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OUTLOOK FOR THE FORMATION OF ICE IN THE ST. LAWRENCE SEAWAY & LAKE ERIE ISSUED BY CANADIAN ICE SERVICE

prepared for

The Saint-Lawrence Seaway Management Corporation

2nd December 2024



Canada 

For the month of November, mean surface air temperatures at select sites along the Saint-Lawrence Seaway have all averaged 2-4 degrees above normal.

| | November Mean Air Temperature °C | Normal November Mean Air Temperature °C | November Mean Temperature Anomaly °C |
|-----------------|----------------------------------|---|--------------------------------------|
| Montreal | 5.4 | 1.7 | 3.7 |
| Trenton | 5.8 | 2.7 | 3.1 |
| Kingston | 5.9 | 3.1 | 2.8 |
| Toronto | 7.0 | 3.3 | 3.7 |
| Hamilton | 6.4 | 3.5 | 2.9 |
| St Catherines | 8.0 | 4.8 | 3.2 |
| Windsor | 8.4 | 4.8 | 3.6 |
| Gore Bay | 5.1 | 1.9 | 3.2 |
| Sault Ste Marie | 9.8 | 7.0 | 2.8 |
| Thunder Bay | 2.3 | -2.6 | 4.9 |

Table 1: Mean air temperatures compared to normal mean air temperatures for November.

The chart below shows that the region of southern Ontario and southwestern Quebec averaged 1-2 degrees above normal for the month of November (yellow on figure 1 below) except for the area near Windsor which averaged 3 degrees above normal (orange of figure 1 below).

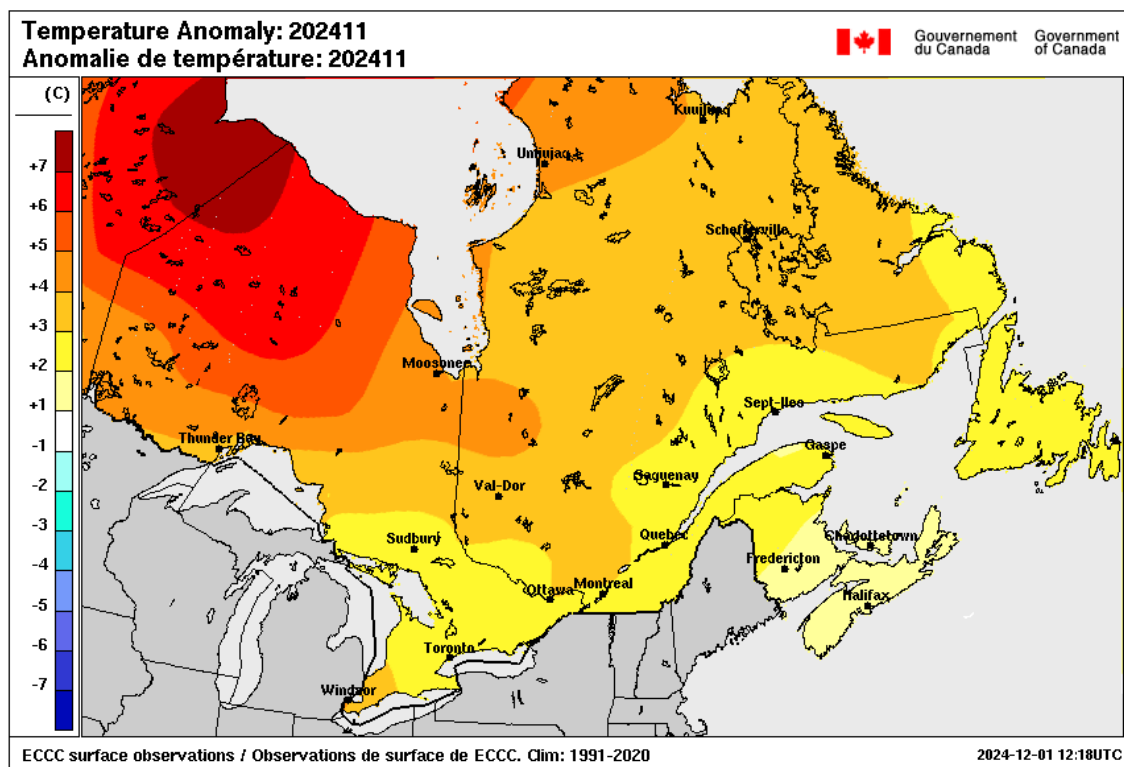


Figure 1: Temperatures anomaly chart showing that temperatures have been 2-3 degrees warmer than normal during November.

The surface water temperatures have also been very warm this year with all the Great Lakes experiencing warmer surface water temperature this year than even last year which itself had warm water temperatures.

The lakes had been on average 2-4 degrees warmer than last year for most of November but with colder temperatures arriving over the area at the end of November with a cold frontal passage the water temperature cooled to be about 2 degrees above normal for most sites at the end of November, see table 2 below.

Surface water temperatures at the end of November were about 2 degrees above the 10-year normal at all stations, see table below.

| Station | Date | Temperature | 10-year Normal | Anomaly |
|------------------|--------|-------------|----------------|---------|
| St. Lambert Lock | 29 Nov | 5.4 °C | 3.5 °C | +1.9 °C |
| St. Louis Bridge | 29 Nov | 7.3 °C | 5.6 °C | +1.7 °C |
| Cornwall | 29 Nov | 7.7 °C | 6.4 °C | +1.3 °C |
| Iroquois Lock | 29 Nov | 8.5 °C | 6.6 °C | +1.9 °C |
| Kingston | 29 Nov | 9.4 °C | 7.3 °C | +2.1 °C |
| Port Colborne | 29 Nov | 8.9 °C | 6.4 °C | +2.5 °C |
| Port Weller | 29 Nov | 9.0 °C | 6.9 °C | +2.1 °C |

Table 2: Current Seaway lock surface water temperatures

The water temperatures this year have been substantially warmer than normal. This will tend to delay the start to the ice season as before any ice can form the water needs to be cooled to freezing.

The warm water temperatures will enable heavy lake effect snow events early this winter as cold air has started to flow over the warm lakes. Besides producing large amounts of snow these snow squalls will enable the lakes to cool as the heat energy they currently contain will be spent on forming these squalls. It is expected that enough energy will be consumed in this process that very early in December the lake temperatures will only be about a degree warmer than normal.

The cold air currently over the area is expected to last for the first week of December it is expected that lake water temperatures should be near normal after the second week of December.

The extended stay of this cold air has changed the forecasted temperatures over the lakes to now average slightly below normal for the month of December, previously the temperature was expected to be near normal for December. See figures below.

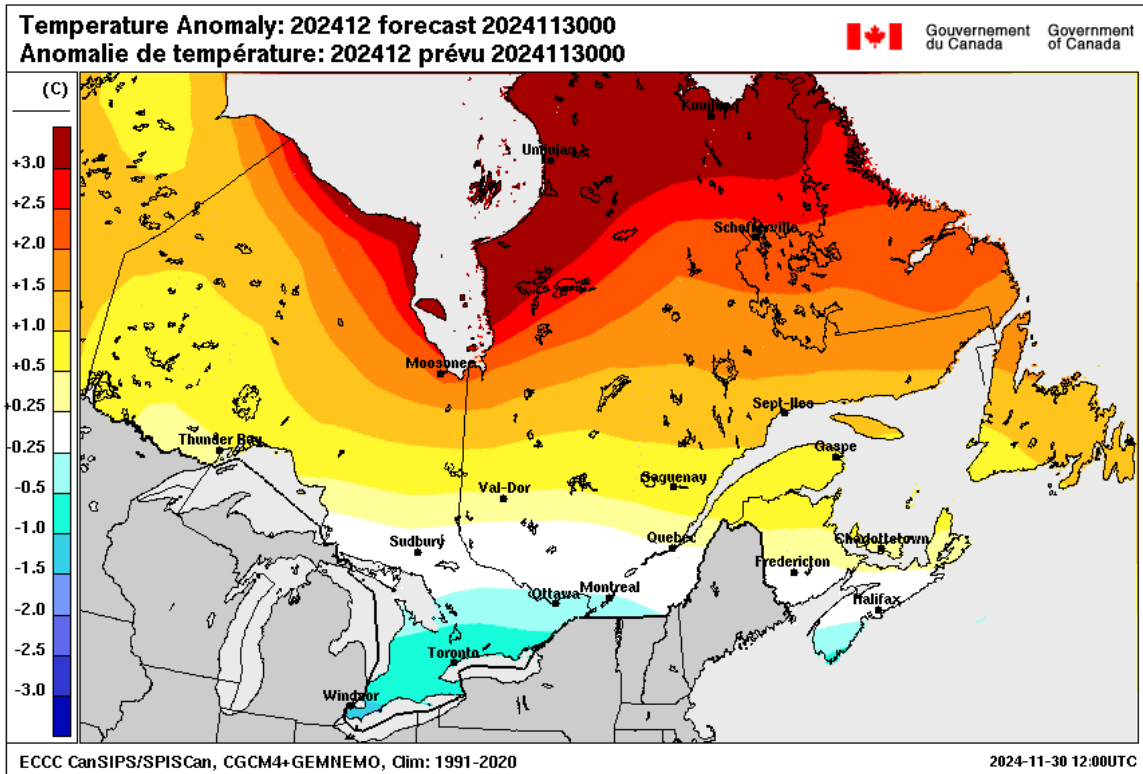


Figure 2: December temperature forecast showing 1 degree colder than normal temperatures expected.

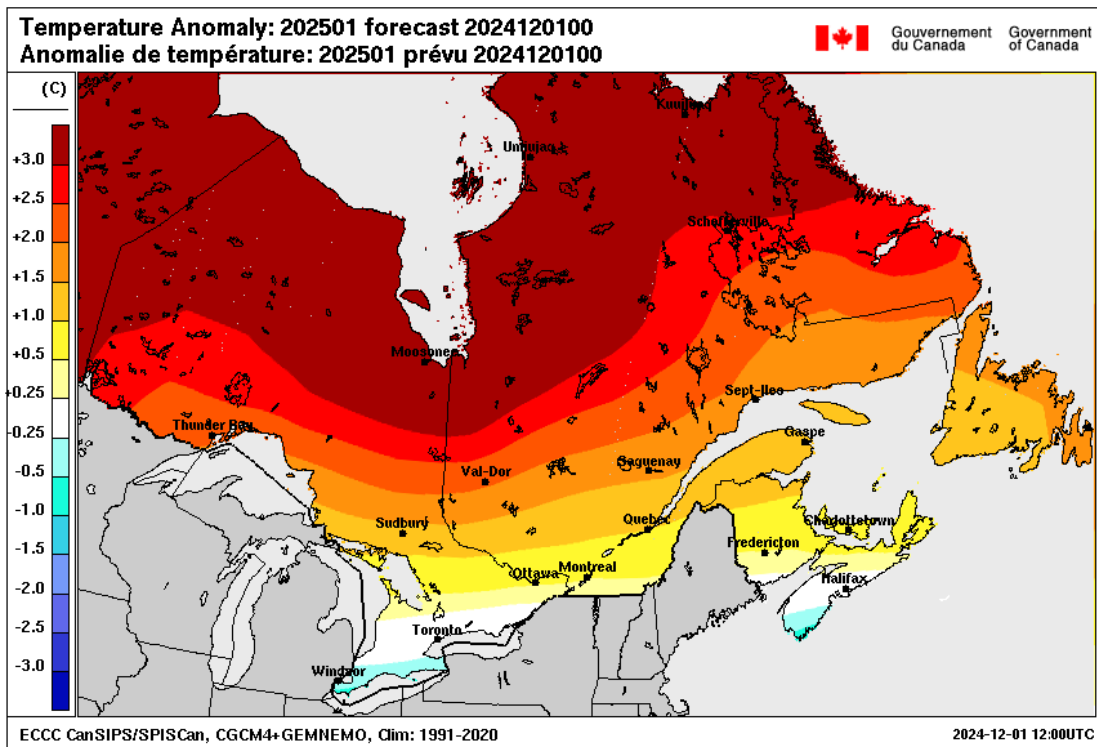


Figure 3: January temperature forecast showing near normal to 1 degree colder than normal temperatures expected.

By early January the water temperature will have cooled enough to allow for ice formation to occur and freeze-over is expected near the end of the first week in January.

Expectation is that ice will form a couple of days later than normal in most of the seaway.

The following table lists the average dates of occurrence of the first permanent ice, the complete freeze-over and the forecast trend for 2024/25.

| Station | First permanent ice | Complete Freeze Over | Forecast |
|-----------------------------------|----------------------------|-----------------------------|-----------------------|
| St. Lambert Lock | 25 Dec | 4 Jan | 2-4 days later |
| Upper Beauharnois | 19 Dec | 5 Jan | 2-4 days later |
| Cornwall (St Louis Bridge) | 23 Dec | 4 Jan | 2-4 days later |
| Iroquois Lock | 26 Dec | 6 Jan | 3-5 days later |
| Welland Canal | 25 Dec | 8 Jan | 1-3 days later |
| Port Colborne | 28 Dec | 8 Jan | 0-2 days later |

Table 3: Ice formation forecast.

THIS IS THE LAST ST. LAWRENCE SEAWAY AND LAKE ERIE FORECAST FOR THE 2024-25 SEASON.

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