



DID YOU KNOW?

Here is what's already occurring:

- Lake Superior's surface water temperature in summer has warmed twice as much as the air above it since 1980.
- Lake Superior's spring turnover has become earlier by about 1/2 day / year, leading to earlier summer stratification. The sun-warmed upper layer extends farther into the water column, making fall mixing later, and lengthening the number of days the lake is stratified by 25 days in the last century. Less mixing of water means less nutrient sharing between layers and reducing fish production in lakes.
- Significant decreases in winter ice cover, leading to changes in the distribution of cold and warm water fish species. The area covered by ice each winter is decreasing by about 0.5%/year. Ice cover on Lake Superior has decreased from 23% to 12% over the last century.
- We have seen an increase in flooding (a lot of water falling at once) and drought (longer periods of time, especially in summer, with no precipitation).
- Increased wind speeds on Lake Superior accelerate the speed of water currents, in turn affecting the aquatic food web
- Climate change has resulted in less winter precipitation as snowfall and more rain, both resulting in reduced snowpack, which effects many wildlife species and spring run-off in our watershed.

LAKE SUPERIOR AVERAGE SURFACE TEMPERATURE



Here are the projections, some of which have already begun:

- Due to climate change, the Great Lakes are expected to see an increase in water temperature between 1°C and 7°C within the next century.
- Increase in water temperature will:
 - Make some rivers and lakes more favourable for invading species;
 - Increase evaporation leading to lower water levels;
 - Effect the growth and reproduction of aquatic organisms;
 - Increase frequency and intensity of extreme weather events, resulting in increased erosion of soil. This increase of sediment in water smothers habitat, harms organisms directly, overloads the ecosystem with nutrients, all resulting in:
 - Decreased water quality;
 - Altered stream flow patterns.
- Drought may cause wetlands to dry up, adding to the reduction of water quality in our watershed.



WHAT CAN WE DO?

Here is what you can do to help:

- Trees and shrubs are Win-Win: Keep shorelines natural and, where possible enhance vegetation along all water systems, and even in-land. Shoreline plants increase shading, reduce erosion, manage stormwater, support fish species, capture carbon and more. Whenever possible use native species.
- Eliminate or avoid the use of hard surfaces such as pavement that heat up precipitation that falls on it, then transferring that hot water into our natural water systems, as well as eliminating ground water infiltration.
- Installing rain gardens and Low Impact Developments to manage stormwater where it falls.
- Conserve water during times of drought and make preparations for excessive stormwater runoff (examples: rain barrels, cisterns)
- Reduce your carbon footprint and call for climate action from your local, provincial, and federal elected representatives.



TAKE ACTION NOW!

- *Communicate about climate change*
- *Encourage decision makers to take action*
- *Get involved with community initiatives*



Here is what's already occurring to prepare in the Thunder Bay area:

- Residential drainage booklets that provide property owners information on drainage systems and basic flood prevention measures. Rebates are also available through EcoSuperior and funded by the City of Thunder Bay
- Rain Garden rebates through EcoSuperior and funded by the City of Thunder Bay
- Can request a boulevard tree through the City's Parks Department
- Flood warning system through the Lakehead Region Conservation Authority

REFERENCES:

- Environment and Climate Change Canada. 2017. Quarterly Climate Impacts and Outlook – Great Lakes Region. https://binational.net/wp-content/uploads/2017/10/GL-Summer2017_Final.pdf
- Sea Grant Minnesota and NOAA. Climate Change and Lake Superior. <http://www.seagrants.mn.edu/climate/superior>
- Huff, A. and Thomas A. 2014. Lake Superior Climate Change Impacts and Adaptation. Prepared for the Lake Superior Lakewide Action and Management Plan – Superior Working Group
- Lakehead Region Conservation Authority. <https://lakeheadca.com/watershed/climate-change>
- Federation of Ontario Cottagers' Associations. 2016. Managing Your Waterfront Property in a Changing Climate

THIS RESOURCE IS BROUGHT TO YOU BY:

- CITIZENS UNITED FOR A SUSTAINABLE PLANET
- EARTHCARE – CITY OF THUNDER BAY
- ECOSUPERIOR ENVIRONMENTAL PROGRAMS
- ENVIRONMENT NORTH
- FRIDAYS FOR FUTURE – THUNDER BAY CHAPTER
- LAKEHEAD REGION CONSERVATION AUTHORITY
- LAKEHEAD UNIVERSITY – SOCIAL SCIENCES AND HUMANITIES
- RESEARCH COUNCIL
- MATAWA FIRST NATION MANAGEMENT – FOUR RIVERS ENVIRONMENTAL GROUP
- ONTARIO NATURE
- THUNDER BAY DISTRICT HEALTH UNIT – NORTHERN ONTARIO HEALTH AND CLIMATE CHANGE COLLABORATIVE

FOR SOURCES AND MORE INFORMATION, VISIT:
WWW.CLIMATECHANGETBAY.COM