E.D. Soulis Memorial Weather Station at the University of Waterloo Annual Summary - 2023

The big story of 2023 was the heat throughout the year with only one month of below average temperatures. Although globally 2023 was the warmest year on record, in the region it was the fourth warmest year in the history of weather records in the region which go back over 100 years. The top four warmest years locally are: 2012 with an average temperature of 9.32°C, 1998 at 8.98°C, 2021 at 8.89°C, and now 2023 coming in at 8.86°C.

The year started off very warm with the January coming in as the fourth warmest and February the sixth warmest. March was then close to average, before another warm month in April. That month the temperature reached 26.0°C or more for 5 straight days, this was the first streak that long during April. Also, with a temperature of 28.1°C on April 13, it was the earliest in the year that the temperature has gone above 28°C (previously it was April 22). With all that it isn't surprising that it was the third warmest April in the region.

The last below zero temperature occurred on May 18th, this was 12 days later than the average in the last 25 years and the second latest during that time. The month of May started a three month streak of temperatures that were close to average.

August had an overall temperature that was 1.3 degrees below average, this was the only month that was below average during the year and the coolest August since 2008. Then in September we saw the first warmer than average month since April the warmest September in the last 5 years. There were 3 days above 30°C where we usually only see one of those every couple of years in September. Finally, the 32.0°C that occurred on the fifth was the warmest temperature for the entire year.

There was a very hot streak the first week of October with 3 days close to 30°C, that contributed to the overall temperature being a little over a degree and half above average, that made it the fourth warmest October in the region. A little after midnight on the 23rd, the temperature went below zero for the first time since May 18th, which is about 10 days later than the average. With the frost-free period from May 18 to Oct 23, the frost-free season lasted 158 days, which is very close to the average of 160 days.

November dipped a bit below average followed by the second warmest December on record at 4 degrees above average. The low temperature for the month of -6.9°C on the 13th, this was the highest for December in the history of records in the region.

Looking at precipitation, the year started out very wet between January and April, this included February which was the most above average of any month since October 2021. There was one particularly wet day on the ninth when there was 35.6 cm of precipitation (the fourth wettest single day in February). While March was the second wettest in the last 10 years.

May then broke the trend with only about half the average for the month ending with 11 days of no precipitation. Things turned around again in July which was the wettest since 2014 and in the top 10 in the history of weather records in the region.

September was very dry, the 18.0 mm of precipitation made it the 4th driest on record and the direst since 1969. The rest of the fall was close to average, resulting in a total for the year of 958.8 mm, above the average of 869.6 mm, but still within the average range.

The total snowfall for the 2022-23 season was a total of 119.5 cm, which was well below the average of 159.7 cm. The first few months of the next snowfall season has started slowly with only 10 cm total in November and December compared to the average of 26 cm by the end of the year.

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Summary for 2023 (averages from 1998-2022 data for Soulis Memorial Weather Station):
Average Daily High Temperature: 13.81°C (average 12.62ºC)
Average Daily Low Temperature: 3.92°C (average 2.59ºC)
Total Precipitation: 958.8 mm (average 869.6 mm)

Extremes for 2023 (all time Soulis Memorial Weather Station extreme in brackets):
Highest temperature:
32.0°C Sep 5 3:15 pm (35.7 °C July 21, 2011 3:00 pm)
Highest humidex:
41.4 Sep 5 3:15 pm (47.6 July 17, 2013 5:00 pm)
Lowest temperature:
-19.7°C Feb 3 7:45 am (-35.5 °C Feb 16, 2015 7:00 am)
Lowest windchill:
-35.4 Feb 3 11:00 am (-47.3 Feb 15, 2015 6:15 am)
Greatest temperature drop in 15 minutes:
-6.7°C Jul 6 12:30 am (-9.5 °C July 19, 2013 5:00 pm)
Greatest temperature drop in 60 minutes:
-10.7°C Jul 6 12:30 - 1:30 pm (-11.8 °C July 19, 2013 4:45-5:45 pm)
Greatest temperature rise in 15 minutes:
3.6°C Jun 2 7:45 am (8.6 °C Jan 2, 2001 6:15 am)
Greatest temperature rise in 60 minutes:
7.7°C Apr 15 8:15 - 9:15 am (12.2 °C Jan 2, 2001 4:45-5:45 am)
Highest precipitation in 15 minutes:
12.6 mm Jul 20 5:30-5:45 pm (24.8 mm Jul 10, 2020 6:45-7:00 pm)
Highest precipitation in 60 minutes:
19.0 mm Jul 29 5:30-6:30 pm (57.4 mm Aug 2, 2014 2:30-3:30 pm)
Highest Precipitation in 1 day:
35.6 mm Feb 9 (88.0 mm Sep 22, 2021)
Highest 15 minute average wind speed:
28.4 km/h Mar 25 6:00 pm (44.6 km/h Mar 9, 2002 6:30 pm)
Highest wind gust (only available since 2015):
42.1 km/h Mar 25 6:00 pm (44.4 km/h Apr 13, 2015 2:30 pm)
Last time the temperature went below 0 before the summer:
May 18 6:30 am (Has ranged between Apr 26- May 23)
First time the temperature went below 0 after the summer:
Oct 23 12:15 am (Has ranged between Sep 19 - Oct 29)
Length of frost-free season
158 Days (Has ranged between 129-175 days)
Highest daily low temperature:
20.3°C Sep 6 (25.3 °C Aug 1, 2006)
Lowest daily high temperature:
-11.1°C Feb 3 (-20.6 °C Feb 15, 2015)
Largest daily temperature range:
21.6°C May 30 (29.6 °C Feb 19, 2007)
Smallest daily temperature range:
0.80°C Jul 26 (0.45 °C Dec 7, 2005)