

Top Ten
Weather Stories of
2012
in the
Winnipeg Area
By Julien Corriveau

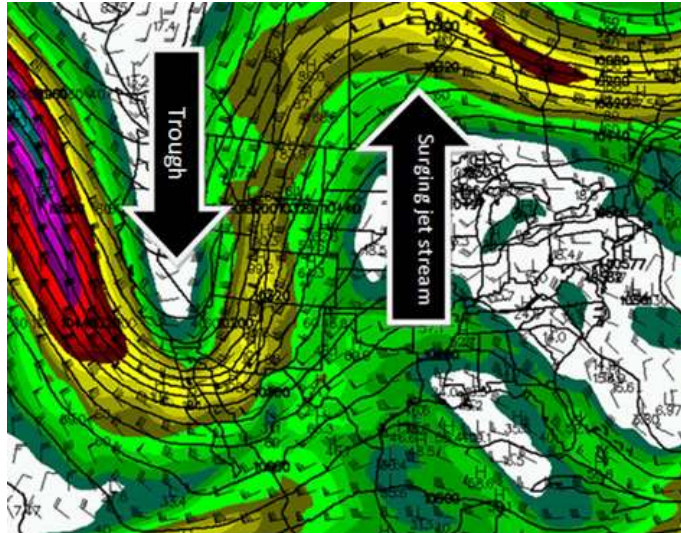
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1 March Madness

The off-the-scale warmth experienced in mid March was one of the most extreme meteorological events in history across North America – for all its duration, coverage, and magnitude. After an early end to winter, we fast-forwarded right to summer, even before the spring equinox. Temperatures soared into the twenties, and in some cases the thirties in eastern North America, shattering thousands of records east of the Rockies in both Canada and the United States. Remarkably, these record temperatures lasted for more than a week, giving the record books a complete facelift in a way not seen in years.

The event was the result of a blocking pattern caused by the jet stream, something that already happens regularly, but rarely to this extremeness. In western North America, the jet stream dove into the southern US and then took an almost direct northerly path up over the Rockies into Canada. This pattern remained mostly anchored for at least a week. The persistent trough in western North America brought British Columbia, Washington, and Oregon unusually cold and snowy weather. Meanwhile, a persistent southwesterly to southerly flow aloft brought extreme warmth, and even high humidity, east of the Rockies underneath the persistent ridge of high pressure. This dome of warmth rapidly melted away the winter snowpack across southern Canada and the northern US, another factor allowing such warm temperatures to be achieved so far north.



March 18 depiction of jet stream pattern, by A Weather Moment using College of Dupage model images.

Here in Manitoba, the warmth began March 10th and lasted the rest of the month but peaked between the 15th and 23rd when thunderstorms and humidity also made an appearance. As soon as the warmth arrived, people flocked to ice cream parlours, parks, and golf courses. Geese, countless birds, and insects, including butterflies and bees, were also seen abnormally early. Trees began budding and grass greening up in late March, a very rare sighting in March in Manitoba. The rivers became completely open as well.



Geese on March 14 in Winnipeg. Photo shared to The Weather Network by Jennifer Molnar

Despite there still being snow on the ground, incredibly warm temperatures aloft allowed temperatures to rise to near-record values on March 10. The high of 6.5°C in Winnipeg was just shy of the old record of 8.3°C in 1902. Highs of 10.8°C in Melita, 11.1°C in Pinawa, 11.6°C in Pilot Mound and 12.4°C in Portage la Prairie all broke daily records. It was even warmer in North Dakota with highs of 18°C in Minot and Bismarck reached 22°C, breaking its daily record of 18°C in 2008. The following day, Winnipeg joined the records club with a high of 12.8°C, exceeding 12.5°C in 1981. Other records in southern Manitoba included 15.8°C in Wasagaming, 14.8°C in Pinawa, 14.6°C in Melita and 14.3°C in Sprague. Such areas were even warmer with 16-17°C in the Whiteshell. Deloraine hit 17.4°C.

This warmth and sunshine rapidly melted the snowpack. In Winnipeg, 25 cm on the ground in the early morning of March 10 completely disappeared by the 14th, with grassy patches showing up as early as the 12th. The snow melt was also aided by a very warm night leading into the 12th. The overnight low was 6°C before temperatures dropped in the morning with some rainfall. The rapid melt kept city crews busy clearing drains.



Progression of snow melt in Winnipeg. From left to right, March 10, 11, 12 and 14th.

Temperatures reached the mid double digits in southwestern Manitoba again on the 13th, but the most insane warmth in southern Manitoba began on the 15th. By then, golf courses were opening, the earliest opening on record for some. Typically, they don't open until April. Garden centres were also readying for people itching to garden. The warmth did come with consequences. Soils were already beginning to dry up with the sunshine leading to fire bans in southeastern Manitoba. These fire bans were exceptional for that time of year as we'd usually be more worried about flooding. Fires did spark up in the Winnipeg area and in the RM of Stuartburn on March 16 and 22 respectively. Farmers were beginning to worry about the early dryness leading to a year of drought.



John Blumberg Golf Course on March 17th, by Ruth Bonneville for the Winnipeg Free Press

On March 15, temperatures soared into the mid teens across southern Manitoba, breaking numerous records. Most records were broken by a margin of at least 3 degrees, and some by as much as 5 degrees. Winnipeg reached a record 14.4°C, breaking the old record of 11.1°C in 1927. The hotspots included Gladstone at 16.7°C, Boissevain 16.5°C, Melita 16.3°C, Portage la Prairie 15.9°C and Morden 15.1°C.

The first 20°C temperatures of the warm spell in Manitoba were felt on March 16. On this day, records were not just broken, they were obliterated. Winnipeg Airport reached 19.9°C, easily the warmest on record for that early in the season (previously the warmest that early in season was 16.5°C on March 6, 2000). It also broke the old daily record by a margin of 7.5 degrees, which is very impressive given the long period of record going back to 1872. The largest margin was in Gretna, which with a high of 19.8°C broke its old record by 12.3 degrees. The station had data going back to 1956. The hotspots included Gladstone at 22.2°C, Boissevain 21.4°C, Brandon 21.3°C, and Sprague 21.2°C.

Temperatures reached the twenties in a few communities again on March 17, again breaking records by several degrees. The largest margin was in Pilot Mound, which with a high of 20.2°C broke its old record by 13 degrees! The station had data going back to 1939. Many of the old records were from 2010. The hotspots included Sprague at 22.2°C, Morden 20.8°C, Steinbach 20.7°C, Emerson 20.5°C and Pilot Mound 20.2°C.

It only got warmer on the 18th and 19th. On March 18, the majority of southern Manitoba exceeded 20°C, at least 20 degrees above normal. Shorts, t-shirts and sandals had to be worn instead of the winter coats and boots that we would normally be wearing. People flocked to the patios. Five communities (Pinawa, Melita, Gimli, Pilot Mound and Fisher Branch) broke their old daily record by more than 10 degrees. Gimli had the largest margin with a high of 21.4°C, 12.2 degrees warmer than the previous daily record. It has recorded since 1944. Most communities had already broken their record high for the day by mid morning.

Winnipeg Airport reached 20.9°C, breaking the old daily record by 6.5 degrees. It was the earliest recorded date to ever reach 20°C in the city, and the first 20°C in March in 66

years. Street cleaning crews started their spring cleanup, which was about a month earlier than usual. The hotspots included Sprague at 22.9°C, Pinawa 22.2°C, Deloraine 22.1°C, Steinbach 21.9°C and Morden 21.3°C.

Amazingly, humidity was also starting to build in on the 18th. Dewpoints rose into the mid teens, causing a humidex value of 24.9 at Winnipeg Airport. Previously, the highest humidex in March was 18.8 on March 30, 1967.

March 19, the official last day of winter, was one of the most anomalous March days ever in southern Manitoba. A strong south-southeasterly flow ahead of a cold front kept temperatures and humidity high during the night. The overnight low in Winnipeg was an extraordinary 16°C, more than 15 degrees warmer than the normal high and more than 25 degrees above the normal low! It was also just three degrees below the record high of 18.9°C for the day. As Winnipeggers woke up for work or school early in the morning, it was already 17 to 18°C along with dewpoints in the mid teens and lots of sunshine.

At 19°C by 10 AM at Winnipeg Airport, the old daily record high had already been broken. The temperature increased to 21°C by 11 AM, along with a humidex of 25. By mid afternoon, it reached 23.7°C along with a humidex of 28.0. This was the warmest ever recorded in March in Winnipeg, breaking the old record of 23.3°C on March 27, 1946. The humidex of 28.0 was the highest humidex on record in March since 1953, breaking the old record of 24.9 set the day before.

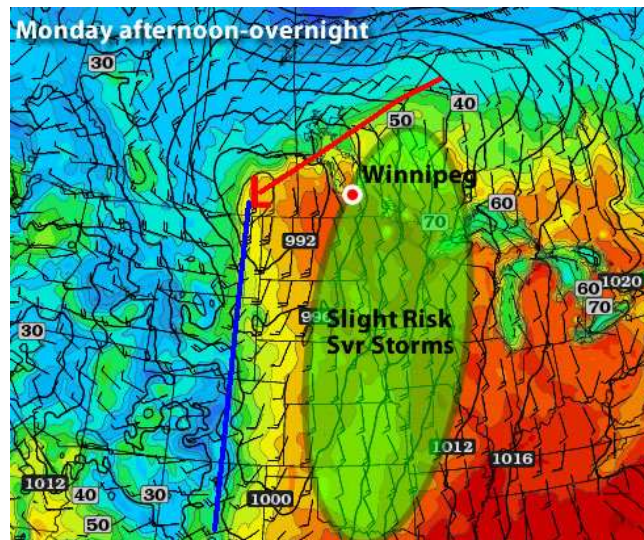
The hotspot was Gladstone at 25.1°C. This was still shy of the 28.3°C in Morden on March 23, 1910. At least a half dozen locations broke their daily records by more than 10 degrees. The warmth reached far north as well with a high of 21.9°C in Berens River. That broke the old daily record by 13.0 degrees and the old monthly record by 7.5 degrees! The community has records going back to 1905. Other hotspots included Portage la Prairie at 24.6°C, Pinawa 24.6°C, Selkirk 24.3°C, Steinbach 24.2°C, and Fisher Branch 24.2°C. Official all-time records for March at Environment Canada sites are listed in the following table. The stations that go back far enough to cover 1946 have the most impressive records, because 1946 was the last time we had such widespread 20°C weather in March.

All-Time March High Temperature Records Broken in 2012			
Location	New record	Old record	Records since...
Pinawa	24.6°C	21.1°C (27 th , 1946)	1916
Sprague	24.3°C	23.9°C (27 th , 1946)	1916
Fisher Branch	24.2°C	19.0°C (29 th , 2010)	1960
Gimli	24.1°C	18.8°C (29 th , 2010)	1944
Carberry	23.7°C	18.9°C (26 th , 1973)	1962
Winnipeg	23.7°C	23.3°C (27 th , 1946)	1872
Deerwood	23.5°C	18.3°C (30 th , 2010)	1952
Pilot Mound	23.3°C	22.8°C (27 th , 1946)	1938
Berens River	21.9°C	14.4°C (25 th , 2007)	1905
Wasagaming	21.7°C	15.6°C (26 th , 1973)	1966
Shoal Lake	20.7°C	16.5°C (24 th , 1993)	1962

The dewpoint reached 17.2°C in the evening at Winnipeg Airport, the highest dewpoint recorded in March since 1953. It was, in fact, the second day in a row that the March dewpoint record was broken (16.5°C the day prior). Prior to 2012, the highest dewpoint recorded in March since 1953 was 10.6°C on March 30, 1967. Mid-teen dewpoints were recorded in 1910 at St John's College, however, the accuracy of these values is unclear.

The temperature dropped to 13.3°C in the evening, marking the daily low. This low was astonishing considering it was more than 10 degrees warmer than the normal high and broke the old March record by a margin of 5.5 degrees! It was also close to the record high for the next day of 13.9°C in 1878. Previously, the earliest double digit daily minimum was on April 14, 2010, almost a month later!

The mean temperature for the 19th at Winnipeg Airport was 18.5°C, which is more typical of late June. This was 23.4 degrees above normal for the date, the most above normal day on record since 1872. Only about a dozen days since 1872 have been more than 20 degrees above normal.



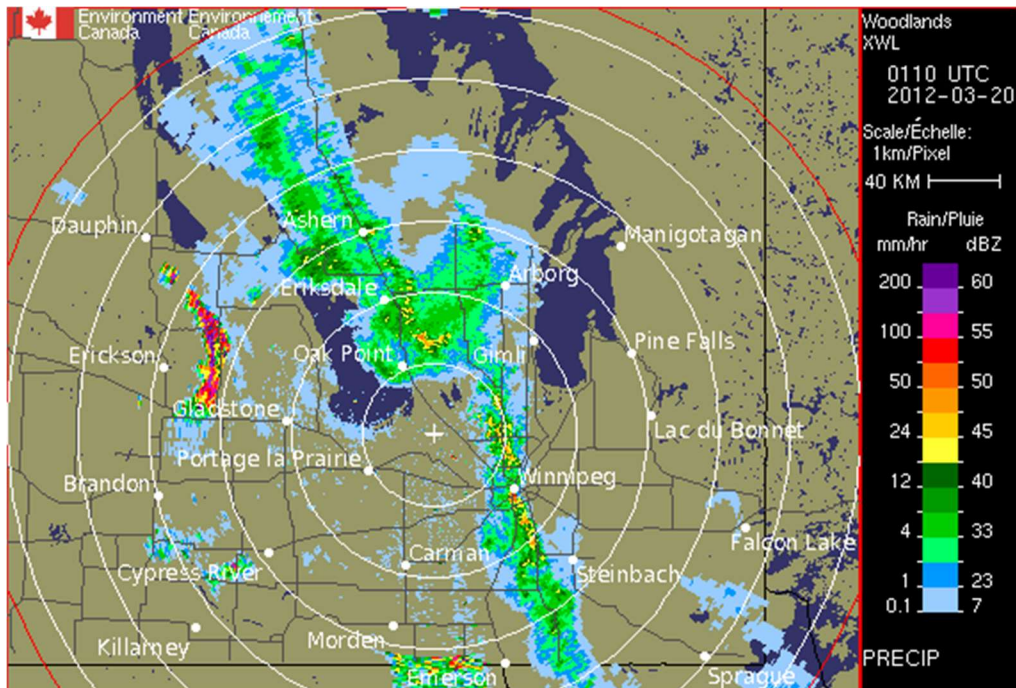
Modelled surface temperatures (TwisterData.com) with fronts and t-storm risk by A Weather Moment, for March 19.

A cold front moving through the province in the evening collided with the warm and humid air mass, producing widespread thunderstorms. Thunderstorms are not unprecedented in March. After all, thunderstorms have been witnessed in Winnipeg in every month of the calendar. However, the extent and intensity of the storms were especially unusual that early in the season. In the morning, the Storm Prediction Center in the US had forecast a 2% tornado risk all the way up into North Dakota for storm potential on the 19th. A slight risk for severe thunderstorms was also forecast up to the Manitoba border. The ingredients were there thanks to a strong jet stream, ample moisture, and a cold front as the trigger.

In the end, the storms remained non-severe in southern Manitoba but were still quite strong for that time of year. A line of thunderstorms developed from Carberry down into North Dakota and Minnesota late in the afternoon and moved into the Red River Valley

and Interlake in the evening. The storms reached Winnipeg by 7:45 PM and lasted for about 45 minutes. The nearly north-south orientation of the line, combined with its north-northeast movement, caused the storms to train on parts of the city. Torrential downpours produced some minor street flooding and knocked out some traffic lights. A peak rainfall rate of 155.6 mm/hr was recorded at 8:33 PM in Transcona and 135 mm/hr at 8 PM in Charleswood. No hail was reported in Winnipeg, but hail as large as dimes were reported south of Altona.

Frequent and intense lightning accompanied the storms. Some cloud-to-ground strikes were seen, and lightning flashed every few seconds at peak. This initiated a red alert at Winnipeg Airport, meaning ground crew had to stay indoors, causing delays. In addition, power was knocked out to thousands of customers in various parts of Winnipeg and lightning sparked pole-top fires. It took Manitoba Hydro a few hours to restore power, some residents being without power until overnight. There were also power outages near Carman lasting a few hours. Gusts up to 70 km/h were recorded with the storms. Rainfall amounts were 10 to 15 mm in Winnipeg.



Radar image showing the line of thunderstorms moving through Winnipeg at 8:10pm March 19.

Remarkably, the thunderstorms reached up to northern Manitoba in the overnight hours. Thompson was one community to get in on the action with a couple hours of thunderstorms accompanied by freezing rain. This event was particularly exceptional in the city considering that there was still a deep snowpack on the ground and temperatures during the thunderstorm were around -4°C. Heavy freezing rain, ice pellets and hail came down making surfaces slippery.

Behind the cold front, it cooled down for a couple days, but it was still about 15 degrees above normal. The temperatures peaked again on March 22 with highs in the low

twenties, the third day of 20°C in Winnipeg during the month. This was truly exceptional considering that prior to 2012, only three other March days since 1872 reached 20°C, and all of these had occurred later in the month. Winnipeg Airport reached 21.7°C, breaking the old daily record 18.3°C in 1878. The hotspots were in the eastern Red River Valley with Steinbach at 23.9°C, St. Adolphe 23.9°C and Dugald 23.8°C. Other impressive highs included Sprague at 22.4°C, Boissevain 22.0°C, Morris 22.0°C, Melita 21.7°C and Portage la Prairie 21.4°C.

Humidity increased again the following day ahead of a cold front, with dewpoints reaching the mid teens. Winnipeg Airport reached a dewpoint of 14.1°C on the 23rd. The minimum temperature on the 23rd was 8.7°C at Winnipeg Airport, the second warmest on record for March. Only the low four days earlier was warmer. Like the 19th, this low occurred in the evening. The morning low was an exceptional 12°C.

The next cold front moved through during the early morning hours of the 24th. It brought more thunderstorms to southwestern Manitoba. Temperatures hovering near freezing meant precipitation in Brandon fell as freezing rain during the storms. Some of the freezing rain was heavy at times making for treacherous roads.



Some trees budding in late March. This photo from Mar 24 was posted to The Weather Network by Esther Weiss

Temperatures on March 24 fell below freezing in Winnipeg for the first time since the 15th. This ended an eight-day streak with temperatures above zero. The average minimum during the period was 5.4°C, about 5 degrees warmer than the normal high!

Temperatures finally cooled down toward the end of the month but remained close to five degrees above normal. Even so, it felt cold after the summer-like weather. But the unusual weather still wasn't over. A system moved in from the south on March 26th and 27th bringing another bout of thunderstorms.



Wide open Red River at Churchill Park on Mar 25, posted to The Weather Network by Tom Jillette.

Late on March 26th, a large complex of thunderstorms formed in the northern Interlake along the warm front and moved into northern Manitoba. In southern Manitoba, a separate area of elevated thunderstorms moved in from the south overnight on the 27th. The thunderstorms rattled Winnipeg around 2:30 AM. Lightning was at times intense with flashes every few seconds at peak. The lightning caused brief power outages. Hail, as large as dimes, also fell. In some parts of the city, the hail lasted five minutes which was enough for it to accumulate. Heavy downpours dropped 6 to 12 mm of rain. It was only about 2°C during the storm.



*(Left) Hail overnight on Mar 27 in Winnipeg. Photo by Eric Toupin, posted to The Weather Network.
(Right) Lightning near 2:30am Mar 27 in south Winnipeg, posted on Youtube by CanadianNatureShots.*

With two thunderstorm days in March in Winnipeg, it was the most on record.

One last day of extreme warmth on March 31st was a fitting way to end the month. It reached 18.8°C at Winnipeg Airport, just 0.1 degrees off the record of 18.9°C in 1963.

With a mean temperature of 2.2°C, it was the warmest March in Winnipeg since 1872. It was 8.0 degrees warmer than the 1981-2010 normal of -5.8°C. Daily highs averaged 8.0°C, 8.8 degrees above normal, and the warmest on record. This broke the old record

set in 1910 by 0.8 degrees. There was about 42 mm of rain at the Airport, the 5th rainiest March. Normal is about 11 mm. The table below shows my quality-controlled values.

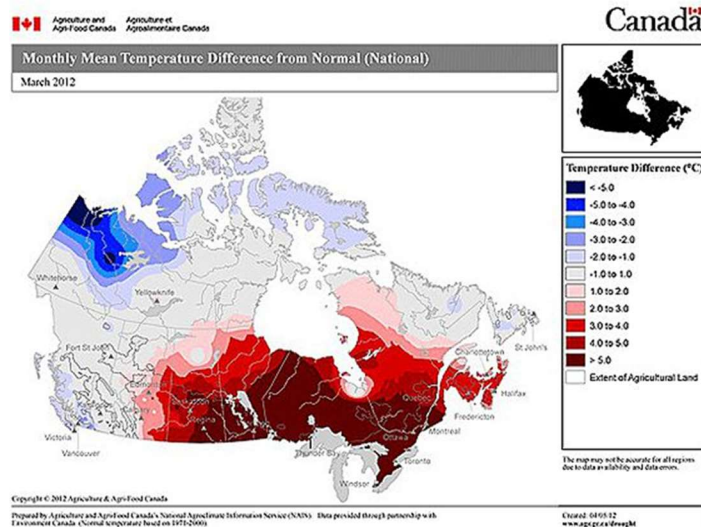
Warmest Marches in Winnipeg Since 1872 by Mean Temperature		Rainiest Marches in Winnipeg Since 1872	
2.2°C	2012	67.6 mm	1945
1.6°C	1878	59.9 mm	1878
1.2°C	1910	45.2 mm	2004
0.5°C	1973	42.7 mm	1902
-0.1°C	2000	42.0 mm	2012
-0.6°C	2010	40.4 mm	1983

In total, five days reached 19°C in March 2012. Prior to this, only four such days were recorded since 1872. What had been accomplished in 140 years only took one year to beat. Some parts of southern Manitoba, such as Emerson, Pilot Mound, Steinbach, and Morden, had five days above 20°C.

In addition, March 8 was the date of last measurable snowfall of the season (0.2 cm or more). This was the earliest on record since 1872, beating March 11 in 2006. The winter snowpack completely melted away to 0 cm by March 14th, tied with 1995 for 3rd earliest since 1955. The winter snowpack has reached a trace earlier than this, however, on many occasions.

See Annex A for a full list of records that were broken in Winnipeg in March 2012.

The Story in Other Parts of Canada



Map of Canada showing temperature anomaly for the month of March. The darkest red represents an anomaly of more than 5 degrees. Colours are in intervals of 1 degree. From Agriculture and Agri-Food Canada

The March warmth covered much of Canada east of Alberta. Thousands of records were broken across the country, and in fact, there was a record for the most records broken. Much of the country from Nova Scotia to Manitoba experienced its warmest March on

record including Halifax, Charlottetown, Fredericton, Quebec City, Montreal, Toronto, and Ottawa. At times, northern Ontario and Quebec were as warm as the Gulf Coast. Ontario and Quebec saw the warm temperatures last the longest. While Old Man Winter is usually still hanging on in mid March in those two provinces, in 2012 words such as humidex, tulips, green grass, patios, swimming pools and thunderstorms were used instead. The warmth, which had reached far northern Ontario, rapidly melted all the snow that was on the ground. In Geraldton, for instance, 31 cm of snow cover on March 18 had melted in just two days. In Abitibi-Temiscaming, Quebec, more than two feet of snow cover melted down to nothing in as little as a week and a half. It was a similar story in northeastern Ontario where over two feet of snow melted in less than two weeks.

The warmth began with a bang in southern Ontario on March 15. Severe thunderstorms rattled the province in the morning and evening. Severe storms early in the morning dumped over 20 mm of rain in Peterborough, flooding streets. City crews worked for hours to get the flooding under control. Frequent lightning strikes caused havoc as well. A person struck by lightning in Cambridge just before 8 am was taken to hospital and recovered. Some structures in the area were damaged by lightning. In the evening, severe thunderstorms from Michigan prompted Environment Canada to issue a tornado watch for the Windsor area. Frequent lightning and hail were the main stories with this, including in areas as far north as Ottawa.

In southeastern Saskatchewan, temperatures reached the low twenties on March 16 with many records shattered. Estevan reached 23.0°C and Weyburn 22.2°C, both breaking their old records by 6 or 7 degrees. Estevan reached 23.4°C again on March 22. Then on March 30, most of southern Saskatchewan reached the twenties including 22.3°C in Regina.

Some of the most impressive records occurred in Ontario. All-time March record highs occurred day after day between March 18 and 22. Fort Frances in northwestern Ontario broke their old all-time March high of 19.0°C three times with highs of 21.2°C on the 16th, 24.8°C on the 17th and an unbelievable 26.4°C on the 18th (they reached 26.0°C again on the 19th). The low temperature on the 19th was 15.1°C or 5 degrees warmer than the record high for the day. Five or six days reached 20°C during the month, which is incredible considering they had never hit 20°C in March before.

The following table (next page) shows the highs recorded between March 18th and 22nd in Ontario and Quebec. The values in bold were all-time March high records broken. Some of these were very impressive, especially in northern Ontario and in Quebec where some areas broke their all-time March highs by as much as 8 degrees! It's also incredible how Windsor recorded highs warmer than 27°C for three consecutive days. In fact, Windsor recorded 10 consecutive days with highs above 20°C, a record for the city and probably all of Canada. The mean temperature for the month was 9.6°C; over 7 degrees above normal and a full degree warmer than the April normal. The city also recorded a humidex of 32.3 on the 22nd which broke the old March record of 29.9 on March 30, 1998, and is possibly the highest humidex ever in Canada in March. The city recorded six days with a minimum temperature above 10°C.

All-time March high temperature records broken (in bold) in March 2012 in Ontario and Québec						
Location	March 18 high	March 19	March 20	March 21	March 22	Old all-time March high
Chapleau	23.7°C	23.9°C	25.3°C	26.2°C	16.9°C	19.0°C (Mar 14, 1995)
Moosonee	9.3°C	20.0°C	23.4°C	13.5°C	11.3°C	19.4°C (Mar 31, 1967)
Kapuskasing	16.3°C	25.1°C	26.2°C	24.6°C	17.8°C	19.4°C (Mar 25, 1945)
Timmins	21.3°C	23.6°C	26.1°C	27.9°C	17.9°C	19.9°C (Mar 15, 1990)
Sudbury	21.9°C	20.3°C	23.1°C	25.9°C	14.8°C	17.3°C (Mar 31, 1999)
Sault Ste. Marie	24.2°C	21.3°C	22.0°C	26.7°C	Missing	21.1°C (Mar 28, 1946)
Toronto Lester B.	19.9°C	22.8°C	21.9°C	23.3°C	26.0°C	25.6°C (Mar 28, 1945)
Hamilton	Missing	23.5°C	24.2°C	25.6°C	26.8°C	25.0°C (Mar 31, 1998)
London	Missing	22.3°C	25.1°C	26.4°C	27.5°C	24.8°C (Mar 30, 1998)
Sarnia	23.6°C	22.9°C	26.4°C	27.9°C	25.5°C	25.6°C (Mar 30, 1986)
Windsor	23.0°C	23.9°C	27.0°C	27.8°C	28.4°C	26.6°C (Mar 30, 1986)
Ottawa	Missing	24.8°C	25.8°C	27.4°C	24.9°C	26.7°C (Mar 29, 1946)
Montréal	23.1°C	20.1°C	23.5°C	25.8°C	23.9°C	25.6°C (Mar 28, 1945)
Sherbrooke	22.6°C	22.2°C	24.0°C	25.3°C	24.1°C	23.0°C (Mar 30, 1977)
Québec City	13.5°C	7.2°C	14.9°C	18.3°C	17.0°C	17.8°C (Mar 30, 1962)
La Tuque	20.9°C	16.1°C	24.7°C	26.9°C	18.2°C	21.1°C (Mar 30, 1962)
Temiscamingue	23.6°C	24.6°C	25.7°C	27.3°C	14.2°C	23.3°C (Mar 24, 1920)

A mean temperature for March of 6.7°C in Toronto made it the warmest March on record in the city, beating 1946 by an impressive margin of 1.5 degrees.

In Petawawa, it reached 28.8°C on March 21, almost 17 degrees warmer than the old daily record of 12.2°C. It was also the second hottest temperature ever recorded in Ontario in March. Hottest was 29.4°C in Wallaceburg on Mar 26, 1921.

The Maritimes received the bulk of their warmth on March 20, 21 and 22. Fredericton beat its old all-time March record high of 22.2°C on March 30, 1962, three times. The mercury hit 23.9°C on the 20th, 27.1°C on the 21st and 27.2°C on the 22nd. In Saint John, a high of 25.4°C on the 21st not only broke the all-time March record by 7.9 degrees (old record 17.5°C on March 28, 1999) but was warmer than April's all-time maximum of 22.8°C on April 20, 1976. Halifax broke its all-time March high twice with highs of 25.8°C on the 21st and 27.2°C on the 22nd (old record 25.6°C on March 31, 1998). The 27.2°C on the 22nd was also 15.4°C warmer than the old daily record of 11.8°C in 1983. Western Head, Nova Scotia had a high of 29.2°C on the 22nd. That broke the old daily record by 18.6 degrees (old record 10.6°C in 1969). Lake Major, NS was the nation's hotspot in March with a high of 30.0°C on March 22, possibly a March record for Canada.

There were repercussions from the early warmth. The maple sugar season in Ontario and Quebec was cut short giving below-normal yields. Blooming trees and plants brought out an early start to the pollen season across the country as well. Flooding was an issue in parts of Quebec due to an incredibly rapid snow melt and in Perth-Andover, NB, the warmth triggered one of the biggest ice-jams in history. Fruit trees in eastern Canada were hard hit when a widespread freeze occurred in late April. Trees which had bloomed five weeks earlier than normal faced major damage. Strawberry yields were generally 50%

less than normal, while apple growers were hardest hit. Total losses from the freezes in Ontario were estimated at over 100 million dollars.

The Story in the United States

Much of the information in this section is from Jeff Master's blog on Weather Underground. He provided much data and context about the event in the US.

South of the border, it was the most extended period of extreme and record-breaking warmth ever in March, going back to the late 1800's. Tens of thousands of records were broken. And these records were being broken day after day after day. In fact, there were so many records being broken that the extremes section of the NOAA National Climatic Data Center website was down for several days. The website could not handle the number of people wanting to see the numerous records being broken.

The warmth also caused flowers and trees to bloom in many states east of the Rockies, including Michigan and Missouri in mid March. This was at least a month earlier than normal. Large parts of Michigan, and along the eastern Seaboard had a major freeze on March 27th causing major damage to the early blooms. Fruit growers had worked through the night to try to save their yields by running large fans and propane heaters to keep temperatures a little warmer. Damage was still widespread. In addition, the early warmth dried up soils.



Mar 19 in Michigan. Gardner48197 to Wunderground.

Benefits of the warmth included huge savings for heating and snow removal and much fewer vehicle accidents from icy conditions.

In the end it was the warmest March on record in the US. The average temperature was 10.6°C; 4.8 degrees above normal. The previous warmest March was 1910 with 10.3°C. Of the more than 1400 months of record keeping since 1895, only January 2006 was more above normal. 25 states had their warmest March on record and another 15 had a top-ten warmest March. In addition, only July 1936 had more high temperature records. 11.3% of all daily high records in March were now held by 2012 for the 550 stations in NOAA's database that have more than 100 years of data. July 1936 holds 14.4% of all the daily high records for July.

Among all the daily records in the country, 21 were cases where the low temperature for the day was warmer than the previous record high for the date. Examples included:

- A low of 17°C in Rochester, Minnesota on the 18th. The old record high was 16°C.
- A low of 11°C in Marquette, Michigan on the 21st. The old record high was 9°C.
- A low of 16°C in International Falls, Minnesota on the 18th tied the record high.

Many notable records during the month included:

- Minneapolis: Five days above 21°C between March 1st and 20th. Since 1872, there had only been nine other days that warm. But remarkably, there were 5 such days during that period in 2012. 27°C on the 17th was the hottest temperature ever in the period, breaking the old record of 23°C on March 7, 2000. It was just shy of the March record of 28°C and was 22 degrees above normal for the date. In total, nine daily high temperature records were broken in the month. Lastly, there were eight straight days with a daily low above 10°C from the 17th to 24th, at least 3 degrees above the normal highs for the period. The warmest low was 16°C on both the 18th and 19th, at least 10 degrees above the normal high.
- Bismarck: 27°C on the 16th was 23 degrees above normal and tied the monthly record.
- International Falls: 22°C on the 16th was the earliest date above 21°C by two weeks. The previous earliest was on March 30, 1967. 25°C on the 17th was 23 degrees above normal and a new monthly record, beating the old record of 23°C. It was also 12 degrees warmer than their old daily record. Records go back to 1895. 26°C on both the 18th and 19th broke the monthly record again.
- Huron, SD: 31°C on the 18th was just over 24 degrees above the normal high.
- Milwaukee: 26°C on the 14th was 20 degrees above normal and the earliest date to reach 26°C. Records go back to 1869. The city did hit 25°C on March 7th and 8th in 2000. 29°C on the 21st was a new monthly record.
- Madison, WI: 26°C on the 14th was the earliest date to reach 26°C. Records go back to 1869. The city did hit 25°C on March 7th, 2000. 28°C the next day tied the monthly record (tied with Mar 29, 1986, and Mar 31, 1981). It was also the earliest date to hit 27°C by two weeks. 28°C on the 21st finally broke the monthly record. Prior to 2012, there had only been five days in March above 27°C, but in 2012 alone there were five days.
- Chicago: Five consecutive days above 27°C from the 14th to 18th. There had never been such a streak before mid or late April. Prior to 2012, there had only been ten days above 27°C in March since 1871, the last time being 22 years ago. They had eight days in March 2012.
- Fort Wayne, Indiana: 31°C on the 21st was a new monthly record.

The warmth raised Lake Michigan's water temperature to the warmest on record in March. The average temperature of the lake became more typical of June.

For two consecutive days on the 20th and 21st, the majority of southern Michigan recorded its warmest temperatures ever recorded in March. A wide swath of the area was near 30°C on the 21st. Amazingly, Flint's high of 30°C was just one degree shy of their April monthly record. On the 22nd, Lapeer reached 32.2°C, a state record for March. Ypsilanti and Dearborn both tied the previous record of 31.7°C, which was set in Lapeer in 1910.

- Detroit had a string of 9 days with temperatures over 21°C from the 14th to 22nd. Previously, the earliest that this had been recorded was a month later in 1886,

from April 16th to 24th. 28.3°C on the 21st and 22nd was a new monthly record, beating 27.8°C on March 30, 1986.

- Houghton, Michigan reached 24°C on the 17th and 18th, 24 degrees above normal and a new monthly record.
- Traverse City, Michigan tied or broke its monthly record high five times.
- Pellston, Michigan: 29°C on the 21st was 18 degrees warmer than the old daily record 27 degrees above the normal high. Five days exceeded 27°C, a temperature that had not even been achieved in March before. The monthly record was broken five times.

There were also rare March tornadoes in Michigan. On the 15th, at least three tornadoes touched down, making it the second largest tornado outbreak for so early in the year. The only larger one earlier in the year was on March 12, 1976, when there were eight tornadoes. The strongest tornado on the 15th was an EF-3 that hit Dexter. It was the earliest EF-3 or stronger tornado to hit the state, with records going back to 1950 (previous earliest was an F-3 on March 20, 1976). The tornado had an 11.6 km path and a width of up to 700 m. 128 buildings were damaged or destroyed, but there were no injuries or deaths. Prior to 2012, only 16 tornadoes had been recorded to have touched down in Michigan before March 16. The storms also dumped golf ball to baseball sized hail and 100-125 mm of rainfall on Ann Arbor causing flash flooding.

There were also tornadoes in South Dakota and Nebraska on the 18th. A strong EF-3 tornado hit North Platte, Nebraska, injuring 4 people.

Some communities in the US also broke or tied the record for the most consecutive days with record high temperatures including:

- International Falls: 10 consecutive days, beating 5 days from March 3 to 7, 2000.
- Chicago: 9 consecutive days, tying August 26 to September 3, 1953.



Mar 21 Washington DC cherry blossoms. By KEM on Wunderground.

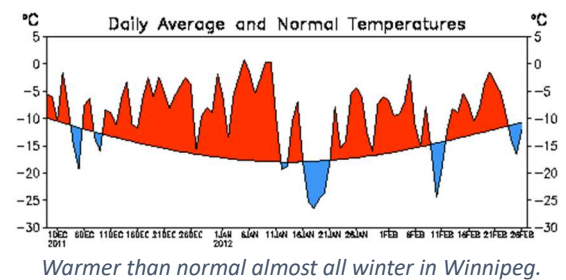
The month also more humid than ever in parts of the country. According to the NWS in Minneapolis, humidity levels in Minnesota on March 18th and 19th were the highest ever experienced in the state for so early in the year.

The heat reached the Atlantic coast on the 20th and 21st. Here are some highlights:

- Burlington, Vermont: 27°C on the 20th was the earliest date to hit 27°C and 22 degrees above normal.
- Concord, New Hampshire: 27°C on the 20th was the earliest date to hit 27°C.
- Bangor, Maine: 26°C on the 20th was the earliest date to hit 26°C. It then hit 28°C the following day.
- Caribou, Maine: 23°C broke the old daily record by 13 degrees and was a new monthly record. The following day hit 24°C.
- Houlton, Maine: 26°C on the 21st was the earliest date to hit 26°C.
- Buffalo, NY: 28°C on the 21st was the earliest date to hit 28°C.

2 Exceptionally Mild Winter

The winter of 2011/2012 was exceptionally mild and dry across southern Manitoba and much of the continent. It defied seasonal forecasts which predicted a brutally cold winter because of La Niña. Instead, it was one of the gentlest winters.



La Niña winters tend toward being colder and snowier in southern Manitoba. However, unusually strong positive AO (arctic oscillation) and NAO (north Atlantic oscillation) indexes through most of the winter overwhelmed the weather pattern over North America, greatly reducing the influence of La Niña. These indexes resulted in a stronger jet stream, keeping arctic air locked in the Arctic and cold snaps brief in the south. Also being further north than usual, the jet stream deflected systems to the north, explaining the minimal snowfall in southern Manitoba.



January 4th, Red River with open water sections near St Andrews. By Madeleine Goodwin-Ominski for CBC.

The winter started off with the 9th mildest and 9th least snowy December on record in Winnipeg. The mean temperature was -8.1°C ; 5.4 degrees above normal. The snowfall of 5.2 cm was just 22% of normal and almost 20 cm below normal. Thanks to minimal snowfall and mild temperatures, it was a brown Christmas in parts of southwestern Manitoba and in the western and southern Red River Valley. Some areas didn't have any snow on the ground at all. It was a close call in Winnipeg, with very minimal snow cover. Officially, 2 cm was reported on the ground on Christmas morning in Charleswood, making it another white Christmas for the city. However, fields around the city had only patchy snow cover with patches of grass here and there. Since snow depth records began in 1955, only seven Christmases in the city have had 3 cm or less on the ground.

We were also greeted by record warmth on Christmas Day and Boxing Day with highs in the mid to high single digits.

An incredible streak of days that were warmer than normal began December 10th. Temperatures remained above normal every day until January 11th – a total of 33 consecutive days. Temperatures in the period averaged almost 10 degrees above normal. From December to February, only 18 of a possible 91 days were colder than normal.

Temperatures were especially impressive from January 4th to 10th. This seven-day period featured temperatures 10 to 20 degrees above normal, and daily minimum temperatures higher than the normal highs. It did not even dip below -10°C during the period. The average high was about $+3^{\circ}\text{C}$, 14 degrees above normal. Lows averaged about -6°C , 15 degrees above normal.



(Left) Golfing in Carman on January 4. Submitted to The Weather Network by Dean North. (Right) January 5, Winnipeg.

January 5 saw the peak of the warmth. Mostly sunny conditions combined with minimal snow cover and favourable westerly winds to produce one of the warmest January days ever recorded in Manitoba. Winnipeg's high of 6.7°C easily broke the daily record of 4.3°C in 1984 and was 1.1 degree shy of the all-time January record of 7.8°C in 1942. It tied with January 22nd, 1942, for 3rd warmest January day since 1872. It could have been even warmer if there wasn't any snow on the ground. A couple centimetres of snow depth was enough to keep temperatures slightly lower. Extreme southwestern Manitoba and areas along the escarpment saw even warmer temperatures thanks to less snow cover and downslope winds. The day in these areas started with temperatures that were already near 5 or 6°C at 8 AM. Temperatures then climbed into the double digits in the afternoon.

High Temperatures on January 5 th	
Pierson	12.7°C
Melita	11.9°C
Carman (ag)	11.6°C
Gretna	11.5°C
Elm Creek	11.5°C
Morden	11.4°C
Emerson	11.1°C
Morris	10.8°C
Portage la Prairie	10.3°C
Pilot Mound	10.2°C
Steinbach	9.0°C
Dauphin	8.9°C
Sprague	8.2°C
Winnipeg The Forks	7.6°C
Brandon Airport	7.3°C
Winnipeg Airport	6.7°C

Highs of 8°C and 9°C were reported as close to Winnipeg as Headingley, Sanford and Starbuck. Double digits were as close as Sperling, Elm Creek and Morris.

The highs were shy of the all-time January record in Manitoba of 14.5°C in McCreary on January 7, 2003.

Numerous all-time January highs were recorded in North Dakota. Fargo reached 13°C (old record 12°C), Minot 16°C (old record 15°C), Williston 14°C (old record 13°C) and Jamestown 13°C (tied record).

The warm day brought snow depth down to 1 or 2 cm in Winnipeg, but there were several bare spots with grass and mud visible. Some avid golfers took advantage of the snow-free ground southwest of the city to do some golfing.

A record high daily minimum of -5.2°C was also recorded on January 5th. The following night, about 1 mm of rain was recorded in the city.

More super warm days followed on January 9th and 10th. Winnipeg reached 4°C or 5°C on both days. A high of 5.1°C on the 10th tied the old daily record. Records were broken in other parts of southern Manitoba with highs in the mid to high single digits. It looked like April in Emerson on January 9th with sunny skies, a high of 7.5°C and not a flake of snow on the ground. Some of the warmest spots reached over 8°C, such as 8.7°C in Pierson, 8.6°C in Melita and McCreary, 8.2°C in Letellier, and 8.0°C in Gretna.

A cool down mid January was anything but the frigid temperatures that we come to expect in the winter. It didn't even dip to -30°C in Winnipeg thanks to westerly winds on the coldest nights. It was only the third time since 1873 that -30°C was not reached in January. 1931, 1944 and 2001 were the only other years. Mild weather returned late January.



Bare ground on January 9th at Dauphin (Left) and Emerson (Right).

January averaged -10.8°C at Winnipeg Airport, 5.6 degrees above normal and the 3rd warmest January on record. There were eight days above freezing, the second most on record. Only 1942 had more with 13 days. Snow on ground remained around or below 10 cm the entire month. Snow depth at Charleswood ranged from 2 cm to 11 cm.

Warmest Januaries by Mean Temperature in Winnipeg	
-7.4°C	2006
-10.6°C	1944
-10.8°C	2012
-11.4°C	1942, 1992
-11.6°C	1990

February continued the mild and calm weather in the first half. Remarkably, parts of southwestern Manitoba, the western and southern RRV and southern and western North Dakota remained nearly snow-free in the first two or three weeks. In Winnipeg, snow on ground remained between 6 and 10 cm up to the 15th.



No snow on the field just north of Neepawa on February 21st. By Dean Robinson, submitted to The Weather Network

February 5th was the warmest day of the month with temperatures again reaching over 15 degrees above normal. Abundant sunshine and a westerly wind helped temperatures rise into the mid to high single digits. Winnipeg Airport reached 6.8°C , just shy of the record of 7.2°C in 1963. Temperatures commonly reached 7°C to 9°C west and southwest of the city, with a few localized double digit temperatures.

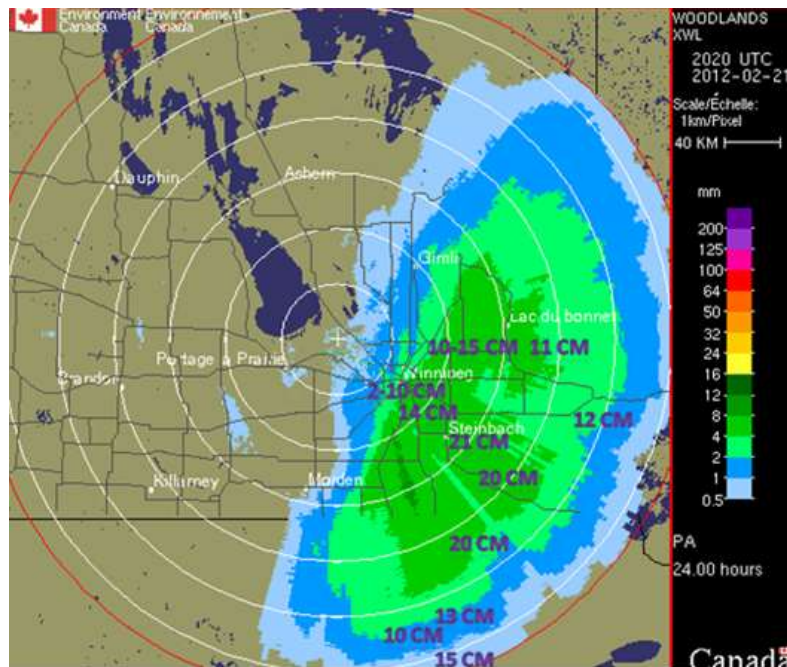


Fog caused four days of spectacular rime ice from February 1st to 4th. Photos were submitted to The Weather Network

High Temperatures on February 5th	
Miami	10.5°C
Deerwood	10.1°C
McCreary	9.9°C
Carman	9.3°C
Elm Creek	9.0°C
Pilot Mound	8.8°C
Killarney	8.7°C
Portage la Prairie	7.9°C
Winnipeg The Forks	7.6°C
Glenboro	7.5°C
Winnipeg Airport	6.8°C

It wasn't until the second half of February that proper winter conditions arrived. A heavy snowfall on February 20th and 21st marked the first significant snowfall of the season in Winnipeg and southeastern Manitoba with 2 to 10 cm in Winnipeg and 10 to 20 cm in southeastern Manitoba and the southern RRV. Locally higher amounts fell, such as 23 cm

at Indian Bay. There was a very tight gradient in snowfall amounts across the Red River Valley.



A tight deformation zone caused a sharp gradient in snowfall amounts Feb 20-21.

Several snowstorms during the last week of February into the first week of March dumped more than 25 cm of snowfall over Winnipeg and over 40 cm southeast of the city. The storm of March 1st and 2nd was particularly potent with 10 to 20 cm of snow across the Red River Valley. Strong winds caused significant blowing snow. Travel was disrupted with many collisions and highway closures. Extreme warmth in March put an end to what felt like a two-week-long winter. Southwestern Manitoba on the other hand, received very little snow in late February, with continued extremely mild weather. Temperatures on the 20th again reached up to 8°C. McCreary reached 9.3°C.

Overall, it was the 4th mildest winter on record in Winnipeg since 1873. The mean temperature from December to February was -9.7°C, 4.8 degrees above normal. The lowest temperature was a measly -28.9°C, only the second time since 1873 that a temperature of -30°C was not reached. The only other winter was 1930/1931, when the lowest temperature was -29.4°C. In addition, 19 days exceeded the freezing mark, tied 6th most. This was meager in comparison to communities to the southwest. Morden had an incredible 41 days above freezing from December to February. McCreary had 35 days.

Warmest Winters by Mean Temperature in Winnipeg	
-7.2°C	1877-1878
-8.2°C	1997-1998
-9.5°C	1986-1987
-9.7°C	2011-2012
-10.1°C	1930-1931

As mentioned, snowfall was minimal before mid February. Just over 25 cm fell from December 1st to February 14th. Most of the snowfall fell in minor bouts of less than 5 cm. This, along with the mild temperatures and sunny skies, explained why snow depth was so minimal or non-existent in southern Manitoba throughout most of the winter. Late February storms brought the total snowfall to 44.2 cm from December to February. This was not overly remarkable historically, with the driest winter of 1877/1878 only receiving 13 cm. It was just under three quarters of normal.

The warm winter had some unusual side effects. For instance, some people suffered seasonal allergies in January. Some trees even began budding slightly in January. City crews were filling potholes in January, something not usually seen until late February or March when the freeze-thaw cycle becomes more common. Many rivers had some open water throughout the winter. The Red River in Winnipeg had sections of open water at times. Ducks were witnessed on ponds in both January and February in the city.

Winter-focused businesses suffered from the warm and dry winter. Snow removal companies hauled only a fraction of the snow they normally would. Some winter clothing businesses reported a 50% drop in sales. The closure of snowmobile trails much of the winter hurt snowmobile sales. Skating rinks were forced to close much of the winter.



Ducks in Winnipeg on February 1st. Submitted to The Weather Network by Barb Johnson.



Some trees attempted to bud in January. Submitted to The Weather Network by Laurette Fellows.

In early January, a health emergency was declared in Berens River. Impassable winter roads prevented supplies from reaching the community, and the community had run out of gasoline. Health workers could not reach patients who needed regular care.

There were a few advantages to the mild and dry winter. The spring flood was much less significant thanks to the minimal snowfall. The warm weather also encouraged people to

be more active outdoors more instead of being cooped up inside. Huge energy savings were occurred, and governments saved money on snow clearing.

The winter was just as unusual across most of Canada and the United States. Across Canada, December to February was 3.6 degrees above normal, and the 3rd warmest on record since 1948. It was also the second driest. The Prairies had their 3rd warmest winter and the driest.

In Toronto, it was the warmest winter since records began in 1840. It was also the least snowy with 41.8 cm. There was no measurable snowfall after March 1st. In Montreal, it never dipped below -20°C for the first time on record. In Alberta and Saskatchewan, grass fires occurred. The ground was bare across much of southern Saskatchewan and Alberta well into January. Some river sections in Saskatchewan were almost ice-free into February. Strong chinook winds brought temperatures exceeding 10°C in southwestern Saskatchewan and in much of Alberta on January 4th and 9th. On the 4th, it reached 16.4°C in Maple Creek, Saskatchewan, breaking its old record by several degrees. Calgary reached 15.3°C. However, the chinook winds that day brought gusts over 110 km/h in southern Alberta, causing some damages.



Qu'Appelle River near Craven, Saskatchewan on February 19th. By Stew Fettes, submitted to The Weather Network.

South of the border, golfers had more action than skiers most of the winter. For the contiguous US, it was the 3rd least snowy January on record since 1967. 95% of the country that normally had snow in early January had below normal snow cover. The northern Plains had nearly bare ground well into January.

In January, flowers sprouted in New Hampshire, cherry trees were budding in Washington DC, peach trees were budding in Georgia and daffodils were blooming in Oklahoma. In Nebraska, temperatures reached the high teens in early January, more than 15°C above normal in some cases. And in Washington DC, temperatures reached 20°C late month. In Fargo, it was the warmest winter on record with a mean temperature of -5.5°C.

3 15 Consecutive Warmer than Normal Months

The 2011-2012 period was one of the warmest ever recorded in southern Manitoba. In Winnipeg, 15 consecutive months were warmer than normal, from June 2011 to August 2012. This was a new record, beating 12 consecutive warmer than normal months from October 1918 to September 1919. The following list points out some impressive statistics from the 15-month period.

- Jul 2011 - second highest humidex since 1953 (47.2 on Jul 19).
- Aug 2011 - hottest day since 1995 (37.2°C on Aug 23).
- Sep 2011 - four consecutive days above 30°C, tying for longest September streak.
- Oct 2011 - hottest October day on record (31.1°C on Oct 5).
- Nov 2011 - 9.7°C on Nov 24, 3rd latest date to reach that high since 1872.
- Dec 2011 - Brown Christmas over much of southern Manitoba.
- Jan 2012 – 3rd warmest January and 3rd warmest January day (6.7°C on Jan 5).
- 4th warmest winter since 1872.
- Mar 2012 - warmest March on record.
- Mar 19, 2012 – Warmest day in March (23.7°C) and most humid (humidex 28.0).
- 2nd warmest spring since 1872.
- Jul 2012 – 5th hottest July.
- 10th hottest summer (tied).

The year 2012 had a mean temperature of 4.6°C, the 5th warmest year since 1873. The only reason that 2012 was not the warmest year on record was because of cooler weather in the fall which lowered the average. Winnipeg had its warmest January to August, January to September and January to October on record.

Winnipeg Airport also broke the record for the warmest 12-month period on record since 1873 in Winnipeg, with a mean temperature of 6.0°C from August 2011 to July 2012. The old record of 5.6°C was set over 130 years ago in the 1877-1878 period. This old record was equalled or surpassed seven times in the 2011-2012 period.

Warmest 12-Month Periods in Winnipeg Since 1872 by Mean Monthly Temperature	
6.0°C	Aug 2011 – Jul 2012
5.9°C	Jun 2011 – May 2012
	Jul 2011 – Jun 2012 Sep 2011 – Aug 2012
5.8°C	May 2011 – Apr 2012
	Oct 2011 – Sep 2012
5.6°C	Sep 1877 – Aug 1878
	Dec 1877 – Nov 1878
	Apr 2011 – Mar 2012

The coldest temperature in 2012 was a measly -29.0°C on December 24th, the highest on record. This was only the second time on record that -30°C was not achieved in Winnipeg since 1872. The last time was in 1931 with a minimum of -29.4°C .

-30°C was not reached until January 20, 2013. This ended a streak of 694 days without reaching -30°C , still shorter than the record of 714 days from February 15, 1930, to January 29, 1932.

Similar records were broken across Canada and the United States. Across Canada, July was the hottest month on record and the period of August 2011 to July 2012 was the warmest 12-month period for the Great Lakes, the St. Lawrence region, and the Prairies. Water temperatures of the Great Lakes reached some of their highest on record. Lake Superior was eight degrees above normal in mid August. The water temperature of Lake Ontario reached 24°C and Lake Erie 27°C . Algae blooms plagued the lakes as a result.

In the contiguous United States, July was also the hottest month on record, beating July 1936. August 2011 to July 2012 was also the warmest 12-month period since 1895. The mean temperature was 56.1°F (13.4°C) beating the old record of 55.5°F (13.1°C) from November 1999 to October 2000. In addition, the January to July period was the warmest on record with a mean temperature of 56.4°F (13.6°C). This easily beat 54.5°F (12.5°C) in 1998. 2012 was also the hottest year on record in the contiguous United States, and by a large margin.

4 Early Winter Wallop October 4th-5th

An unseasonably early snowstorm on Oct 4th and 5th put an abrupt end to summer-like weather. Less than a week earlier, Manitobans were basking in near record heat. On September 29th, it was nearly 30°C in Winnipeg, and it was in the high twenties throughout southern Manitoba. Even as late as October 2nd, just two days before the winter wallop, it was in the low to mid twenties.



Picture by Steinbach Online.

The system formed over South Dakota on October 3rd and tracked northeastwards into northwestern Ontario on the 4th. Initially, heavy rain fell in southeastern Manitoba

beginning on the 3rd. As much as 30 mm of rain fell south and east of Winnipeg, while 5 to 10 mm fell in Winnipeg. Rain switched to a very wet and heavy snowfall early in the morning on the 4th. A general 10 to 20 cm of snowfall fell across southeastern Manitoba, northwestern Ontario, and northwestern Minnesota by the 5th. Heaviest hit areas east and southeast of Steinbach received 30 cm, which is quite rare for that early in the season. A sharp drop-off in amounts occurred in the Red River Valley as the deformation zone of the system essentially divided the valley in half. While the eastern Red River Valley received up to 15 cm, Winnipeg only received around 2 cm which did not stick on the ground for very long.

Snow did fall in the western Red River Valley near the escarpment as well. In addition, lake-effect snow fell downwind of Lake Manitoba.



Snowfall amounts reported Oct 4-5, 2012.

Strong winds gusting up to 70 km/h accompanied the snowfall, only worsening visibility. RCMP issued travel advisories east of Winnipeg after many vehicles crashed in the ditch along the Trans-Canada due to icy, snow-covered highways. Parts of the Trans-Canada were down to one lane. Steinbach Towing was exceptionally busy. At one point on the 4th, they had 26 calls on-the-go. They were forced to prioritize drivers, starting with those who were stranded, and had to work through the night.

Perhaps the biggest setback with the storm was power outages. Wet snow and ice accumulating on hydro lines up to three inches in depth, combined with strong winds, snapped hydro poles and hydro towers across southeastern Manitoba. The heavy wet snow and strong winds also toppled trees, which mostly still had their leaves. The fallen trees took some power lines with them. More than 6,000 customers were without power

in southeastern Manitoba, along with more than 4,000 in northwestern Ontario and 1,300 in Winnipeg's Transcona neighbourhood. Transcona's outage was brief, but that was not the case for areas east of the city. Power outages lasted several days because of the number of hydro poles that were down, as well as poor road conditions which made it difficult for hydro crews to get to the affected areas. Some residents were still without power during the Thanksgiving weekend (Oct 6 to 8). Beausejour and the RM of Stuartburn had issued states of emergency because of the outages. About a dozen homes near Lonesand were without power until the following week.

In total, at least 250 hydro poles had to be replaced, costing Manitoba Hydro at least \$800,000. Crews worked 16-hour days.

Intermittent telephone and wireless service outages were felt as well due to power interruptions. However, MTS did the best they could to maintain the services with backup generators and battery power. Hospitals and personal-care homes also used alternate power sources, avoiding the need for evacuations.



(Left) Power lines weighed down by wet snow. By Lothar Dueck to CBC. (Right) Treacherous roads, by Steinbach Online.

The precipitation was much welcomed by firefighters who had been battling fires. Firefighting efforts were halted as fires had been extinguished by the weather.

In Gimli, strong winds with the system pushed water from Lake Winnipeg onto streets. Clogged sewer drains kept the water on the streets. Crews had to pump the water back into the lake and clear the clogged drains of leaves and sand. No homes were damaged.



Flooded street in Gimli. By Ken Krebs, submitted to The Weather Network.

The amount of snow that fell this early in the season is rare in southern Manitoba, especially in southeastern Manitoba. Higher elevations of western Manitoba are more prone to these early season snowstorms. On Sep 12-13, 1903, 10-30 cm of snow fell in western Manitoba near the Saskatchewan border. In October 1959, 3 major snowstorms dumped over 1 metre of snowfall over southwestern Manitoba, making it the snowiest month ever in Brandon. On Oct 7-8, 1985, 10-15 cm fell in Winnipeg with higher amounts in other parts of the Red River Valley. And more recently, on Oct 5, 2005, 20-45 cm fell over southwestern Manitoba with 5-10 cm in Winnipeg.

5 A Week of Severe Thunderstorms

While many thunderstorms bypassed the Winnipeg area much of the summer, the week of July 25th to August 3rd was an exception. Finally, storms brought beneficial rainfall, but also the usual damages.

July 25 Steinbach Flash Flood

A freak downpour caused a flash flood in Steinbach overnight on July 25th. An extremely isolated and slow-moving cell of torrential rain formed right over the city near 2:30 am and trained over the city for about 3 hours. Interestingly, it was not a thunderstorm because there was no thunder or lightning reported. There was very little wind as well. However, the three-hour downpour dumped between 60 and 120 mm of rain over Steinbach and 45.2 mm in nearby Mitchell. This outstanding amount of rain caused severe overland flooding. Roads, fields, and yards were underwater, and a few basements flooded. Stranded cars on flooded streets kept towing companies busy throughout the day. The creek that runs through the city was at its highest level in years.



Aerial view of flooding in Steinbach early morning July 25th. CJOB/Global News helicopter.

The water receded quickly. By afternoon, it was as if nothing had happened. This was because of very dry soil which soaked up the moisture, as well as the localized nature of the downpour which allowed water to drain downstream quickly.

Just to show how isolated the event was, not a drop of rain was recorded just 15 km south of Steinbach. Very little rain fell just west and north of the city as well with barely a drop in Ste. Anne.

July 29 Squall Line

July 29th featured the worst thunderstorm of the summer in the Winnipeg area. A strong cold front sliced through a hot and humid air mass that was in place across southern Manitoba. Daytime highs were in the mid thirties with humidex values near 40. Severe thunderstorms began in the Swan River and Roblin areas late morning and early afternoon. Large hail, damaging winds and torrential downpours occurred in areas west of Lake Manitoba in the afternoon. Hail as large as loonies fell. In some areas, the hail lasted about 15 minutes and accumulated. 65 mm of rain fell in Garland and 75 mm in Amaranth.

The storms organised into a line which tracked southeastwards across Lake Manitoba late afternoon and the Red River Valley and southeastern Manitoba by evening. In these areas, damaging winds were the main story with gusts over 90 km/h. Winds reportedly reached as high as 118 km/h at Twin Lakes Beach and 150 km/h in St Laurent. Damage was widespread, including in Winnipeg where winds reached 98 km/h at the Airport.



The storm shortly before hitting Winnipeg. Photo by @jdderk on twitter.

On the southeastern shores of Lake Manitoba, damage was severe. At Twin Lakes Beach, winds caved in the windows of residences along the beach, ripped roofs off cabins and uprooted many trees. The winds also reportedly tossed around hay bales on farm fields and 50–75-year-old trees were blown over like toothpicks. In St Laurent, a short distance north, a mobile home was destroyed. While the storm hit, the couple who lived in the

home were inside. They said the home rolled over several times, knocking both unconscious. They were taken to hospital but luckily only suffered cuts and bruises. 50 mm of rain in 30 minutes was also reported in the community.

South of Lake Manitoba, between Marquette and Poplar Point, 12 cars of a 56-car train derailed as winds blew them over near 6:30 pm.

In Winnipeg, the temperature plummeted to 19°C at the Airport as the gust front came through. At the same moment, it was still 33°C at The Forks! Violent winds caused severe damage in some parts of the city. The worst hit neighbourhoods appeared to be Tuxedo, River Heights, Crescentwood and Fort Rouge. Some trees were uprooted or snapped. Some streets and yards were littered with twigs, branches, leaves, and trees. In some instances, decades-old trees were snapped. Some of the fallen branches caused damage to nearby vehicles. Some roofs were damaged by the winds as well. In North Kildonan, a large section of roof came flying off a Henderson Highway apartment hitting a tree below and exploding to pieces across the street below. A few homes also lost their roofs. One home was hit by lightning in the city. Luckily, the home did not go into flames, and no one was hurt, but the roof needed repairs.



(Left) Fallen tree on St Anne's Rd.. Raymond St Mars on Twitter. (Right) Damage near Woodlands. Credit: "Rudder".

In Pinawa, winds uprooted 9- to 12-metre-high trees. Roofs were damaged as well.

A group of seven Ontario girls canoeing on the Bloodvein River got a bit of a scare. One of the girls, 23 years old, was hit by lightning. In addition, another one, 15 years old, was shocked while holding onto a canoe as they were pulling it ashore. After sending a GPS distress signal, a helicopter with two Mounties arrived bringing the 23-year-old to Winnipeg hospital, suffering only minor injuries. The 15-year-old was not hurt.

Power outages were scattered all over southern Manitoba as winds toppled hydro poles. As many as 26,000 customers were without power in the Fort Rouge neighbourhood of Winnipeg, a thousand in Selkirk and thousands more across Winnipeg and the rest of southern Manitoba. Many outages were restored by the next morning, but thousands were still offline in Winnipeg and the Whiteshell. Two days after the storm, 60 homes were still without power in the city and 140 outside the city. Some residents in the Whiteshell area were not restored until the first week of August.

The storms also dropped quarter to loonie sized hail in Charleswood and St. James, as well as in some areas outside of the city. Hail as large as golf balls fell in La Salle and Zhoda, while ping pong sized hail fell 3 km west of Piney.



Hail in La Salle. Submitted to Metro Winnipeg News by Kayla Wright.

August 1 Severe Thunderstorms

August 1st was almost a repeat performance of July 29th for areas north of Winnipeg. Severe thunderstorms formed in the Parklands and northern Interlake early afternoon. Loonie to golf ball sized hail fell in these areas. As they tracked southeastward, similarly to July 29, they organised into a line. It reached the southern Interlake, the Red River Valley and southeastern Manitoba by evening.

The hardest hit area was around the south basin of Lake Winnipeg. Winds reached 143 km/h in Grand Marais. Golf ball sized hail also fell in the area. The hail fell for several minutes, enough to accumulate like snow according to residents. In Riverton, on the west shore north of Gimli, 90 mm of rain fell in about 30 minutes along with nickel sized hail and damaging winds. Streets flooded, and there was hail and wind damage. Some trees were uprooted, and power lines were downed. Power outages lasted for hours.

The previously hard-hit region of St Laurent recorded wind gusts of 97 km/h. In Winnipeg, a peak gust of 76 km/h was recorded at the Airport, enough to do more damage to trees weakened by the storm only a few days prior.

August 3-4 Heavy Thunderstorms

Another strong thunderstorm event occurred on August 3rd. Two rounds of storms moved through the Winnipeg area, the second being the worst. Dark and large menacing clouds approached and were followed by sheets of rain lasting at least ten minutes. Rains were heaviest in central, northern, eastern, and southern parts of the city where 20 to 40 mm was common. Gusty winds occurred as well.

More heavy rain fell in the city the next morning dumping an additional 10 to 15 mm.



View of second thunderstorm moving into Winnipeg August 3rd. Submitted to The Weather Network by Leslie Barker.

6 Drought Intensifies with 2nd driest September

Dry weather persisted and even worsened into September. A persistent upper ridge in western Canada diverted systems from the Pacific through the northern Prairies, bypassing the south. In addition, the lower dewpoints of late summer halted convective events which only amplified the dryness. This also explained why Saskatchewan and Alberta had made a dramatic turn to drought after an extremely wet summer loaded with convective events.

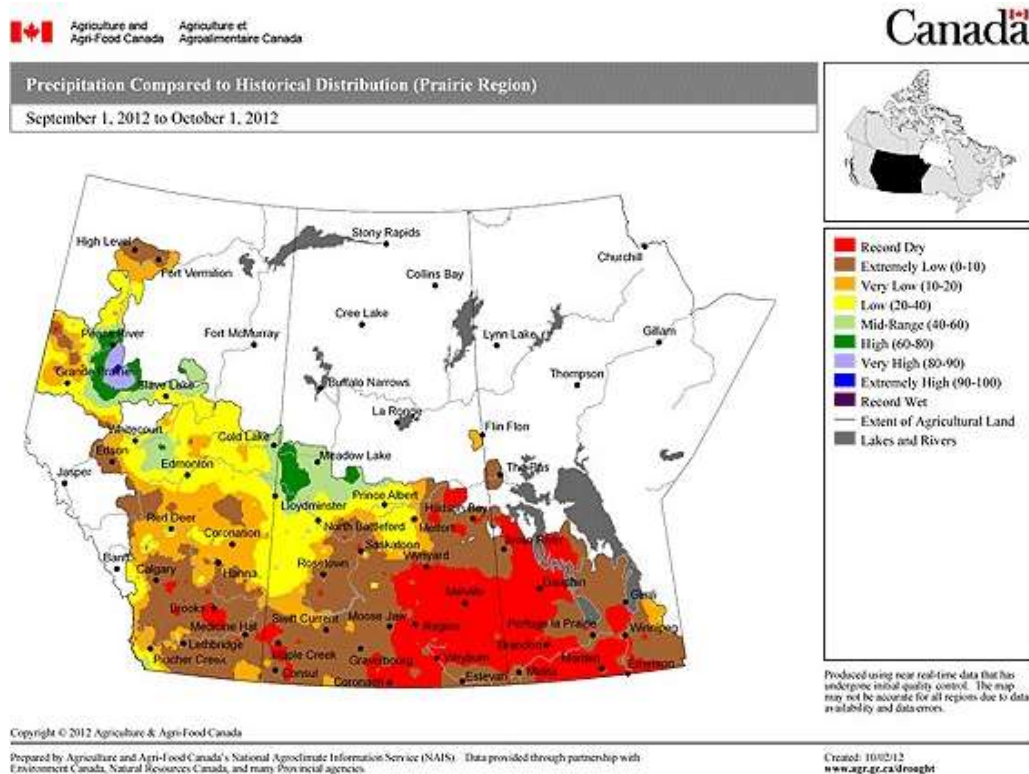
At Winnipeg Airport, only 6.5 mm of rain fell between August 16 and October 3, a 49-day stretch. Similar amounts fell in most of southern Manitoba, southern Saskatchewan, and parts of Alberta. Much of southwestern Manitoba and southeastern Saskatchewan recorded their driest September on record, with some localities receiving no rain at all.

With only 4.0 mm of rain at Winnipeg Airport in September, it was the 2nd driest September since 1872 in Winnipeg. This was only 8% of the normal 47 mm of rain. It was also in the bottom 2% of all months for precipitation.

Driest Septembers in Winnipeg Since 1872	
1.3 mm	1948
4.0 mm	2012
6.1 mm	1938
8.6 mm	1897
9.9 mm	1976

September was the 4th consecutive drier than normal month in Winnipeg. Soils were bone-dry with brown lawns, cracks in the ground, and low water levels. Water pipe breaks

occurred in September because of shifting soils, causing some flooding. Similar conditions south of the border prompted the US Drought Monitor to classify the US Red River Valley in extreme drought in their September 25th issue.



September was extremely dry throughout the southern Prairies.

With the dry conditions came numerous fires. A return to summer-like warmth was felt during the last days of September and first days of October. Unfortunately, this warmth was accompanied by very strong winds on September 30th and October 2nd, creating perfect conditions for numerous fires to spark. As a result, the province cancelled all burning permits in western, central, and eastern parts of Manitoba.

On September 30th, large wildfires sparked near Souris, Dominion City, and St. Laurent. Up to 30 fire departments, dozens of firefighters and water bombers fought the flames. In Winnipeg, a grassfire occurred in Charleswood near Loudoun Road. Eight fire trucks were dispatched. About 100 acres of pasture and woodland was affected, and at least one home was evacuated.

On October 2nd, conditions were worse. Winds gusting over 80 km/h combined with dry and warm weather creating prime conditions for dangerous fast-moving fires. Some fires were sparked in Winnipeg and near Vita, Ross, and St. Malo. Ross, which is east of Winnipeg, was under an evacuation order due to a brush fire. About 50 homes, or about 200 people, were evacuated. A brush fire near St. Malo was brought under control with no reports of property damage. In Winnipeg, 3 fires occurred: in the 1400 block of Charleswood Road, in the Assiniboine Forest and near Loudoun Road. The fire near Loudoun Road was a reignited fire from two days previous. This time it was larger.

Residents in the area soaked down their property to prevent spreading. The fire in the Assiniboine forest was so deep inside the forest that firefighters could not use their hoses. Instead, they walked around pounding the flames with brooms. Dark smoke from these fires was blowing into the city through the day.

The worst fire was near Vita. A grass fire started in the southwest corner of the community. A state of emergency and evacuation order was issued by early afternoon for the entire village. Strong winds rapidly pushed the fire into the community destroying four homes: one in the town and three in the nearby rural area. A bridge on Highway 201 was also destroyed. Two drivers heading towards town, which could not see the fallen bridge due to the thick smoke, drove into the void left by the fallen bridge. Luckily, they did not face any serious injuries, but the vehicles were burned by the fire. Some roads in the area were shut down due to the flames and smoke. Anybody who had to travel in the area was warned to watch out for loose cattle after fences had been burnt. Unfortunately, cell service in the area was cut during the fire. On November 17, a fundraiser was held in Vita to help the families who lost their homes.



House burned down near Vita. Photo submitted to ChrisD.com by Stan Milosevic.

7 One of the Earliest Springs on Record & 2nd Warmest

Spring was early in many ways in 2012, all thanks to a record warm March which put an abrupt end to a tame winter. Insects, trees, plants, the ice-breakup, and the fire season all got a head start that was weeks earlier than normal.

The fire season already began in late March. Ditches, fields, and forests were tinder dry after limited winter snowfall and warm windy conditions in March. These dry conditions continued throughout the spring despite near to above normal rainfall. Persistently low dewpoints and high winds rapidly dried up any new moisture. Some municipalities issued

fire bans as early as the first week of April. Back-country travel restrictions in southeastern Manitoba and more burn bans followed in May.

By May 1st, there had already been 50 fires reported across Manitoba. Some of these were grass fires in Winnipeg, such as along Sturgeon Road on April 5th and in the Assiniboine Forest on April 26th. Both were extinguished with no property damage.

Some of the worst fires in April were near Beausejour, Selkirk and Anola. The fire near Beausejour on April 6th was 1.6 km long at one point. Water bombers from Manitoba and Ontario fought the blaze. There were no reports of property damage. In Selkirk, a fire that was brought under control earlier in the day on April 28th reignited later in the afternoon. The fire spread to a scrap yard causing significant damage. On the same day, near Anola, a fire raged out of control and travelled several kilometres, burning one home. Firefighters spent hours trying to extinguish it. Unfortunately, four fires in the Anola area that weekend burnt in total three homes and a few out-buildings, such as barns.

In mid May, two much larger fires were sparked in southeastern Manitoba: one in the RM of Stuartburn east/southeast of Vita and another in the RM of Piney. They both lasted about a week. They were very difficult to battle due to hot, windy, and dry weather. In addition, winds were not only strong, but they were variable in direction. The fires were hard to access by ground crews and were spread all over the place. The RM of Piney declared a state of emergency on the 14th, the same day that over a dozen people were evacuated in the small village of Badger. They remained evacuees for four days, finally returning home on the 18th. In total, several thousands of hectares burned in the RM of Stuartburn, while a few tens of thousands were burned in the RM of Piney. The smoke plumes from these fires were large enough to be visible on satellite and radar. The radar imagery indicated that the tops of these pyro cumulus clouds reached over 15,000 feet.

The ice breakup on the Manitoba lakes was extremely early. There was already open water along the shores of Lake Winnipeg at the end of the first week of April. By mid month, the south basins of both Lake Manitoba and Lake Winnipeg were largely ice-free making it the earliest ice-breakup in at least recent memory. According to 78-year-old Robert Kristjanson in his interview with CBC Manitoba, the ice breakup had never been so early in his lifetime. Kristjanson's family had been commercial fishing on Lake Winnipeg for more than 120 years. In a normal year, they would be ice fishing until mid April.



Ice-free Lake Winnipeg (north of Gimli) on April 9th. Photo submitted to CBC by Richard Romanow.

Trees began budding and plants began sprouting a few weeks earlier than normal as well. Some trees began budding in late March and early April. For instance, my maple tree had already started showing seed pods in mid March, began budding on the first week of April and leaves came out in late April. This was all three or four weeks earlier than normal. Many plants and flowers also sprouted in early April. Lawns greened up in April as well.



Trees budding on April 5th.

Overall, it was the 2nd warmest spring on record since 1872 in Winnipeg with a mean temperature of 6.8°C, 3.4°C above normal.

April was tied 30th warmest and May tied 52nd warmest. March, being the warmest on record, was largely responsible for the warm spring.

After March 8th, only a trace of snow fell in Winnipeg. This was the earliest date of last measurable spring snowfall on record. In fact, the measurable snowfall season was only 124 days long, easily beating 136 days long in the winter of 1899-1900.

Warmest Springs in Winnipeg Since 1872 by Mean Temperature	
7.5°C	1977
6.8°C	2012
6.6°C	2010
6.3°C	1987
6.0°C	1878
5.7°C	1922

Earliest Dates of Last Measurable Snowfall	
March 8	2012
March 11	2006
March 19	1993
March 20	1925
March 22	1998
March 25	1900

8 Another Summer of Searing Heat and Parched Lawns

Like 2011, the heat and dryness cranked up in late June with the arrival of an upper ridge which pushed the storm track northwards and allowed sunshine and heat to dominate most of the summer. There was a small break in early August with cooler wetter weather, which allowed lawns to green up again. The upper ridge rebuilt by mid August, however, bringing back the very hot and dry weather experienced in July.

With a mean temperature of 22.3°C in July, it was the 5th hottest July on record since 1873. It was also the hottest July in 76 years, and the 6th hottest month on record. In addition, the average daily high was 29.3°C, the 3rd hottest on record and 6th hottest for any month since 1872. In total, there were 14 days with a high above 30°C, tied 4th most, and ten days more than normal.

24.2°C	1936
22.4°C	1914, 1916, 1935
22.3°C	2012
22.2°C	1957, 1983

July was even hotter in Portage la Prairie, where the mean temperature was 23.2°C and the average daily low was 17.0°C. The Forks in Winnipeg had a mean temperature over 24°C and an average daily low of 19°C.

High humidity and warm nights often accompanied the hot weather in July. 21 days had a minimum temperature that was warmer than 15°C at Winnipeg Airport, while only one night dipped into the single digits. As for humidex values, the average daily maximum was 34.5. The highest humidex was 42.1 on the 11th and 19th. Four days had humidex over 40, tied second most since 1953. 26 days had humidex over 30 and 14 days over 35. The average dewpoint was 16.5°C, eclipsing the previous record of 15.5°C in 1966 and 1989.

The high heat and humidity prompted the city of Winnipeg to extend spray pad and swimming pool hours until mid evening. In addition, cooling centres were opened in leisure centres and libraries. A temporary water trailer was added north of downtown on Henry Avenue to refill water bottles. A spike in water use occurred, reaching one of the highest rates in the last decade. Some residents were seeing discoloured water from their taps, which was blamed on this increase. It was believed that this caused sediment to stir up in the pipes, causing discolouration. This sediment was not dangerous. Air conditioners were also flying off the shelves, with many stores reporting a shortage.

As for rainfall, July was much drier than normal around Winnipeg for the second consecutive year. With only 23.5 mm of rain, it was the 12th driest July on record. Lawns were parched and some trees were yellowing from moisture stress and leaf burning. By mid July, it was dry enough for Manitoba Conservation to cancel burning permits and not

issue new ones in eastern and northern Manitoba. Wildfires in Alberta and Saskatchewan were causing smoky conditions throughout much of the Prairies.



Unwatered lawns were quite parched in July. This picture is from July 27th.

However, Winnipeg and parts of the Red River Valley were a bit of a drought island. Most of southern Manitoba, especially in western and northern areas, had seen near normal and in some cases much above normal rainfall in July. This helped produce one of the best crops in years for many farmers. The worst of the storms consistently bypassed the Red River Valley. Even around Winnipeg though, there was some variety of rainfall amounts. Some highly localized and quasi-stationary storms over the southwestern portion of the city on July 12th dumped some impressive amounts. That brought monthly totals up to around 40 mm for Whyte Ridge, over 50 mm for Oak Bluff and 60 mm for Starbuck.

In the contiguous United States, July 2012 was the hottest month in history, beating July 1936. Nationally in Canada, it was the same result.

The heat cranked up again in late August. August 22nd to 24th was an official heat wave with highs of 32°C and 33°C. It was even hotter on August 29th, with highs in the mid to high thirties across southern Manitoba. This was also accompanied by high humidity with humidex values near or above 40. Winnipeg reached 35.4°C on the 29th, just shy of the record of 36.1°C in 1972. A stiff south wind kept temperatures high through the evening. It was still 30°C at 10 PM. Of note, it also hit 40°C in Minot and 44°C in Chamberlain, South Dakota during the heat wave. The highest temperatures in Manitoba were in the southwest with several communities reaching over 37°C.

High Temperatures August 29 th	
37.9°C	Dauphin
37.6°C	Gladstone
37.5°C	Pierson
37.5°C	Wawanesa
37.1°C	Brandon Airport
37.1°C	Treherne
36.8°C	Carberry
36.6°C	Portage la Prairie
36.1°C	Melita
35.8°C	Morden
35.4°C	Winnipeg Airport

Summer 2012 overall had a mean temperature of 19.8°C at Winnipeg Airport, 1.4°C above normal and tied 10th warmest summer. 21 days had highs above 30°C, much above the normal of 11 days. Daytime highs averaged 26.9°C, 7th hottest on record.

As for precipitation, it was the 10th driest summer with 129.5 mm of rainfall at Winnipeg Airport, much below the normal of 247.5 mm. All three months from June to August were drier than normal. Other parts of the city were wetter, with as much as 170 mm in Charleswood and 150 mm in St. Vital. This was the second consecutive top 10 driest summer. To put in perspective how dry the past two summers have been, adding the rainfall of 2011 and 2012 together still results in below normal summer rainfall. Three of the past seven summers have been among the top 10 driest (2006, 2011 and 2012).

The growing season from April to October was exceptionally dry. See Annex B for a map of precipitation anomalies across the Prairies from April to October. Notice that central Saskatchewan was extremely wet in contrast.

Nationally, it was the hottest summer on record in Canada, and 1.9°C above normal. July to September was the warmest three-month period ever.



Already harvesting wheat on August 8th near Sanford. Submitted to The Weather Network by Bob Enns.

9 Rainy May with Several Thunderstorms

After an early spring, the thunderstorm season had an active early start in May. Notable events in Winnipeg included May 14, 18, 22/23 and 27. All these storms, along with other rain events during the month, brought monthly rainfall totals as high as 130 mm in parts of northern and western Winnipeg. This was more than double the normal May rainfall. However, amounts were lower in other parts of the city with as little as 85 mm in southern and eastern parts. These were areas that missed out on heavy rains on May 18th and 28th. Winnipeg Airport received 98 mm of rain, the 21st wettest May. Five days had thunderstorms, tied with five other years for 8th most since 1953.

May 14 Dry Thunderstorms with Severe Wind Gusts

A cold front moving across southern Manitoba in the evening of May 14th sparked off thunderstorms, despite minimal humidity with dewpoints only in the low single digits. The low humidity resulted in severe wind gusts and very little rain thanks to evaporative cooling. The rain which largely evaporated before reaching the rain resulted in some interesting cloud formations.

Gusts of 80 to 100 km/h were common in the Red River Valley with the storms. Winnipeg Airport gusted to 85 km/h with the passage of the first storm to hit the city. Some regions were hit repeatedly as several cells formed one after another. In addition, the storms formed ahead of the cold front, resulting in another round of severe wind with the front later in the evening. Winnipeg airport recorded a gust of 93 km/h with the front, after the storms had passed. Some trees and even semi-trailers were toppled, and there were numerous power outages across southern Manitoba. Most outages were restored quickly, except for a few regions north of Portage such as St. Ambroise, which lost power for several hours. The winds collapsed a wall under construction at Winnipeg's new football stadium. The strongest wind gusts recorded were 101 km/h in Sperling, 92 km/h in Elm Creek, and 91 km/h in Carman and Starbuck.

Thanks to dry soils, the winds produced localized dust storms with visibility briefly reduced to near-zero in rural areas. According to The Weather Network, callers to their storm line said they had to pull over as visibility reached near zero in blowing dust. The following day, some farmers even woke up to "dirt drifts" in their fields. The winds were strong enough to produce blowing dust and reduced visibility within Winnipeg city limits.



Photo by Bob Ledoux near Fort Whyte.

The storms claimed one life on Lake Manitoba. Two men were fishing on the lake when the storm hit with little warning. The strong winds and heavy waves overturned their boat. One man made it to shore, while the second was swept away by the waves. Searchers combed the area for several days for his body, finding it on May 23rd, 11 km from the location of the capsized.



Poor visibility in blowing dust near Austin, MB, around 8pm. Photo by Duane Arndt.

May 18 Heavy Thunderstorms

On the evening of May 18th, a retreating warm front was the cause of another thunderstorm outbreak in the Red River Valley and southeastern Manitoba. There was a very tight temperature gradient with this front. At 5 PM, while it was only 15°C in Minot, it was 35°C in Fargo.

Lines of thunderstorms formed west-southwest of Winnipeg by 7:30 PM and swept through the city between 8 and 9:15 PM. The storms trained over western, central, and northern sections of the city, giving long-lasting torrential downpours. A swath of 25-35 mm of rain fell, while only 5 to 10 mm fell in east, southeast and extreme northwest sections of the city. A peak rainfall rate of 133 mm/h was recorded in Charleswood at 8:11 PM. In addition, hail as large as quarters fell in central and northern parts of the city and lasted long enough to accumulate. Lightning was frequent, and the rain flooded streets. The rain was blamed for an apartment roof collapse at the corner of Aikins Street and Atlantic Avenue. Residents were evacuated and there were no injuries. Some traffic and streetlights were knocked out as well.



Photo from near the University of Manitoba, by Rebecca Schleicher.

May 22-23 Thunderstorms with Magnificent Lightning

More strong thunderstorms developed late on May 22nd and early May 23rd. This time, the main story was the magnificent display of lightning late evening and early overnight. Lightning was almost constant and there were many cloud-to-ground strikes. Rain in Winnipeg was not impressive with only a general 2 to 6 mm. Heavier amounts of 10 to 20 mm fell east and northeast of the city, with locally even higher amounts.



Magnificent lightning the night of May 22-23. Photo by Kevin Devion, submitted to The Weather Network.

May 27 Thunderstorms

Another round of storms drenched the Winnipeg area on May 27th. A line of heavy elevated thunderstorms swept through the city near 6:30 PM, dumping locally 10 to 15 mm of rain in as little as 10 minutes. Lightning was not frequent. Storms continued intermittently through the evening until about 9:30 PM. By the end of the day, in addition to showers earlier in the day, as much as 20 to 35 mm of rain had fallen in southern and northern parts of the city.

10 Cold September Nights

Low humidity, clear skies and dry weather resulted in some impressively chilly nights in September. Daytime temperatures were only a few degrees below normal, while nights were several degrees below normal. On a few days, the difference between night and day was more than 20 degrees. Very dry soil conditions accelerated ground heat loss at night.

The growing season at the airport ended on September 14th with a low of -1.0°C, about a week earlier than normal. This resulted in a growing season of 106 days, shorter than the normal of 121 days. It was, however, a good growing season due to an early spring and a hot summer. Using the number of days between hard frosts instead (hard frost is defined

as -2°C or colder) we get a season of 148 days for 2012 (Apr 27 to Sep 21 inclusively). That is much more representative of the conditions experienced in 2012.



Snowing in Kenora, Ontario, on September 21. Submitted to The Weather Network.

The coldest weather of the month moved in a week later. Snowflakes fell in northwestern Ontario and areas north of Winnipeg on the 21st. In Winnipeg, heavy hail fell in parts of the city midday with the passage of a cold front. Behind this disturbance, an arctic airmass under a ridge of high pressure allowed for record low temperatures on September 23rd. A low of -7.1°C was recorded at Winnipeg Airport, breaking the 133-year-old daily record of -6.1°C. It was also the coldest September night in 47 years (since -7.2°C on Sep 26, 1965), the 5th coldest September night on record and the second earliest temperatures that low. Even The Forks dipped to the freezing mark (0.0°C) marking the end of the growing season for Downtown, two weeks earlier than normal.

Low Temperatures September 23 rd	
-9.3°C	Dugald
-9.1°C	Eriksdale
-8.5°C	Fisher Branch, Emerson
-7.8°C	St Pierre Jolys
-7.6°C	Woodlands, Steinbach
-7.3°C	Virден, Wasagaming
-7.1°C	Winnipeg Airport
-7.0°C	Altona
-6.9°C	Sprague
-6.7°C	Brandon Airport
-6.3°C	Gretna, Starbuck
-5.2°C	Pilot Mound

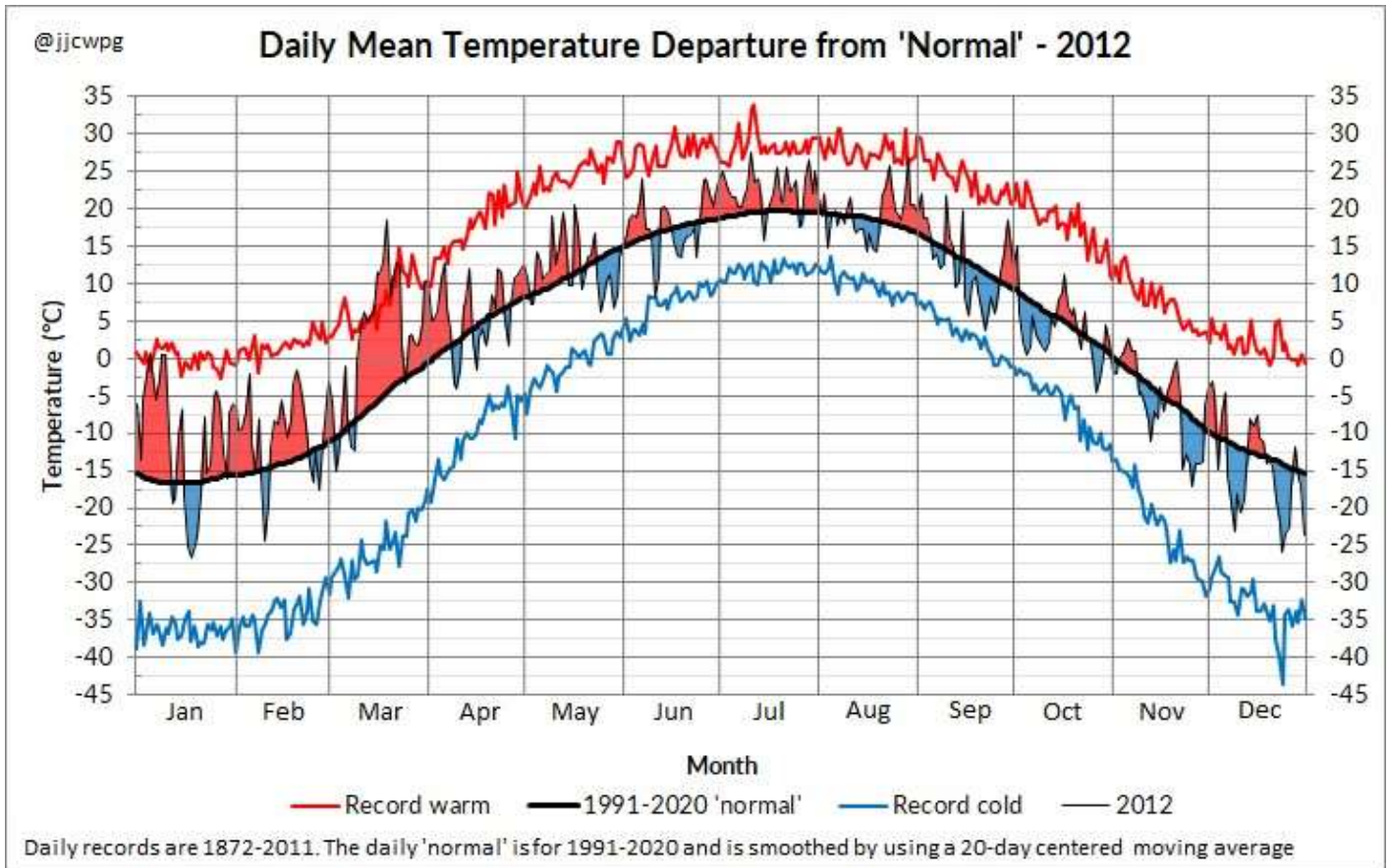
Despite a chilly night, temperatures skyrocketed during the day with highs in the high teens. Winnipeg reached 17.2°C, a 24 degree rise from what it was early morning.

In total, 7 days had a low below zero in Winnipeg, tying for third most subfreezing days on record for September.

Honourable Mentions

- Four days of spectacular rime ice from fog in early February.
- June 9 severe thunderstorms with tennis ball sized hail in Winnipeg.
- Hot end to September coincides with the leaf colour change.
- Major snowstorm November 10th-11th.
- Rainy start to December – 9th rainiest December.

Daily Temperature Departures Graph



Annex A – March 2012 List of Records at Winnipeg Airport

Record Highs

Mar 11	12.8°C	old 12.5°C in 1981	
Mar 12	9.7°C	old 7.2°C in 1922	
Mar 15	14.4°C	old 11.1°C in 1927	
Mar 16	19.9°C	old 12.4°C in 1981	
Mar 17	19.2°C	old 12.2°C in 1929 and 1938	
Mar 18	20.9°C	old 14.4°C in 1910	*Earliest 20°C (old Mar 23, 1910; 22.8°C)
Mar 19	23.7°C	old 18.9°C in 1938	* All-time for March (old 23.3°C; Mar 27, 1946)
Mar 22	21.7°C	old 18.3°C in 1878	

*Most 20°C days in March (3 days)

*Most above normal day on record Mar 19 - 23.4 degrees above normal

*Mar 16, 18 and 19 were all warmest for so early in the year on record

Record High Minimums

Mar 12	2.5°C	old 1.6°C in 1995	
Mar 14	1.2°C	tied with 1977	
Mar 16	2.8°C	old 0.6°C in 1874 and 1946	
Mar 17	3.2°C	old 2.2°C in 1938	
Mar 18	4.4°C	old 1.1°C in 1938 and 1987	
Mar 19	13.3°C	old 2.2°C in 1918	* All-time for March (old 7.8°C on Mar 25, 1945) *Earliest double digit (old Apr 14, 2010; 11.5°C)
Mar 20	2.8°C	tied with 1946	
Mar 22	3.7°C	old 1.7°C in 1945, 1973, 1987 and 2009	
Mar 23	8.7°C	old 6.7°C in 1910	

Other Records

*Warmest March on record with a mean temperature of 2.2°C.

*Most thunderstorm days in March (2 days).

*Mar 8 last measurable snowfall of spring, the earliest on record (old Mar 11, 2006).

*Mar 19 high daily rainfall with 13.5 mm (old 4.6 mm in 1931).

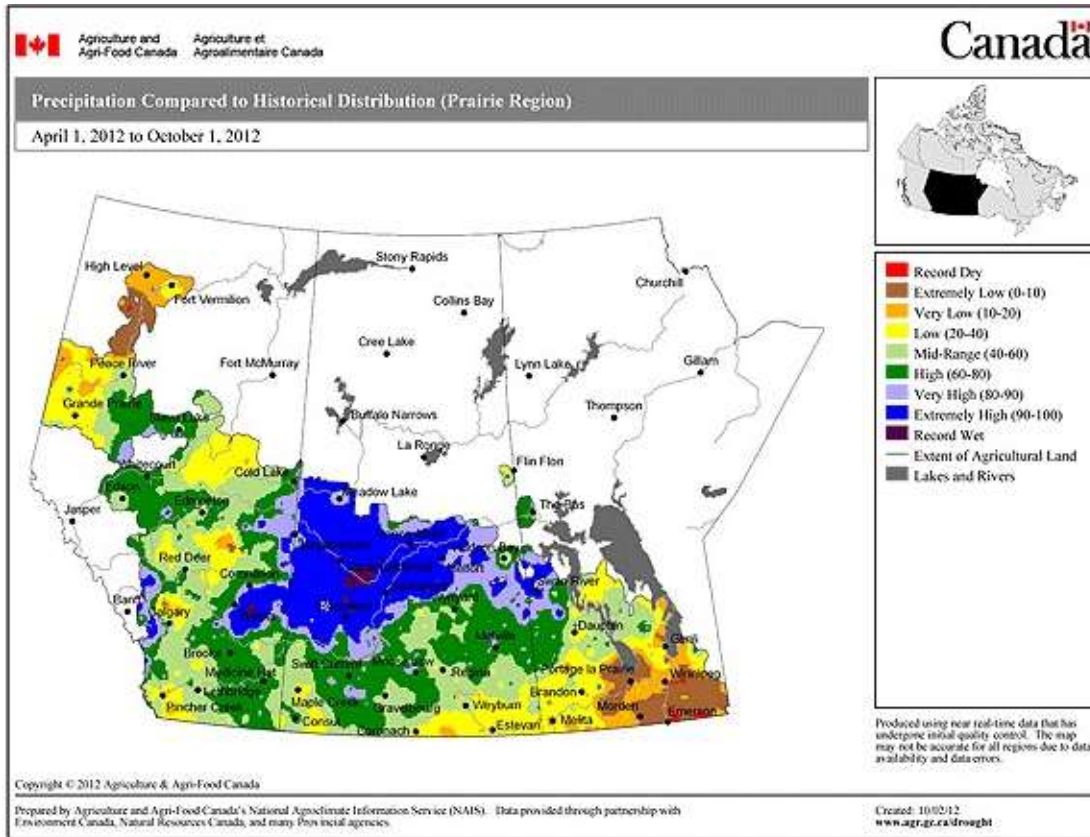
*All-time highest humidex in March broken three times; 20.5 on the 16th, 24.9 on the 18th and 28.0 on the 19th (old 18.8 on March 30, 1967).

*All-time highest dewpoint in March broken three times; 10.9°C on the 16th, 16.5°C on the 18th and 17.2°C on the 19th (old 10.6°C on March 30, 1967).

*Earliest double-digit dewpoint on record on Mar 16 (old Mar 24, 2000, at 10.3°C).

Temperature and rainfall records since 1872, and dewpoint and humidex records since 1953.

Annex B - Growing Season Precipitation Map

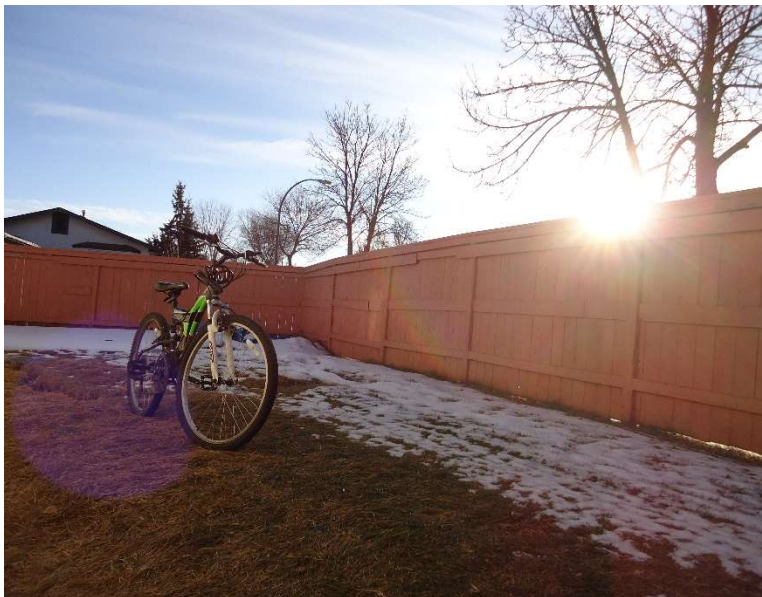


Acknowledgement of Sources

This summary document contains information from a variety of sources, including Environment Canada, Jeff Masters from Weather Underground, Weather Underground (or "Wunderground"), CBC, CTV, CBS News, Rob's Blog, Steinbach Online, Metro News, Winnipeg Free Press, YouTube, A Weather Moment, Manitoba Agriculture, The Weather Network, Agriculture and Agri-Food Canada, TwisterData.com, the National Weather Service (NOAA), Nav Canada, College of Dupage and the City of Winnipeg. Any other sources are mentioned in the document itself.

Pictures

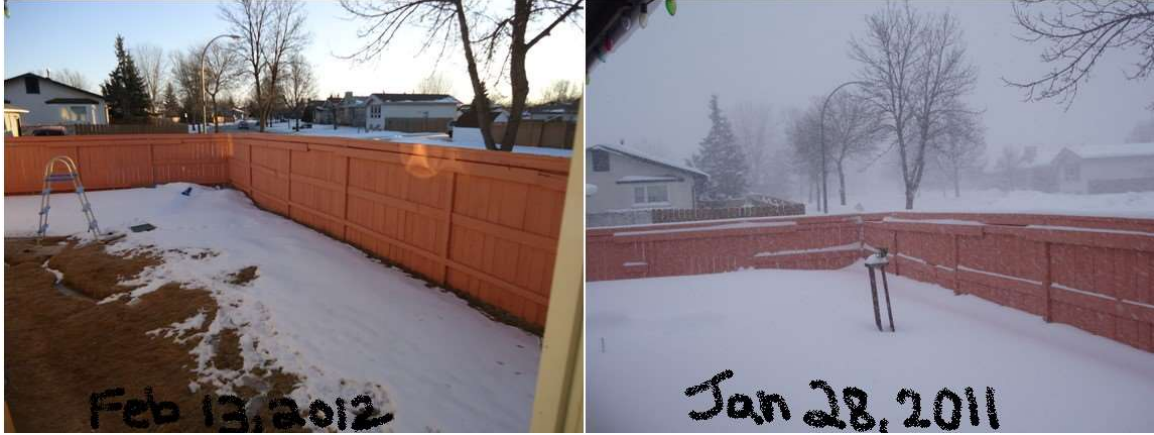
Extra photos from the year 2012 taken by me.



January 5



January 6 after some snow last night.



February 13, 2012 versus January 28, 2011



February 2 rime ice from fog



February 13 very little snow



March 2 quite a bit more snow



March 23 grass already greening up



April 5 rhubarb coming out



May 6



June 9 evening thunderstorms



June 9 morning mammatus



June 9 morning thunderstorm as it moves in



July 29 shelf cloud ahead of thunderstorm



Seine River on September 29



December 15 rime ice after fog