

Planning for Climate Change in Muskoka



The New Muskoka Climate

Climate is changing in Muskoka just as it is changing elsewhere, and we are powerless to alter the trajectory by taking local action. Instead, we must adapt to the changes coming, while supporting the global actions that need to take place if we are to avert truly serious changes in climate later in this century. To adapt effectively, we must plan ahead and be proactive.

This factsheet describes the climate that Muskoka is likely to experience at mid-century. That time is sufficiently far away that the climate will be measurably different to what we have today, yet not so far away that it fades into the misty future. If you have children starting kindergarten in 2016, they may have children of their own in school at mid-century. Your grandchildren!

The problem

The world's climate system is large and complex, and there are lengthy time lags built into its operation. Human behavior, particularly since the start of the industrial revolution, has altered the composition of our atmosphere in ways that resemble putting on an extra sweater or two – the world is getting warmer. We have altered the atmosphere by burning coal, oil and gas to power our global economy, thereby releasing carbon dioxide (CO₂) to the atmosphere. CO₂, methane, water vapor, and nitrous oxide (NO₂) are the primary insulating gases in our atmosphere – we call them greenhouse gases – but CO₂ is the most important at present, because our actions have rapidly increased its concentration in the atmosphere. Adding insulation leads to warming, and the CO₂ we have already added will continue to warm the planet through this century. At present, the global economy adds about 36 gigatonnes of CO₂ per year to the atmosphere!

Complex global climate models now enable climate scientists to project the likely climate in coming decades, making specific assumptions on how large the economy will become and how much of the energy used will be derived from coal, oil and gas. Using the output of 19 different global climate models, Muskoka Watershed Council has been able to specify the most likely climate in Muskoka at mid-century (2041 to 2070).

Our new climate

While the Paris Agreement of 2015 is an excellent first, and a very necessary, step by the nations of the world to start to amend our climate-damaging ways, little can be done to alter the climate expected at mid-century. Those benefits will come later in the century. **Our evaluation of the data suggests that Muskoka's climate at mid-century is going to be warmer and slightly wetter than at present, and that precipitation may come in fewer but more pronounced storm events.**

While there will still be warm years and cool ones, wet years and dry ones, the climate that we expect to see in Muskoka by mid-century will be a little warmer than the present climate throughout the year. It will also be noticeably wetter in winter and spring, but likely no wetter than at present in summer and fall. Because of the warmer temperatures, summers will seem dryer and soils will be dryer than they are at present.

The extent of likely warming, about 3-4°C in average daily temperatures each month, may seem slight, but is substantial. For comparison, during the last glacial maximum of the Pleistocene, global temperatures were only about 4.5°C colder than they are at present; that was sufficient to build glaciers kilometers thick above Muskoka.

While the warming occurs throughout the year, there is likely to be slightly more warming of nighttime than of daytime temperatures, and more warming of winter than of summer temperatures. This slight asymmetry and the overall 'position' of our climate on the temperature scale means that the typical year at mid-century will have about half of the number of really cold winter nights (-20 °C) and about four times the number of winter nights that remain above freezing. There will be 64% more winter days a year in which the maximum temperature is above freezing, and seven times more summer days in which the maximum temperature exceeds 30°C.

The models suggest about a 10% increase in the total amount of precipitation in Muskoka in a typical year at mid-century. Nearly all of this increase is likely to occur in late fall to early spring (November through April). Because the climate will be warmer, there will be more evaporation (and transpiration by plants), so that the soils will be drier, the air will seem drier, and there will be less water available to nourish wetlands, provide stream flow, and keep our lake levels high.

The consequences for our environment and our lives

These changes in climate will have real consequences for our natural environment and for our own lives. Subsequent factsheets and brochures will discuss these in more detail. The technical report, [Planning for Climate Change in Muskoka](#), provides a detailed explanation of what is happening to climate in Muskoka, and the consequences of these changes for our waterways and forests, and for our infrastructure and our lives. Muskoka's economy is strongly dependent on the quality of our natural environment. Our people, permanent residents and seasonal, greatly value that environment, recognizing its intangible contributions to our quality of life. The technical report justifies the value of forward planning to adapt to, and where possible ameliorate the impacts of the climate which is fast approaching, and concludes with 15 recommendations for action by provincial and municipal governments, businesses, community groups, and individuals. We who are of Muskoka have some important decisions to make, and some actions to take. Our children and our grandchildren will thank us for the efforts we make.

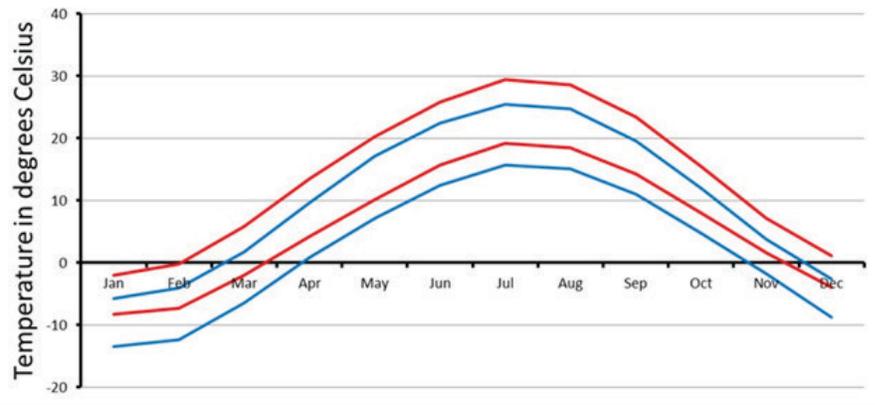


Figure 1. Graph comparing Muskoka's mean daily temperature each month for a typical year during the present (1971-2000) climate (daily high and low temperature as blue lines) and that of a typical year during the mid-century (2041-2070) climate (daily high and low as red lines), assuming a business-as-usual economic future.

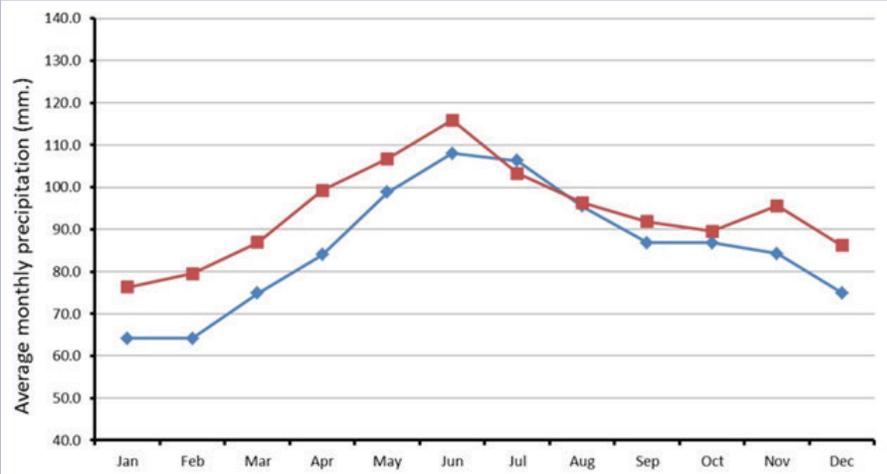


Figure 2. Mean monthly precipitation in Muskoka for each month in a typical year under the current climate (1971-2000) (blue diamonds) compared with the mean monthly precipitation for each month in a typical year during the mid-century climate (2041-2070) (red squares), assuming a business-as-usual economic future. Total annual precipitation in the typical year at present is 1,028 mm rain or rain equivalent. At mid-century it is projected to be 1,127 mm.