normal



Spring transitioned from a cold March to a near normal April to a mild May. March temperatures were up to 4°C (7.2°F) colder than normal, except in the western Lake Superior basin (see left figure). April temperatures were within 2°C (3.6°F) of normal in the entire basin. May temperatures were up to 4°C (7.2°F) warmer than normal, except in the northern Lake Superior basin (see right figure). Overall, spring temperatures were up to 2°C (3.6°F) colder than normal in the northern basins of lakes Superior and Michigan-Huron and near normal in the rest of the basin.

March and May 2015 graphics are shown to display the range in temperatures this spring. Temperature normals based on 1981-2010.

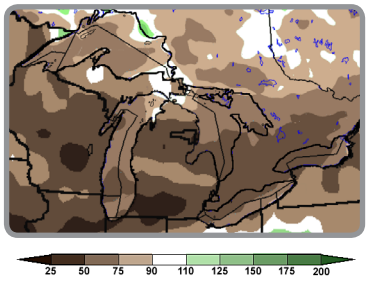
May 2015 Temp: Dep. from Normal



Precipitation

March and April were drier than average for all lake basins. Overall, the Great Lakes basin saw 44% of average March precipitation and 90% of average April precipitation. All lake basins but Ontario were wetter than average in May, with the overall basin seeing 115% of average. Spring was drier than average for all lake basins, with the overall basin seeing 87% of normal.

March 2015 Precipitation: Percent of Normal (%)



Precipitation normals based on 1981-2010.

Great Lakes Water Levels

Water levels usually rise during spring as precipitation and runoff increase, and evaporation rates are low this time of year. After a cool and dry start in March, this spring brought normal to slightly wetter than normal conditions for the Great Lakes region, with the exception of Lake Ontario, where basin conditions were mostly dry. Lake Superior finished the quarter 19 cm (7.5 in) above the long-term average and 5 cm (2.0 in) higher than last year, while Lake Michigan-Huron finished the quarter 14 cm (5.5 in) above average and 31 cm (12.2 in) higher than last year. Lake Erie water levels were 12 cm (4.7 in) above average and 4 cm (1.6 in) higher than last year. The dry conditions contributed to Lake Ontario ending the quarter 18 cm (7.1 in) below average and 31 cm (12.2 in) lower than the last year at this time.

Water level statistics based on 1918-2014.

Regional Impacts - *for March - May 2015*

Shipping

The Pierre Radisson, a Canadian Coast Guard icebreaker, in Lake Superior on 4/4/2014 (Photo: George Leshkevich)

The opening of the Lake Ontario to Montreal section of the St. Lawrence Seaway was delayed until April 2 due to extensive ice cover, completing the full Seaway opening about one week later than normal and the latest since 1997. In fact, despite the locks on the St. Marys River opening on March 25 as planned, the navigation season generally started slowly across the Great Lakes region, and for the second straight year the shipping industry relied heavily on the U.S. and Canadian Coast Guards to clear shipping lanes of ice early in the season. The most notable example occurred during the first week of April, when a clog of vessels sat for days in Whitefish Bay in eastern Lake Superior until a heavy ice-breaker from Montreal arrived to help clear pathways through a large ice field.

Industry

The extensive ice cover on the Great Lakes delayed the commercial fishing season - a $100 million industry for the Great Lakes - by a few weeks this March for the second year in a row. Ideally, the boats like to be out in early March to keep up with the fish demand during Lent but were delayed this year until the end of March.

Agriculture

Freeze events from May 19-23 caused significant crop damage in Michigan, particularly across the northwest portions of Lower Michigan where temperatures fell as low as -5°C (23°F). The most severe damage occurred to vinifera grapes, with some growers reporting no remaining live shoots. This is the second consecutive season grape growers in this region had major crop losses. Other crops with significant damage in Michigan were blueberries, sweet and tart cherries, peaches, and apples. Minor damage was also reported in Ontario to vinifera grapes, corn, soybeans, and strawberries.

While the dry spring conditions were favorable for spring planting operations, the overall dry conditions throughout much of the spring could negatively impact crop germination and plant growth in crops.

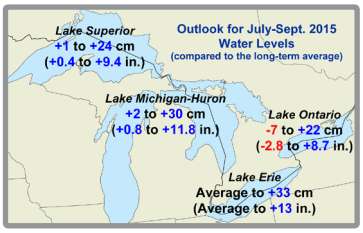
Wildfires

The Palsburg Fire in Minnesota on 4/15/15 (Photo: James Silverstone, US Forest Service)

The dry conditions extending from winter into spring produced an active fire season over portions of the basin the last three months, especially over Minnesota and Lower Michigan. The largest fire in Minnesota was the Palsburg Fire, which began on April 15 and burned approximately 6,000 acres primarily in Beltrami Island State Forest. Smaller fires in Minnesota resulted in evacuations of nearby homes, businesses, and schools.

Regional Outlook - *for July - September 2015*

Lake Level Outlook



Potential range for water levels for July-Sept 2015 compared to the long-term average (LTA: 1918-2014)

Water levels typically peak in the summer months before beginning to decline at the end of summer as water supplies to the lakes tend to decrease, mainly due to increaseing evaporation and reduced runoff. Current projections from July to September show above-average water levels for lakes Superior, Michigan-Huron and Erie unless exceedingly dry conditions are experienced. Lake Ontario is projected to be near or slightly above average this summer unless exceedingly wet or dry conditions are experienced.

Harmful Algal Bloom Outlook

The harmful algal bloom (HAB) season in western Lake Erie peaks annually in late summer. The severity of HABs is dependent on phosphorus inputs from March 1-July 31 (the "loading season"). Based on data from March 1-June 15, the extensive severe HABs observed in 2011 and 2013 are not projected to occur this year. Conditions can change quickly, so this HAB outlook is updated weekly with the latest information. On July 9, NOAA will officially announce the predicted western Lake Erie HAB extent for 2015. Resource and public health managers can use these outlooks to deal with the toxic blooms, which affect human and animal health.

Temperature & Precipitation Outlook

Environment Canada (EC) is forecasting a greater chance for above normal temperatures in the Canadian basin for July-September, while the Climate Prediction Center (CPC) says there is no clear signal whether temperatures will be above, near, or below normal in the U.S. basin. The July-September forecasts from EC and CPC show no clear signal for precipitation as well.

For July, CPC says there is no clear signal across a majority of the U.S. basin in terms of temperature or precipitation, but they are calling for a greater chance for above normal preciptiation near southern Lake Michigan. For the Canadian basin, EC is calling for above normal temperatures in the east and near normal in the western Canadian basin. EC says there is no clear signal for July precipitation in the Canadian basin. Current outlooks can be found through the Climate Prediction Center and Environment Canada.

Great Lakes Region Partners

Environment Canada
www.ec.gc.ca
Agriculture and Agri-Food Canada
www.agr.gc.ca
Midwestern Regional Climate Center
mrcc.isws.illinois.edu
Northeast Regional Climate Center
www.nrcc.cornell.edu
Great Lakes Region State Climatologists
www.stateclimate.org
National Oceanic and Atmospheric Administration
www.noaa.gov
- **National Operational Hydrologic Remote Sensing Center**
  www.nohrsc.noaa.gov
- **Great Lakes Environmental Research Laboratory**
  www.glerl.noaa.gov
- **NOAA Great Lakes Sea Grant Network**
  www.seagrant.noaa.gov
- **North Central River Forecast Center**
  www.crh.noaa.gov/ncrfc
- **Ohio River Forecast Center**
  www.weather.gov/ohrfc
- **Climate Prediction Center**
  www.cpc.noaa.gov

Great Lakes Integrated Sciences & Assessments
www.glisa.umich.edu
US Army Corps of Engineers, Detroit District
www.lre.usace.army.mil
National Integrated Drought Information System
www.drought.gov
Great Lakes Water Level Dashboard
www.glerl.noaa.gov/data/dashboard/GLHCD.html

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