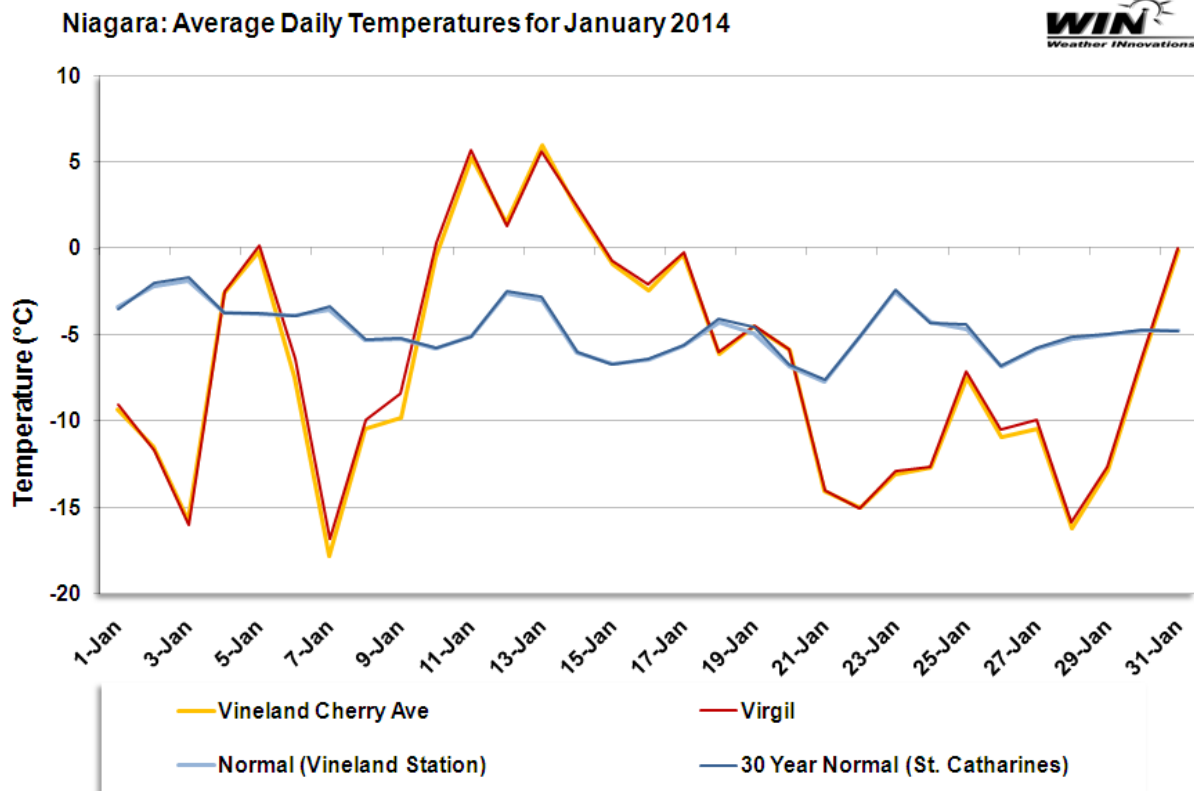


Overview

The much colder-than-normal December temperatures experienced in Niagara continued into January 2014. This was in direct contrast to the previous two years, which experienced warmer-than-normal temperatures. Average monthly temperatures were -7.2°C in the west and -6.6°C in the east (compared to -1.7°C in the west and -1.2°C in the east in January 2013). Accordingly, the average monthly temperature in the west and east was 2.5°C below the normal daily mean for Vineland and St. Catharines. These statistics were based on Environment Canada's 30-year normals. This summary illustrates January 2014 temperatures, as well as the icewine harvest opportunities that arose. For this report, icewine hours are defined as instances when the average hourly temperature ranged between -8.0°C and -12.0°C , inclusive.



Temperature Analysis

The monthly minimum temperatures in January 2014 ranged from -20°C at the Queenston station to -26.9°C at the Grimsby station (compared to -14.2°C at NOTL Lakeshore to -17.7°C at the Grimsby station in 2013). The monthly minimum temperatures occurred on the 3rd, 7th, 22nd and 23rd. Note that there were a significantly greater-than-normal number of days when the minimum temperature was below -10°C and -20°C . There were 20 days (compared to 14 days in January 2013) when temperatures, at



one or more stations, dipped into icewine temperature ranges. These temperature characteristics are shown in the following figures.

Niagara West: January 2014 Daily Minimums

Date	Winona	Grimsby	West Lincoln	Lincoln Fly Road	Beamsville	Lincoln Hwy 8	Lincoln Lakeshore	Vineland Cherry Ave	Vineland Escarpment	Jordan Escarpment	Jordan Hwy 8	Jordan Harbour	Rockway
1-Jan	-11.6	-13.4	-12.5	-12.8	-12	-11.9	-11.2	-11.3	-11.9	-12.6	-11.2	-11.5	-11.9
2-Jan	-16.3	-17	-16.1	-16.4	-15.6	-15.8	-15.1	-15.4	-15.7	-15.4	-14.9	-15.2	-15.1
3-Jan	-19.6	-20.6	-23.6	-19.8	-18.4	-18.7	-18.9	-17.9	-19.9	-20.4	-19.5	-18.8	-19.4
4-Jan	-8.4	-9.5	-9.5	-9.6	-8.7	-8.8	-8.2	-8.4	-9	-9.1	-8.4	-8.9	-8.8
5-Jan	-1.4	-2.6	-2.4	-2.1	-1.5	-2.1	-1.6	-1.4	-1.8	-2	-1.8	-1.6	-2.2
6-Jan	-19.4	-20.4	-20	-20.2	-19.6	-19.8	-19	-19	-19.6	-19	-18.6	-19.2	-18.8
7-Jan	-22.3	-23.2	-22.4	-22.6	-22.1	-22.5	-21.5	-21.5	-22	-21.3	-20.9	-21.7	-21.2
8-Jan	-15.7	-16.5	-15.8	-16	-15.5	-15.7	-14.9	-15	-15.5	-15.2	-14.8	-15.2	-15.1
9-Jan	-13	-16.5	-15.1	-14.7	-13.4	-13	-12.9	-13.3	-14.3	-13.7	-13	-13.5	-13.4
10-Jan	-7	-8.4	-8.2	-8.1	-7.4	-7.3	-7.2	-7	-7.4	-7.6	-7.2	-8	-7.8
11-Jan	0.4	1	1	1.1	1.4	1.1	1	1	1.5	1.8	1.1	0.8	1
12-Jan	0.9	-0.2	-0.1	-0.4	0.4	0.3	0.8	0.4	0	-0.2	0.2	-0.2	-0.4
13-Jan	1.7	0.7	0.9	1	1.8	1.5	2.3	2.1	1.5	1.1	1.7	1.3	1.3
14-Jan	-1	-3	-2.4	-2.3	-1.8	-1.8	-1.7	-2	-2.1	-2.4	-2.4	-2.3	-3.1
15-Jan	-3.9	-4.8	-5	-4.9	-4	-4.1	-3.2	-3.6	-4.4	-4.8	-4	-4	-4.5
16-Jan	-4.7	-6.1	-5.6	-5.4	-4.8	-5.2	-3.9	-4.2	-4.8	-4.9	-4.5	-4.5	-4.6
17-Jan	-1.8	-4.6	-2.9	-3.1	-2.4	-2.6	-2.1	-2.3	-2.6	-2.9	-2.4	-2.5	-2.8
18-Jan	-9.6	-10.7	-10.3	-10.7	-9.9	-10.1	-9.1	-9.4	-10.1	-10.9	-9.6	-9.7	-10.1
19-Jan	-8.9	-8.9	-8.5	-8.5	-7.9	-8	-7.2	-7.4	-7.9	-8.3	-7.7	-7.6	-8
20-Jan	-12.4	-13.6	-13.1	-13	-12.5	-12.4	-11.1	-11.6	-12.3	-12.5	-11.6	-11.7	-12.3
21-Jan	-16.5	-17.2	-16.5	-16.4	-15.7	-16	-14.9	-15.2	-15.8	-15.8	-15	-15.1	-15.4
22-Jan	-20.8	-26.9	-23.1	-22.3	-20.2	-19.8	-17.9	-20	-19.4	-22	-18.4	-18.9	-18.8
23-Jan	-18.1	-20.2	-21.4	-19.5	-18.5	-18.5	-17.4	-17.9	-19	-20.3	-17.6	-17.8	-18.6
24-Jan	-17.7	-19.7	-21.6	-19.3	-18.3	-18.3	-17.5	-17.6	-18.8	-19.2	-17.8	-17.9	-18.4
25-Jan	-14.2	-16	-15.5	-15.4	-14.8	-14.6	-13.2	-14	-14.7	-15.7	-13.4	-13.5	-14.4
26-Jan	-17	-18	-17.5	-17.8	-17.1	-17.1	-16.3	-16.6	-17.6	-17.2	-16.8	-17	-17
27-Jan	-17.4	-18.5	-18.1	-18.2	-17.6	-17.8	-16.8	-17.1	-17.6	-17.6	-16.8	-17.4	-17.3
28-Jan	-21	-21.8	-21.3	-21.4	-20.8	-20.9	-20	-20.1	-20.9	-20.7	-20.1	-20.6	-20.5
29-Jan	-16.9	-17.7	-17.4	-17.7	-16.9	-17	-16.5	-16.7	-17.2	-17.2	-16.6	-17	-17.1
30-Jan	-11.6	-13.4	-12.8	-13.1	-12.3	-12.3	-11.6	-11.6	-12.5	-12.6	-12.3	-12.4	-12.3
31-Jan	-2.8	-3.5	-3.2	-3.2	-2.4	-2.5	-2	-2.1	-2.7	-2.6	-2	-2.4	-2.5



Legend:

	Days with Ice Wine Temperatures
	Monthly Minimum

Niagara East: January 2014 Daily Minimums

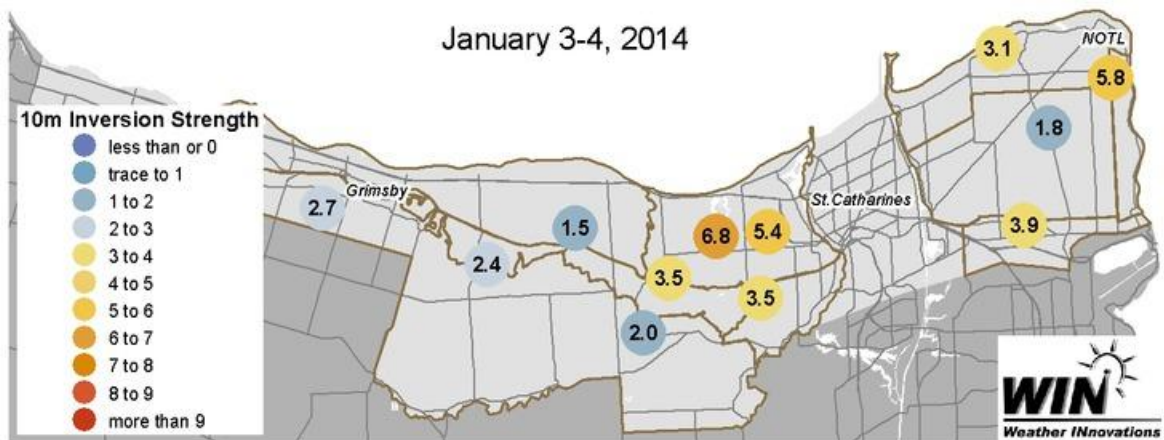
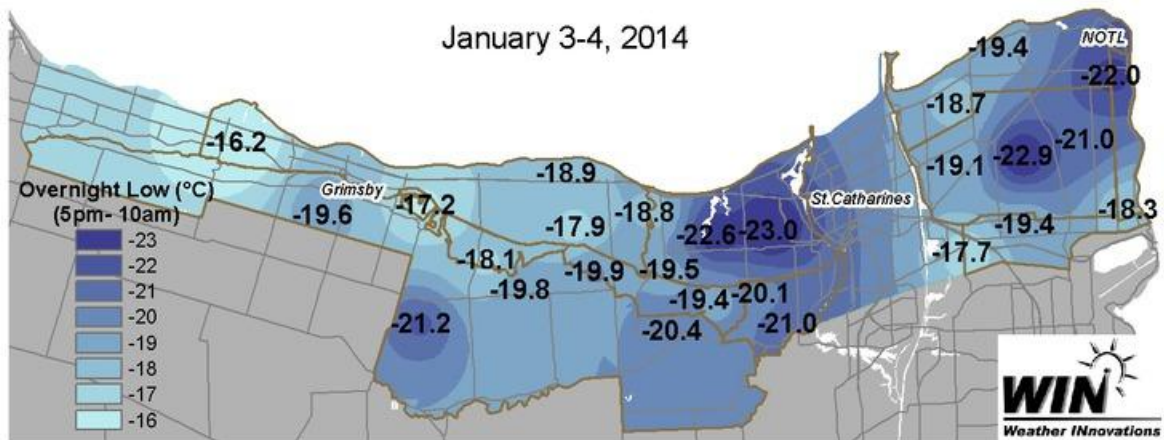
Date	St. Catharines Glass Ave	St. Catharines Third Ave	West St. Catharines Fifth St	Niagara College	St. David's Bench	Niagara Airport	Virgil	Virgil East	NOTL Irvine Road	Lakeshore Parkway	Queenston		
1-Jan	-10.9	-12	-11.8	-11.9	-11.3	-11.2	-10.8	-10.5	-10.7	-10.4	-10.1	-10.2	-11
2-Jan	-14.7	-15	-15.2	-14.8	-14.9	-15	-15.1	-14.6	-14.8	-15	-14.9	-14.6	-14.5
3-Jan	-22.6	-23	-20.1	-21	-17.7	-19.4	-19.1	-22.9	-21	-18.7	-19.4	-22	-18.3
4-Jan	-8.4	-8.8	-8.8	-8.6	-8.9	-9.2	-8.9	-8.7	-10.2	-8.9	-9.5	-10.2	-10.4
5-Jan	-1.5	-1.9	-2.1	-1.8	-1.5	-2.1	-1.9	-1.6	-2	-1.6	-1.5	-1.7	-1.6
6-Jan	-18.5	-18.7	-18.9	-18.2	-18	-18.3	-18.1	-17.7	-17.8	-18.4	-18.3	-17.7	-17.8
7-Jan	-20.9	-21.3	-21	-20.4	-20.1	-20.4	-20.6	-20.1	-20.3	-20.8	-20.7	-20.3	-20
8-Jan	-14.7	-15.1	-15	-14.7	-14.7	-14.9	-14.9	-14.4	-14.7	-14.9	-14.8	-14.7	-14.7
9-Jan	-14.6	-14.8	-13.3	-13.1	-12.8	-13.2	-12.5	-12.1	-11.4	-12.3	-11.9	-11.3	-12.6
10-Jan	-7.6	-7.8	-7.8	-7.6	-6.3	-6.6	-7.1	-6.9	-7.1	-7.5	-7.5	-7.4	-6
11-Jan	1.1	0.9	1.1	1.7	2.1	2	1.1	1.4	1.4	0.9	1	1.3	2
12-Jan	0.3	-0.1	0	0.1	0	-0.2	0	0.1	0.3	0	0.1	0.4	0.4
13-Jan	1.6	0.7	1.5	1.2	0.8	0.6	0.6	0.8	0.9	0.7	0.7	1	1.1
14-Jan	-1.8	-2.9	-2.1	-1.9	-1.4	-2	-1.9	-2.1	-2.1	-2.3	-1.9	-2	-1.4
15-Jan	-3.7	-4.7	-4.2	-4.1	-3.9	-3.9	-3.7	-3.4	-3.4	-3.4	-3.2	-3	-3.5
16-Jan	-4	-5	-4.5	-4.5	-4.2	-4.3	-4.1	-3.9	-4.1	-4.1	-3.8	-3.8	-4.1
17-Jan	-2.1	-2.4	-2.6	-2.2	-2.1	-2.1	-2.1	-1.9	-3	-2.1	-1.8	-2.4	-1.9
18-Jan	-9.4	-10.2	-10.6	-10.9	-9.5	-9.7	-9.2	-9.1	-9.1	-9.1	-9.2	-8.9	-8.8
19-Jan	-7.6	-8.9	-8.2	-7.8	-7.8	-8.2	-7.8	-8	-8	-7.6	-7.7	-7.5	-7.5
20-Jan	-11.1	-11	-12.2	-11.8	-11.1	-11.5	-11.3	-10.9	-11.1	-11.1	-11	-11.2	-11.1
21-Jan	-14.7	-15	-15.4	-15.1	-15.4	-15.5	-15.4	-15.1	-15	-15.1	-15	-15	-15.3
22-Jan	-18.2	-18	-19.3	-19.2	-16.5	-17.9	-18.6	-20	-18.3	-16.8	-15.6	-16.7	-17.8
23-Jan	-17.7	-18.4	-20	-19.6	-18.9	-20.7	-16.1	-16.1	-17	-15.2	-15	-15.4	-18.5
24-Jan	-17.9	-18.6	-18.6	-18.3	-18	-18.2	-17.9	-17.3	-17.4	-17.3	-17.5	-17.4	-17.5
25-Jan	-13.1	-13.6	-14.3	-13.8	-13.2	-12.9	-12.5	-12	-11.6	-11.2	-11.2	-11.3	-12.3
26-Jan	-16.6	-17.1	-16.9	-16.9	-15.9	-16.1	-16.3	-15.7	-15.9	-16.1	-15.9	-15.8	-16
27-Jan	-16.7	-17.3	-17.4	-17	-17.1	-17.3	-16.7	-16.4	-16.5	-15.7	-14.9	-15.8	-16.9
28-Jan	-20	-20.8	-20.3	-20.5	-19.4	-19.7	-20	-19.3	-19.3	-19.8	-19.7	-19.4	-19.4
29-Jan	-16.7	-17.2	-17.1	-16.9	-16.9	-17.3	-17	-16.8	-17	-16.7	-16.7	-16.8	-17
30-Jan	-12.4	-14.1	-12.8	-12.2	-11.6	-11.9	-12	-11.6	-11.7	-11.9	-12.3	-11.5	-11.5
31-Jan	-2	-2.9	-2.3	-2.1	-2	-2.2	-2.1	-2.9	-2	-2.1	-2.1	-1.8	-1.8

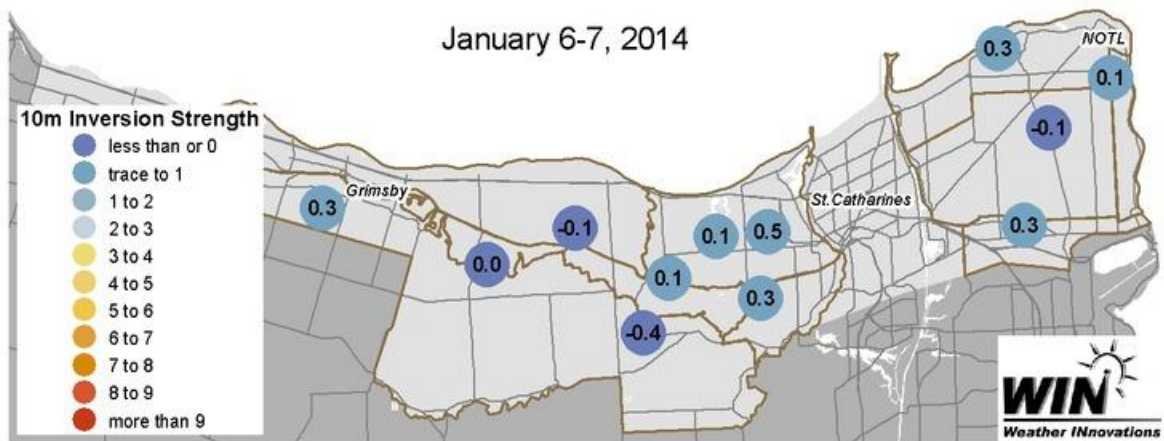
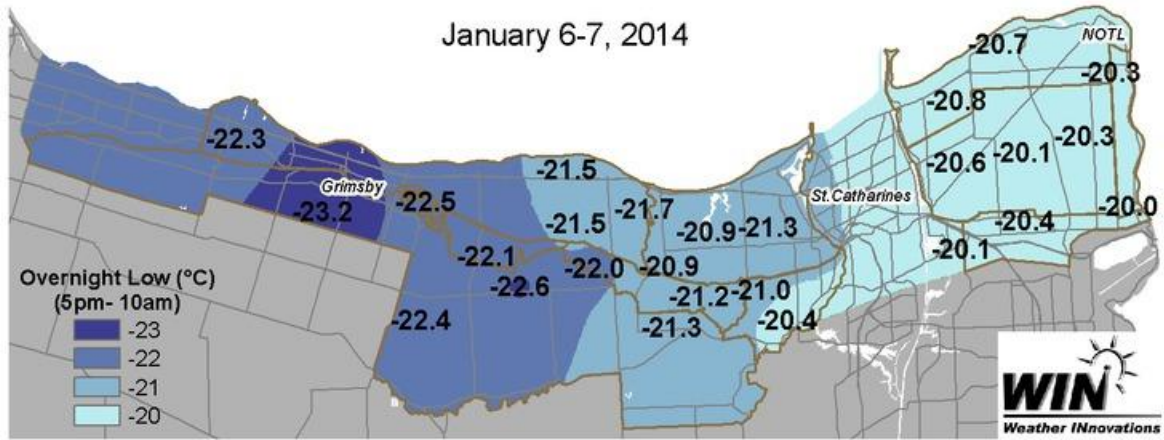
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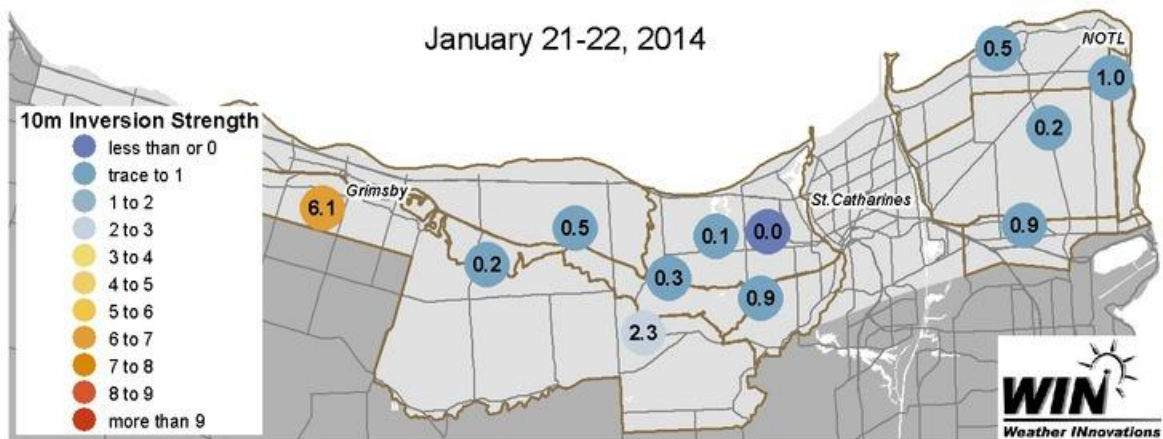
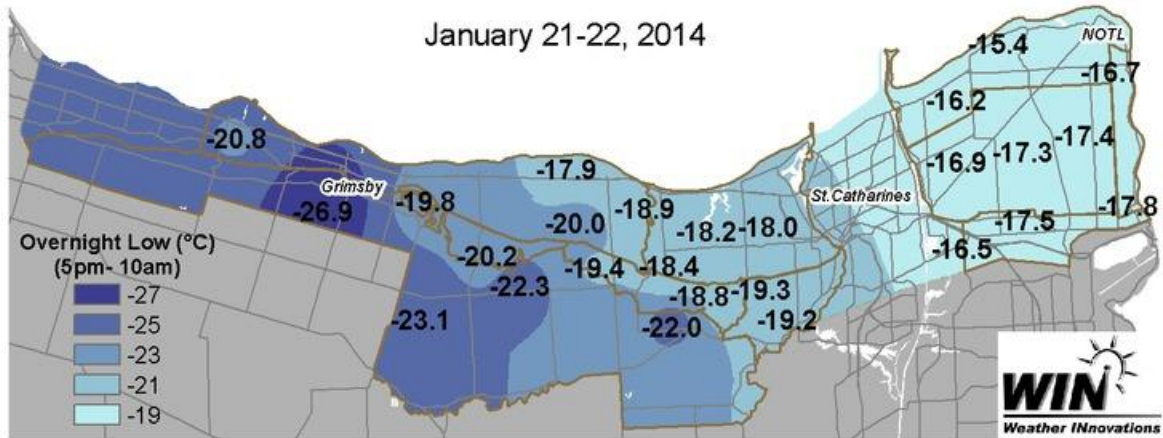
	Days with Ice Wine Temperatures
	Monthly Minimum

Inversion Strength

The following 6 figures show the coldest January nights: January 3-4, 6-7 and 21-22. Note that the locations that experienced the lowest temperatures also had the strongest 10-metre inversion strength on January 3-4 and 21-22 but NOT on January 6-7. The cold event on January 6-7 was the result of an extreme cold air mass entering the region with high wind speeds. These high wind speeds mix the 20-metre profile, preventing the formation of an inversion layer.



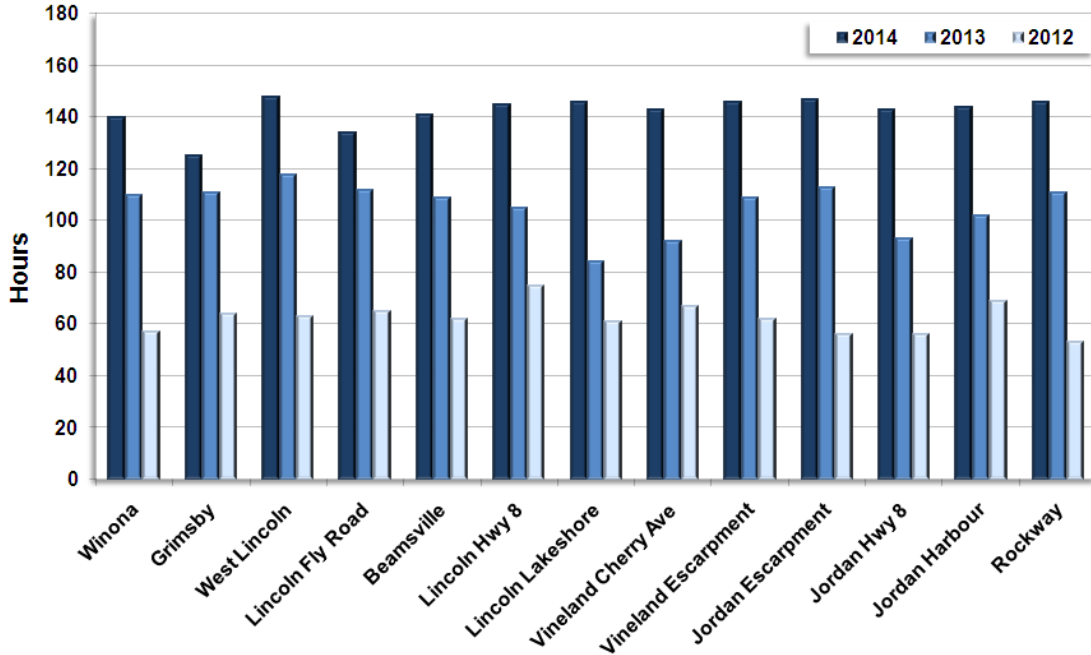




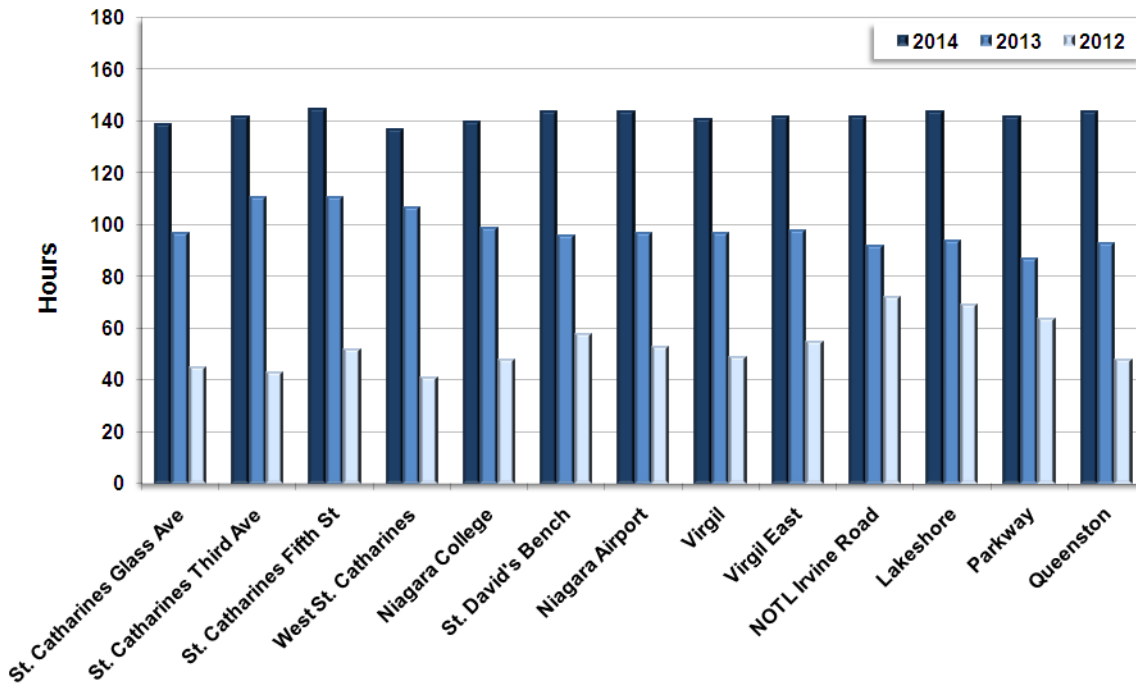
Bud Hardiness

Temperatures dropped below the estimated LTE10 values (the temperature at which 10% of primary buds would die) for Chardonnay and Cabernet Franc at many locations during the 3 coldest January events. Moreover, temperatures dropped below the estimated LTE50 values (the temperature at which 50% of primary buds would die) for a few locations as well. In particular, the Beamsville Bench, Vinemount Ridge and Creek Shores appellations seem to have been affected the greatest. The following figures show the bud survival percentages, estimated based on whether the temperature dropped below the LTE10, LTE50 or LTE90. For example, a bud survival percentage of 90% on the map means that the temperature only dropped below the LTE10 value, on the date of occurrence shown below the percentage. Note that sampling and determining LTE values are not performed at all of the Niagara locations.

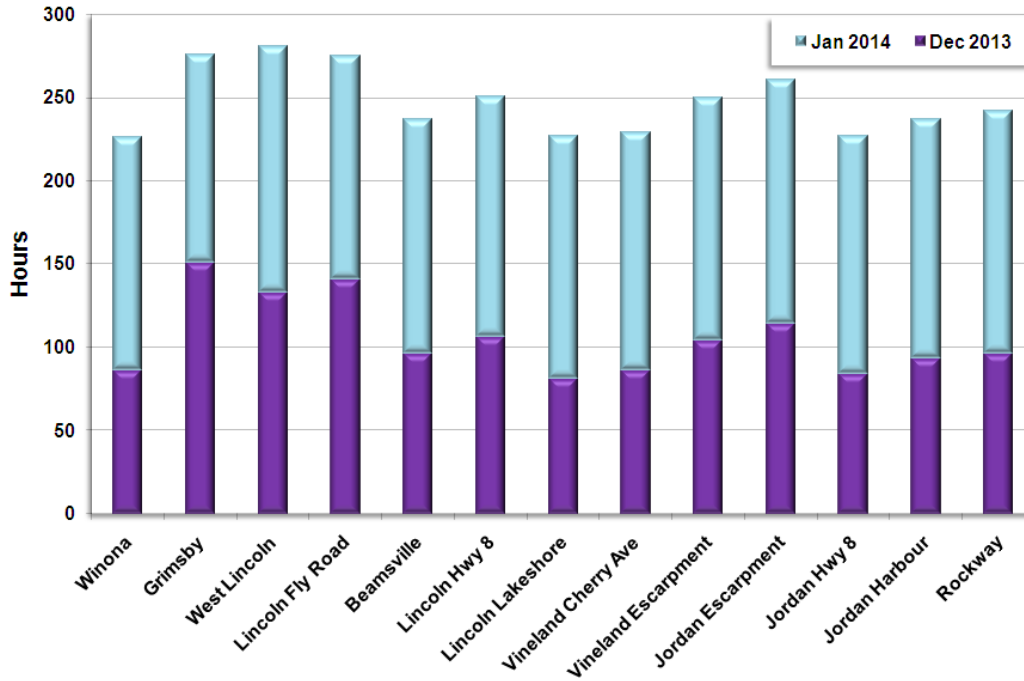
Niagara West: January Accumulation of Icewine Hours



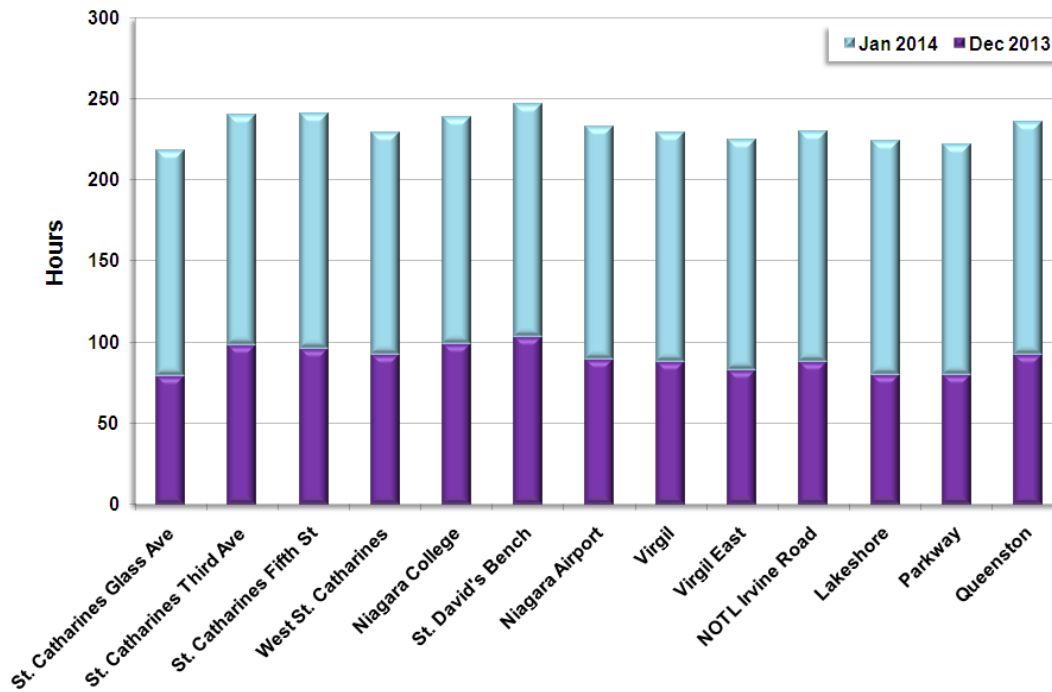
Niagara East: January Accumulation of Icewine Hours



Niagara West: Winter 2013/2014 Accumulation of Icewine Hours



Niagara East: Winter 2013/2014 Accumulation of Icewine Hours





Summary

January 2014 temperatures were significantly below normal in the Niagara appellation; average temperatures for the month were 2.5°C below the 30-year normals. The coldest January temperature reached -26.9°C at the Grimsby station. Temperatures fell below the LTE10 values for Cabernet Franc and Chardonnay at many of the sites and even below the LTE50 temperatures at some sites. January 2014 provided a suitable number of opportunities for harvesting icewine grapes, following a significant number of hours accumulated in November and December 2013. These conditions led to an early completion of the icewine harvest for many this year.