

Climate change and maple syrup production in New Brunswick

Warmer winters and springs can affect maple syrup production in New Brunswick.

We know this is already happening here. In 2018, the [CBC reported](#) that fluctuating temperatures and unseasonably mild weather forced some maple syrup producers in New Brunswick to start their season early for the **third year in a row**. A typical maple syrup season runs about six weeks in the province. The owner of Moncton Maple Sugar Camp said the season could be half that length with the changes to spring and winter temperatures.

According to a [study published in Forest Ecology Management](#), the maple syrup season in eastern North America may be one month earlier by the year 2100 than it was during 1950 and 2017.

Data from the Proctor Maple Research Centre in Vermont, which has a similar climate to New Brunswick, shows that the maple sugaring season in the state [starts an average of 8.3 days earlier and ends 11.6 days sooner](#) than it did 50 years ago.

What's happening?

Maple syrup production is contingent upon two climate-sensitive characteristics: its sugar content and sap flow. Sugar content depends on the amount of carbohydrates the tree has stored after a year of photosynthesizing and taking up nutrients from the surrounding soil through its roots. **Sap flow depends on the local area's freeze-thaw cycle. Specifically, sap begins to flow in sugar maple trees during a very specific window: when freezing temperatures (at or below 0°C / 32°F) occur at night but warm up during the day.**

A **freeze-thaw cycle** is a simple count of days when the air temperature fluctuates between freezing and non-freezing temperatures. Under these conditions, it is likely that some water at the surface was both liquid and ice at some point during the 24-hour period.

Higher average temperatures due to climate change, especially in spring and winter, affects the number of frost-free days we have and the freeze-thaw cycle in New Brunswick. According to data from the [Climate Atlas of Canada](#), New Brunswickers can expect 19 to 22 more frost-free days a year from 2021 to 2050, compared to the 1976 to 2005 mean (see table on Page 2).

6

Projected average frost-free days 2021 – 2050

New Brunswick Community	Mean 1976-2005 days per year	Projected frost-free season (days) 2021 - 2050	# of additional frost-free days	Frost-free season % increase
Edmundston area	125	147	22	18%
Campbellton area	115	137	22	19%
Dalhousie area	135	158	23	17%
Bathurst area	146	166	20	14%
Caraquet area	156	175	19	12%
Miramichi area	140	161	21	15%
Moncton	146	167	21	14%
Sackville area	154	175	21	13%
Sussex area	142	163	21	15%
Oromocto area	145	166	21	14%
Fredericton	141	161	20	14%
Minto area	139	159	20	14%
Woodstock area	126	147	21	17%
Grand Falls area	128	150	22	17%
St. Stephen area	150	172	22	15%
Saint John area	163	182	19	12%

Source: Averaged for high-and-low-emissions scenarios by CCNB using Canadian Climate Atlas data.