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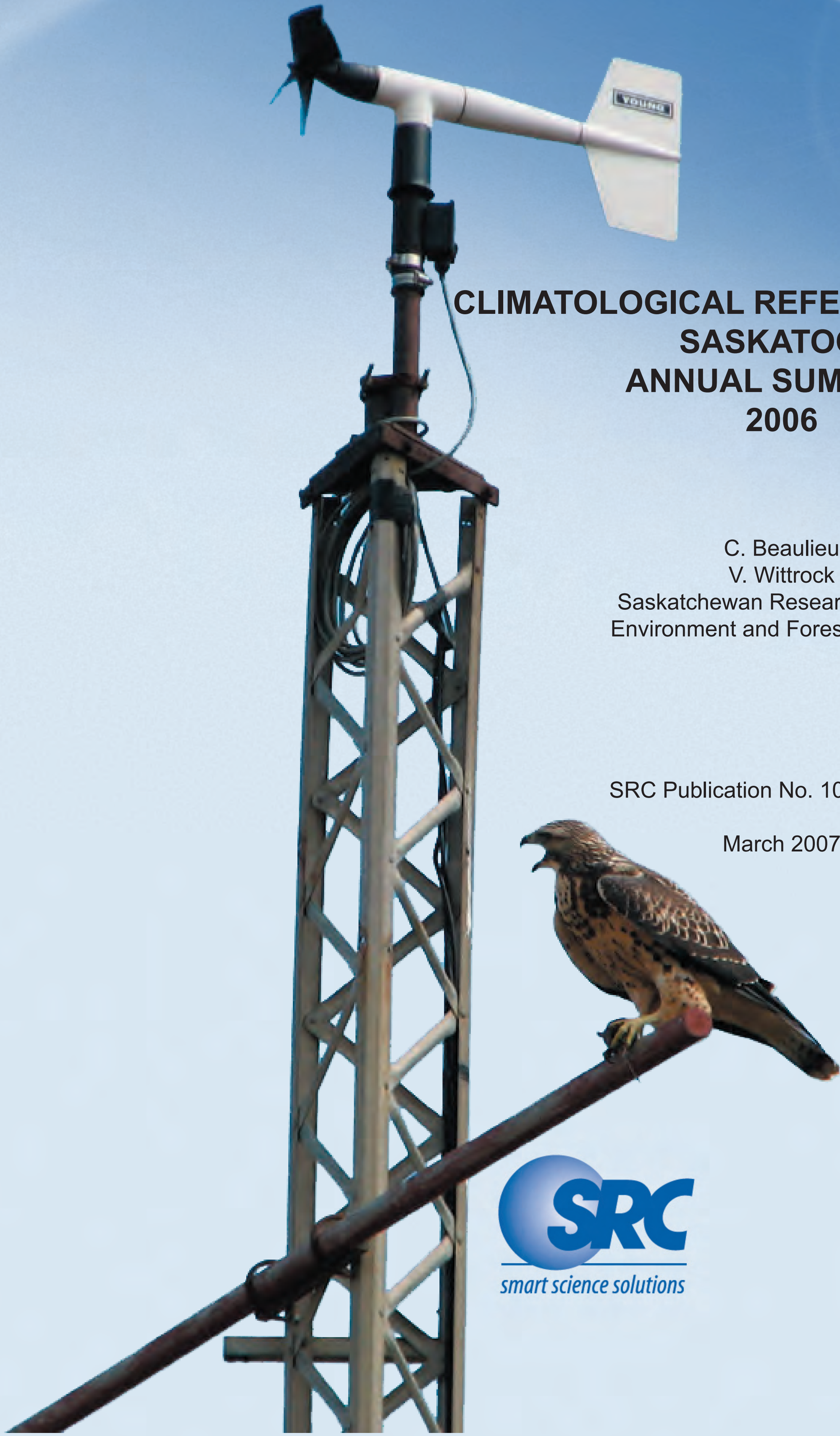

CLIMATOLOGICAL REFERENCE STATION SASKATOON ANNUAL SUMMARY 2006

C. Beaulieu
V. Wittrock
Saskatchewan Research Council
Environment and Forestry Division

SRC Publication No. 10440 - 1E07

March 2007

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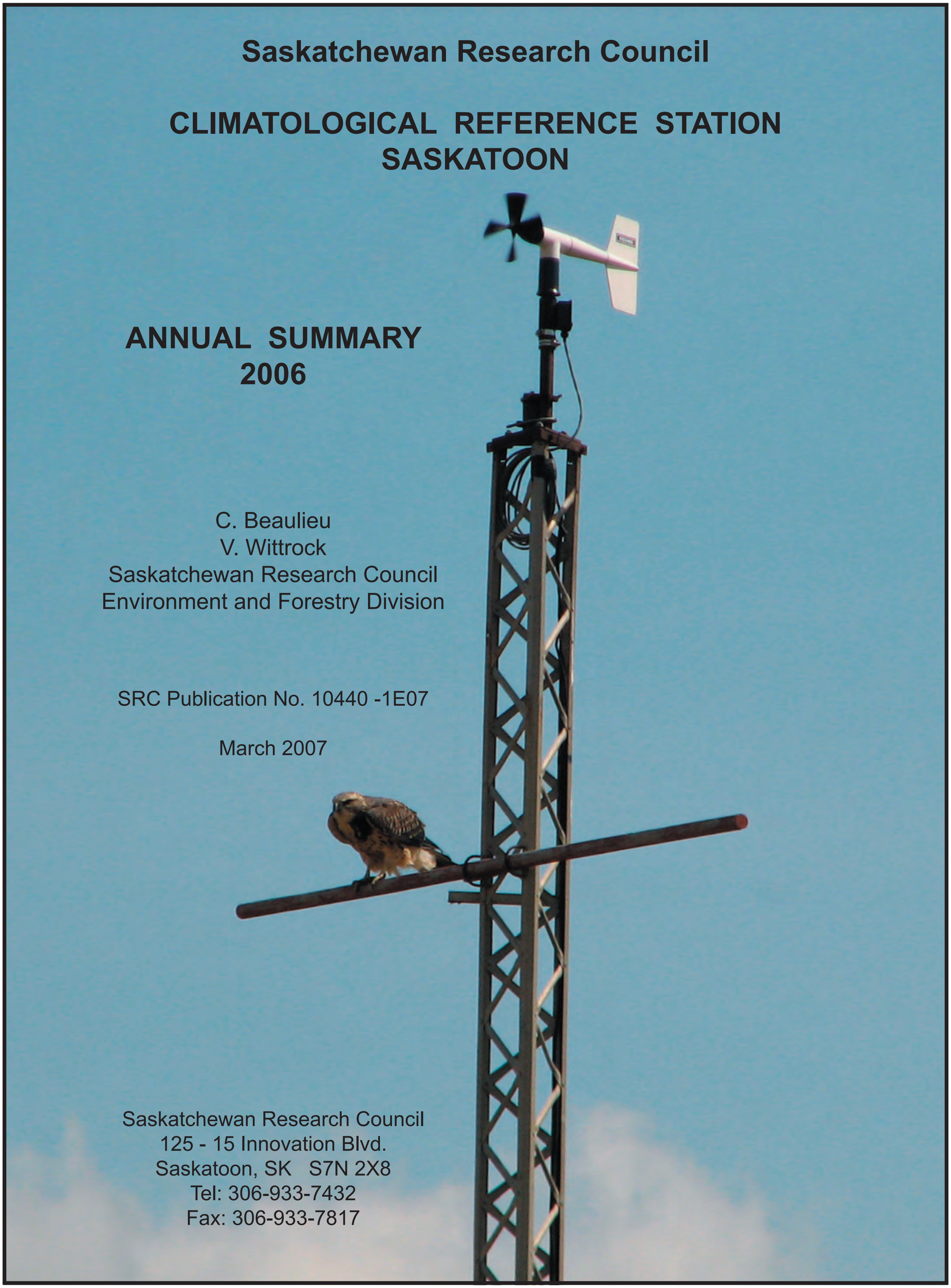

Saskatchewan Research Council

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Saskatchewan Research Council
125 - 15 Innovation Blvd.
Saskatoon, SK   S7N 2X8
Tel: 306-933-7432
Fax: 306-933-7817

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Please be aware that our data is subject to ongoing quality assurance reviews that may result in minor changes and updates to some values in our reports, including past reports. If you notice errors in our reports, please contact us so that we may correct them.

Enquiries concerning the SRC Climatological Reference Station (CRS), its data, measurement programs and publications, or becoming a sponsor are most welcome. For further information contact:

Elaine Wheaton
Senior Research Scientist
306-933-8179
e-mail wheaton@src.sk.ca

Virginia Wittrock
Research Scientist
306-933-8122
e-mail wittrock@src.sk.ca

Carol Beaulieu
Research Technologist
306-933-8182
e-mail beaulieu@src.sk.ca

Climatology Section
Fax 306-933-7817
Saskatchewan Research Council
Web Site Home Page
http://www.src.sk.ca

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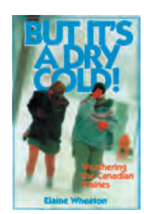

COVER PHOTOGRAPHS
Immature Swainson's hawk on the 10 m wind tower at CRS
Fall 2006
photo credit: CR Beaulieu, Climatology, SRC

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CLIMATE REFERENCE STATION HISTORY

Meteorological observations at or near Saskatoon were first taken by the Royal Northwest Mounted Police in 1889 with the recording of temperature. There is some disagreement in the early records as to the exact location of the weather observing point, but the majority of the evidence indicates 52°15'N, 106°20'W, elevation 480m above sea level as the most probable location. This would place it at Clark's Crossing on the South Saskatchewan River, approximately 16 km northeast of the centre of the City of Saskatoon. At that time, there was a settlement at Clark's Crossing as well as 10 to 15 families on either side of the river where Saskatoon is now located.

Little is known about the very early observers; however, the records do show that Major T.H. Keenan took observations from March 1892 until March 1895, and Mr. George Will was the observer from January 1897 until April 1897. It is thought that T. H. Copeland was involved in the observational program from 1895 to May 1, 1901, at which time it was taken over by Mr. Eby, Sr. Mr. Eby, Sr. recorded the observations until his death in 1921, at which time his daughter, Miss E.S. Eby, continued to record the observations. Her brother, Mr. J.M. Eby, recorded the observations beginning in April 1931 until the station was closed October 31, 1942. The Eby station recorded temperature, precipitation and weather notes on fog, thunderstorms, winds and any unusual weather phenomena. Reports were made twice daily, morning and evening.

In 1916, a climatological station was established by the Physics Department of the University of Saskatchewan and continuous observations were kept twice daily until January 15, 1965. The longtime observer was Mr. Sidney Cox. The Saskatchewan Research Council took over the programme in the fall of 1963 at the newly established Climatological Reference Station at latitude 52°09'N, longitude 106°36'W and elevation 497 m asl[1]. The first observer was Terry Beck followed three years later by Orville Olm.[2] In 1967, Joe Calvert became the primary observer until his retirement in 1983. Ray Begrand succeeded Mr. Calvert until 1988 when Virginia Wittrock became the primary observer. Since 1992, the primary observer has been Carol Beaulieu assisted by Virginia Wittrock, Leanne Crone and Charlene Hudym.

In the summer of 1992, the CRS began to be converted to an automated system of data collection with the installation of a Campbell Scientific data logger and automatic sensors. Elements presently recorded at the site are temperature, precipitation, wind, solar radiation, relative humidity, barometric pressure, soil temperature and snow-on-the-ground (manual recordings). Temperature, precipitation and radiation data are submitted to Environment Canada.

10 m tower for wind measurements at CRS. photo credit CR Beaulieu

[1] *Christiansen 1970; Environment Canada 1975*
[2] *Olm 2001*

WHAT IS THE CLIMATE REFERENCE STATION?

Collecting auxiliary soil temperatures, 2006 photo credit: CR Beaulieu

The Saskatchewan Research Council's Climate Reference Station (SRC CRS) at Saskatoon is classified as a principal climatological station with supplementary climatological observations.[1] A reference climatological station's data are intended for the purpose of determining climatic trends. This requires long periods (not less than thirty years) of homogeneous records, where man-made environmental changes have been or are expected to remain at a minimum. Ideally the records should be of sufficient length to enable the identification of secular changes of climate[2]. At our station, hourly readings are taken of elements which include temperature, precipitation amount, humidity, wind, and atmospheric pressure. Our supplemental observations include rate of rainfall, soil temperature, bright sunshine and solar radiation. High quality and consistent climatological observations are maintained providing data sets to meet the current concerns of the effects of climatic change and increased variability.

Purpose and Benefits

The purpose of the SRC CRS is to provide a record of observed meteorological elements so that the climate of the area and its changes can be accurately documented and described. Climatological data have assumed new importance as a result of social and environmental issues in which climate is a dominant factor. Climatological information assists in realizing new technological opportunities and social changes. It is necessary and valuable for areas such as agriculture, forestry, land use and facility placement, water and energy resources, health and comfort.

The CRS also allows us to:

- evaluate long term climate trends - early warning system for increased frequencies of extreme events such as drought, floods, *etc.;*
- determine the impacts of climate events on society, economy, health, and ecosystems - *e.g*. intense rainfall causing flooding and property damage, heat stress with its implications for health, mosquito monitoring programme directed by Saskatchewan Health;
- do value-added research;
- be part of regional, national and global networks in an important agricultural and ecological area;
- facilitate development of additional programs - *e.g*. air quality, biodiversity, and climate change monitoring;
- have roles in various programs within SRC including spray drift work, Boreal Ecosystem Atmosphere Study (BOREAS), and collaborative research with the Western College of Veterinary Medicine and the College of Agriculture, University of Saskatchewan, for example; and
- provide climate data to governments, universities, insurance agencies, lawyers, agricultural sectors, chemical companies, schools, building science, construction firms, media, transportation studies, accident studies, wildlife studies, tourism groups and interested individuals.

Goals

The goals of the Climate Reference Station are first, to maintain the high quality of data gathered over its more than forty years of existence at its current location and, second, to continue to monitor a large variety of elements. These various elements combined with the long-term collection period as well as the stable location allow CRS to be a very valuable climate information collection station.

[1]*Environment Canada 1992*
[2]*World Meteorological Organization 1988*

ACTIVITIES AT THE CLIMATE REFERENCE STATION, 2006

This year the SPLIT programme (Schools Plant Legacy in Trees) once again requested a presentation on climate for their participants. This programme, sponsored by various community partners including the City of Saskatoon and the Kiwanis Club of Riversdale, is where students take a leadership role in developing a more natural landscape around their schools and learn many valuable lessons about the role forests and trees have in their daily lives. Approximately 100 students received hands-on experience with the weather instruments used to measure temperature, precipitation, wind and solar radiation. The computer presentation highlighted Saskatoon's climate; past, present and future and why consideration of the climate is necessary for the planning of the urban landscape.

CRS continued to host the Sonic Detection and Ranging (SODAR) system during 2006. SODAR, used to remotely measure the vertical turbulence structure and wind profile of the lower layer of the atmosphere with sound, can measure wind speed, wind direction and turbulent characteristics between 20 and 200m without the necessity of erecting a high tower. A validation exercise between SODAR and a 50m tower, erected adjacent to CRS, commenced late in the year.

The general maintenance and calibration of instruments were on going during the year. In February, the bright sunshine recorder was re-mounted after its scheduled calibration. The tipping bucket's calibration was occurred in May. On September 8th, the 10 m wind tower was lowered for routine maintenance on the RM Young anemometer could be accessed for routine maintenance. At the same time, the temperature and humidity instruments were assessed for possible problems.

The general maintenance and calibration of instruments at CRS., Spring and Fall 2006 photo credit: CR Beaulieu

SUMMARIES FOR 2006

Overview

Data concerning temperature, precipitation, wind speed and direction, bright sunshine, solar radiation, and soil temperature, recorded at the Saskatchewan Research Council (SRC) Climatological Reference Station (CRS) (52°09'N, 106°36'W, 497 m asl), are presented for the year 2006 and compared with the long-term (*circa* 1900-2005) and standard-period/normal (1971-2000) records.

For the third year, annual precipitation was above normal. 2006 ranked as the 2nd wettest year out of 43; 30.7mm more than 2005 and 29.4mm less than the record year of 1991. Like 2005, the bulk of the annual precipitation in 2006 occurred during June and September. September's rainfall set five daily records along with the highest monthly total. Between September 13th and 17th, almost 110mm of rain was measured. This deluge placed 2006's yearly precipitation above the annual normal. With September receiving over four times its monthly normal and with October and November also receiving above normal monthly precipitation, it was not a surprise that autumn 2006 was the wettest autumn recorded at the station. Spring (MAM) and Summer (JJA) precipitation ranked in the top third for their seasonal precipitation totals.

Not only was 2006 a wet year according to measured precipitation, it was also a wet year according to the number of precipitation days. Only 2004 and 1969 had more precipitation days than the 139 recorded in 2006. A new seasonal record was set for autumn with 38 days. The other seasons all ranked within the top third.

The annual mean temperature was 1.7°C above normal. It tied for 5th warmest year out of 43 at CRS. The annual maximum temperature was the 7th warmest while the annual minimum temperature was 2nd warmest; only 1987 had a higher average annual minimum temperature. March, October and November were the only months whose average maximum and minimum temperatures were below normal. Only one day in February recorded temperatures below -30°C. Six daily high maximum records and two daily low minimum temperatures were set during the year. Temperatures, of above 30°C, occurred on 21 days; nine days in July, six in August, three in September, two in June and one in May. The frost-free growing season, longer than normal with 136 days, produced 1699.2 growing degree-days which were 26.3 degree-days longer than the average annual degree-days of 1672.9. The last frost occurred on May 4th, 16 days earlier than normal and the first occurred September 19th, 5 days later than normal. With such a warm year, the cumulative heating degree-days were below normal throughout the year. Monthly record low heating degree-days were noted for January, April and July. Annual cooling degree-days (base 18°) and annual extreme cooling degree-days (base 24°) were 67% and 66% above normal respectively; again indicating a very warm year.

With 38% of the days recording some form of precipitation, the above normal bright sunshine hours were a surprise. Excluding January, when the recorder was undergoing its routine calibration, only May and June bright sunshine hours were below normal. Monthly bright sunshine hours of 300.4 recorded in April was the highest value for April since 1966. Bright sunshine days did not follow the same pattern with only 5 out of the 11 months recording above normal days.

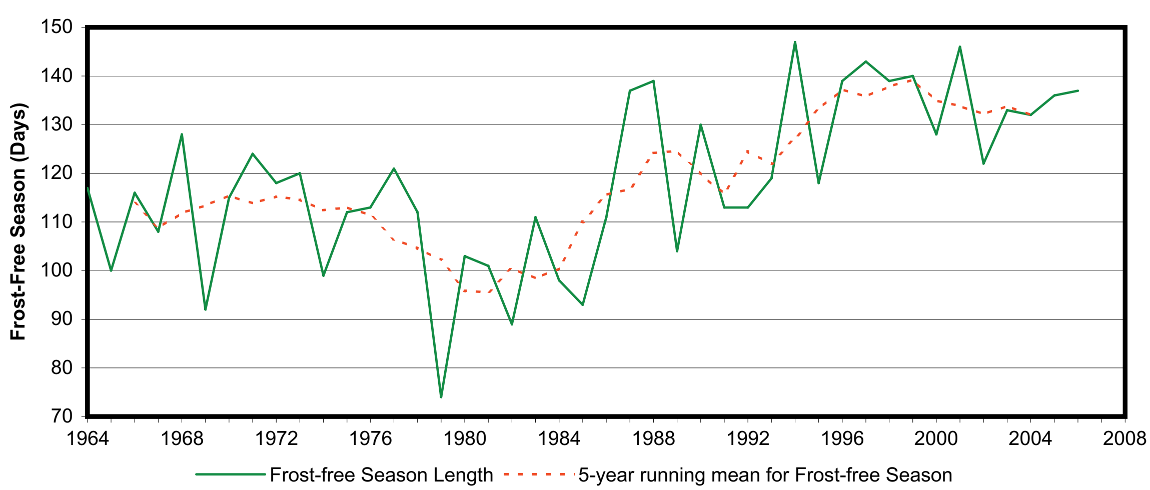
Winds greater than 51 km/h occurred 37 times. Summer was the windiest season with winds over 51 km/h occurring 11 times. Gale (63-76km/h) and Strong Gale (76-88km/h) winds occurred four times during the summer. April, October and December each recorded 1 occasion of Gale winds. Damage noted in the city during these extreme winds was limited to trees and a transport truck blown off the road.[1]

[1]Beaulieu 2006

Weather Events Summaries, 2006

TEMPERATURE RANKINGS 1964 to Present						
WARMEST ANNUAL MAXIMUM TEMPERATURE °C		COLDEST ANNUAL MINIMUM TEMPERATURE °C		WARMEST ANNUAL AVERAGE TEMPERATURE °C		RANK-ING
1987	11.6	1966	-5.5	1987	5.4	**1**
2001	10.8	1979	-5.3	2001	4.6	**2**
1981	10.5	1982	-5.3	1981	4.5	**3**
1988	10.1	1965	-5.3	1998	4.3	**4**
1998	10.1	1996	-5.2	1999	4.2	**5**
1999	9.8	1975	-5.1	2006	4.2	**6**
2006	9.6	1972	-4.8	1988	3.9	**7**
1976	9.5	1985	-4.8	2005	3.8	**8**
1997	9.5	1967	-4.7	1997	3.5	**9**
2003	9.3	1974	-4.7	2003	3.4	**10**
2005	9.1	1971	-4.6	1991	3.2	**11**
1986	9.0	1969	-4.6	1986	3.2	**12**
1991	8.9	1978	-4.6	1976	3.0	**13**
2000	8.8	1970	-4.0	1992	3.0	**14**
1984	8.7	1973	-4.0	2000	3.0	**15**
1990	8.7	1980	-3.8	1984	2.9	**16**
1977	8.6	1989	-3.8	1993	2.8	**17**
1980	8.6	1977	-3.6	2004	2.8	**18**
1992	8.5	1990	-3.6	2002	2.8	**19**
2002	8.5	1976	-3.5	1964	2.7	**20**
1994	8.5	1968	-3.4	1994	2.7	**21**
2004	8.4	1995	-3.4	1990	2.6	**22**
1989	8.3	1983	-3.2	1977	2.5	**23**
1964	8.2	1994	-3.2	1980	2.4	**24**
1993	8.1	1964	-2.9	1989	2.3	**25**
1995	7.9	2000	-2.9	1995	2.3	**26**
1973	7.8	1984	-2.9	1983	2.2	**27**
1968	7.7	2002	-2.9	1968	2.2	**28**
1983	7.7	2004	-2.8	1973	1.9	**29**
1978	7.4	1986	-2.6	1970	1.7	**30**
1970	7.3	1992	-2.5	1978	1.4	**31**
1974	7.1	1991	-2.5	1971	1.2	**32**
1971	7.1	1993	-2.5	1974	1.2	**33**
1967	7.0	2003	-2.5	1967	1.1	**34**
1985	6.9	1997	-2.4	1969	1.1	**35**
1975	6.9	1988	-2.3	1985	1.1	**36**
1969	6.8	2001	-1.6	1975	0.9	**37**
1979	6.5	2005	-1.6	1972	0.6	**38**
1966	6.4	1998	-1.5	1979	0.6	**39**
1965	6.3	1981	-1.5	1965	0.5	**40**
1982	6.2	1999	-1.4	1966	0.4	**41**
1996	6.1	2006	-1.3	1996	0.4	**42**
1972	6.1	1987	-0.8	1982	0.4	**43**

DATES AND DURATION OF THE FROST-FREE SEASON 1964 to Present			
YEAR	DATE OF LAST SPRING FROST	DATE OF FIRST FALL FROST	LENGTH OF SEASON (days)
1964	May 31	Sept 26	117
1965	May 27	Sept 05	100
1966	May 19	Sept 13	116
1967	Jun 06	Sept 23	108
1968	May 19	Sept 15	128
1969	Jun 14	Sept 25	92
1970	May 19	Sept 12	124
1971	May 18	Sept 20	115
1972	May 08	Sept 04	118
1973	May 06	Sept 14	120
1974	May 25	Sept 02	99
1975	May 21	Sept 11	112
1976	May 06	Aug 28	113
1977	May 01	Aug 31	121
1978	May 30	Sept 30	112
1979	May 30	Aug 13	74
1980	May 14	Aug 26	103
1981	May 24	Sept 03	101
1982	May 29	Aug 27	89
1983	May 24	Sept 13	111
1984	May 24	Aug 31	98
1985	Jun 04	Sept 06	93
1986	May 17	Sept 06	111
1987	May 21	Oct 06	137
1988	May 02	Sept 19	139
1989	May 28	Sept 10	104
1990	May 13	Sept 21	130
1991	May 27	Sept 18	113
1992	May 23	Sept 14	113
1993	May 17	Sept 14	119
1994	May 09	Oct 04	147
1995	May 22	Sept 18	118
1996	May 12	Sept 29	139
1997	May 14	Oct 05	143
1998	May 13	Sept 30	139
1999	May 09	Sept 27	140
2000	May 17	Sept 23	128
2001	May 10	Oct 04	146
2002	May 23	Sept 23	122
2003	May 18	Sept 29	133
2004	May 20	Sept 30	132
2005	May 14	Sept 28	136
2006	May 04	Sept 19	137
1971-2000 Normal	May 18	Sept 14	117



NEW 2006 RECORDS			
TYPE	DATE	NEW RECORD	OLD RECORD/ year
Daily Maximum Temperature (°C)	January 25	5.1	4.4/2005
	February 12	5.4	5.0/1983
	February 13	5.1	5.0/1998
	May 18	29.6	29.5/1992
	June 2	33.3	31.1/1970
	July 23	33.2	31.0/2003
Daily Minimum Temperature (°C)	October 12	-7.8	-6.7/1972
	October 13	-6.9	-4.9/1998
Daily Precipitation (mm)	March 1	11.0	8.8/1983
	March 4	8.9	2.0/1975
	April 1	11.0	6.0/2000
	June 22	28.6	16.7/1991
	June 17	35.0	29.4/1996
	June 20	17.6	10.4/1984
	July 30	9.2	8.0/1989
	September 13	20.2	9.9/1978
	September 14	7.8	5.6/1973
	September 15	52.4	14.8/1997
	September 17	15.2	10.0/1983
	September 22	6.8	4.2/2005
	October 7	26.4	16.4/1997
	October 15	6.6	4.9/2004
	October 17	4.1	4.0/1984
	November 8	15.4	3.4/2001
	November 23	1.4	1.0/1970&1978
Highest Monthly Minimum Temperature (C°)	January	-11.4	-12.5/2001
	April	1.8	1.8/1980
	July	14.3	14.0/2002
Highest Monthly Mean Temperature (C°)	January	-7.3	-7.8/2001
	July	21.0	20.9/2002
Lowest Monthly Heating Degree-days (18°C)	January	784.7	799.4/2001
	April	294.7	307.5/1987
	July	2.7	6.9/1964
Highest Monthly Growing Degree-days (base 5°C)	July	495.1	493.9/2002
Highest Monthly Precipitation (mm)	September	128.4	81.6/2005
Monthly Precipitation Days > 5mm	September	7	5/1969&1978
Monthly Precipitation Days > 10mm	September	4	3/1969, 83, 86 & 2005
Greatest Monthly Bright Sunshine Hours	April	300.4	297.1/1980

Damage from July 7, 2006 Strong Gale Force winds
photo credit: CR Beaulieu

EXTREME DAILY WINDS FOR 2006 (km/h)		
DATE	WIND SPEED/ DIRECTION	BEAUFORT WIND SCALE DESIGNATION*
January 23	61.0^{NW}	Near Gale
February 5	53.1^{WNW}	Near Gale
February 9	54.9^{NW}	Near Gale
February 13	60.5^{NW}	Near Gale
February 14	51.2^{ENE}	Near Gale
February 27	54.1^{SE}	Near Gale
March 16	53.3^{SE}	Near Gale
March 17	58.8^{ESE}	Near Gale
March 18	57.6^{ESE}	Near Gale
March 21	54.3^{SE}	Near Gale
March 25	58.4^{SE}	Near Gale
April 13	66.5^{NW}	Gale
May 3	54.7^{N}	Near Gale
May 21	53.9^{SE}	Near Gale
May 30	56.7^{W}	Near Gale
June 14	57.3^{NE}	Near Gale
July 7	85.8^{WNW}	Strong Gale
July 10	76.5^{WSW}	Strong Gale
July 16	53.8^{WNW}	Near Gale
July 31	60.5^{W}	Near Gale
August 4	87.7^{WNW}	Strong Gale
August 5	60.8^{WNW}	Near Gale
August 10	55.0^{SW}	Near Gale
August 11	62.3^{WSW}	Near Gale
August 13	66.3^{NNW}	Gale
August 29	60.3^{SSE}	Near Gale
August 31	51.4^{NW}	Near Gale
September 15	57.2^{NE}	Near Gale
September 24	52.6^{NW}	Near Gale
September 28	52.1^{NW}	Near Gale
October 16	54.8^{NE}	Near Gale
October 26	77.4^{WNW}	Gale
November 16	59.3^{NW}	Near Gale
November 19	51.9^{SE}	Near Gale
December 3	52.1^{NW}	Near Gale
December 15	57.3^{W}	Gale
December 16	57.4^{WNW}	Near Gale

**Near Gale >=51 but < 63* **Gale >=63 but <76*
**Strong Gale >=76 but <88* **Storm >=88 but <102*

EXTREME TEMPERATURES FOR 2006			
COLD SPELL (less than or equal to -30°C)		HOT SPELL (greater than or equal to 30°C)	
DATE	TEMPERATURE °C	DATE	TEMPERATURE °C
February 16	-31.8	May 22	32.3
		June 2	33.3
		June 28	33.5
		July 5	31.9
		July 6	31.1
		July 7	30.0
		July 10	32.0
		July 12	32.7
		July 21	31.7
		July 22	32.8
		July 23	33.2
		July 24	30.2
		August 7	32.9
		August 8	30.5
		August 9	31.9
		August 19	30.5
		August 22	31.3
		August 29	34.7
		September 4	31.3
		September 5	30.5
		September 6	31.3

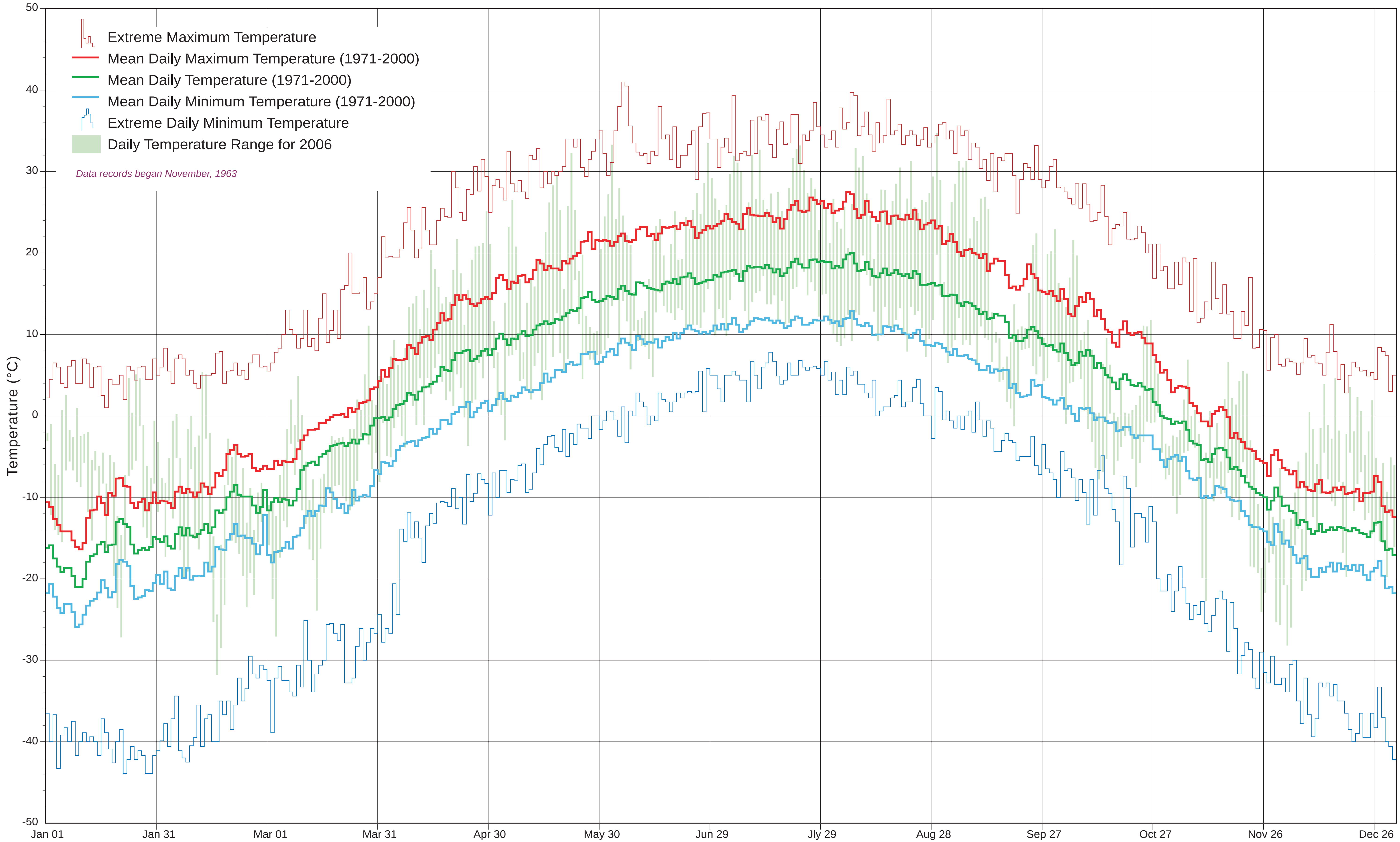
ANNUAL AND SEASONAL PRECIPITATION RANKINGS										
DRIEST YEARS (mm)		DRIEST WINTER (Dec. Jan. Feb.) (mm)		DRIEST SPRING (Mar. Apr. May) (mm)		DRIEST SUMMER (Jun. Jly. Aug.) (mm)		DRIEST AUTUMN (Sep. Oct. Nov.) (mm)		RANKING
2001	165.8	2002	12.1	2002	20.3	1984	70.2	1999	17.2	1
1987	232.4	1984	19.2	1998	29.8	1964	73.9	1994	21.0	2
2003	257.7	1993	22.0	2001	34.0	1977	81.9	1976	21.8	3
1998	263.3	1998	22.4	1980	42.2	2001	91.2	1987	27.4	4
1981	279.8	2001	23.1	1965	43.2	1985	91.8	2001	28.5	5
1964	282.7	2003	29.2	1981	54.3	1987	92.6	2000	31.2	6
1988	285.7	2004	29.3	2004	55.4	1969	105.5	1972	32.3	7
1992	288.1	1987	30.6	1992	55.5	1992	115.6	1990	33.9	8
1997	291.4	1995	31.3	1988	55.6	1997	116.4	1971	34.2	9
1984	293.1	1999	31.3	1999	56.5	1980	120.3	1988	38.1	10
1999	297.7	2000	31.7	1984	57.2	1981	124.9	1974	40.0	11
1993	300.0	2006	32.0	1996	58.8	2003	126.2	1975	48.8	12
1980	305.9	1988	35.9	2000	59.2	1972	133.3	2004	50.0	13
1990	309.8	1982	37.0	1971	61.1	1998	133.4	1966	50.2	14
2000	315.4	1967	37.9	1966	61.2	1979	135.9	1965	50.9	15
1972	317.9	1991	40.3	2003	61.8	1967	139.9	2003	51.2	16
2002	320.0	1983	41.1	2005	62.1	1978	142.5	1995	52.6	17
1995	327.7	1977	43.1	1993	62.2	1975	144.5	1979	53.4	18
1985	330.6	1994	45.1	1995	65.4	1990	144.5	1985	55.2	19
1976	331.8	2005	45.4	1970	65.7	1988	148.9	1970	56.4	20
1996	340.6	1964	47.9	1964	65.8	1989	149.9	1981	61.4	21
1994	341.4	1997	48.0	1969	68.5	1993	151.0	1997	61.6	22
1979	352.0	1996	51.0	1976	69.1	1996	154.4	1989	64.5	23
1967	354.3	1981	52.2	1972	71.6	1973	156.1	1977	65.4	24
1978	358.1	1985	52.3	1978	72.8	1995	164.4	1992	65.9	25
1965	358.8	1970	52.7	1973	73.1	1994	165.6	1980	66.6	26
1977	370.5	1968	53.8	1987	73.6	1976	169.4	1998	70.0	27
1966	376.9	1966	54.7	1967	78.0	2000	183.8	1968	71.3	28
1989	384.8	1992	55.0	1986	82.5	2006	183.8	2002	72.8	29
1970	388.8	1990	55.6	1990	87.2	1999	194.2	1993	73.1	30
1975	392.3	1986	57.2	1979	87.3	1986	196.2	1996	74.4	31
1973	393.3	1989	57.9	1997	88.2	1974	205.5	1967	76.8	32
2004	404.5	1971	60.4	1968	97.6	1965	206.6	1964	77.4	33
1986	411.3	1979	61.3	1989	101.7	2002	206.8	1982	81.5	34
1971	414.6	1978	63.0	2006	101.8	1982	208.4	1986	87.2	35
1969	427.4	1973	67.2	1994	109.4	1983	215.8	1973	88.2	36
1982	436.2	1975	69.3	1982	110.8	1970	216.5	1983	96.2	37
1968	443.1	1965	69.3	1975	119.6	1966	222.0	1991	105.4	38
1974	462.7	1976	69.5	1983	125.2	1968	225.9	2005	109.4	39
1983	471.6	1980	73.0	1985	134.3	1971	248.8	1978	111.4	40
2005	486.8	1972	92.2	1991	147.3	1991	251.6	1984	137.0	41
2006	517.5	1974	92.2	1974	148.0	2004	260.0	1969	151.8	42
1991	546.9	1969	98.1	1977	164.1	2005	269.4	2006	203.3	43

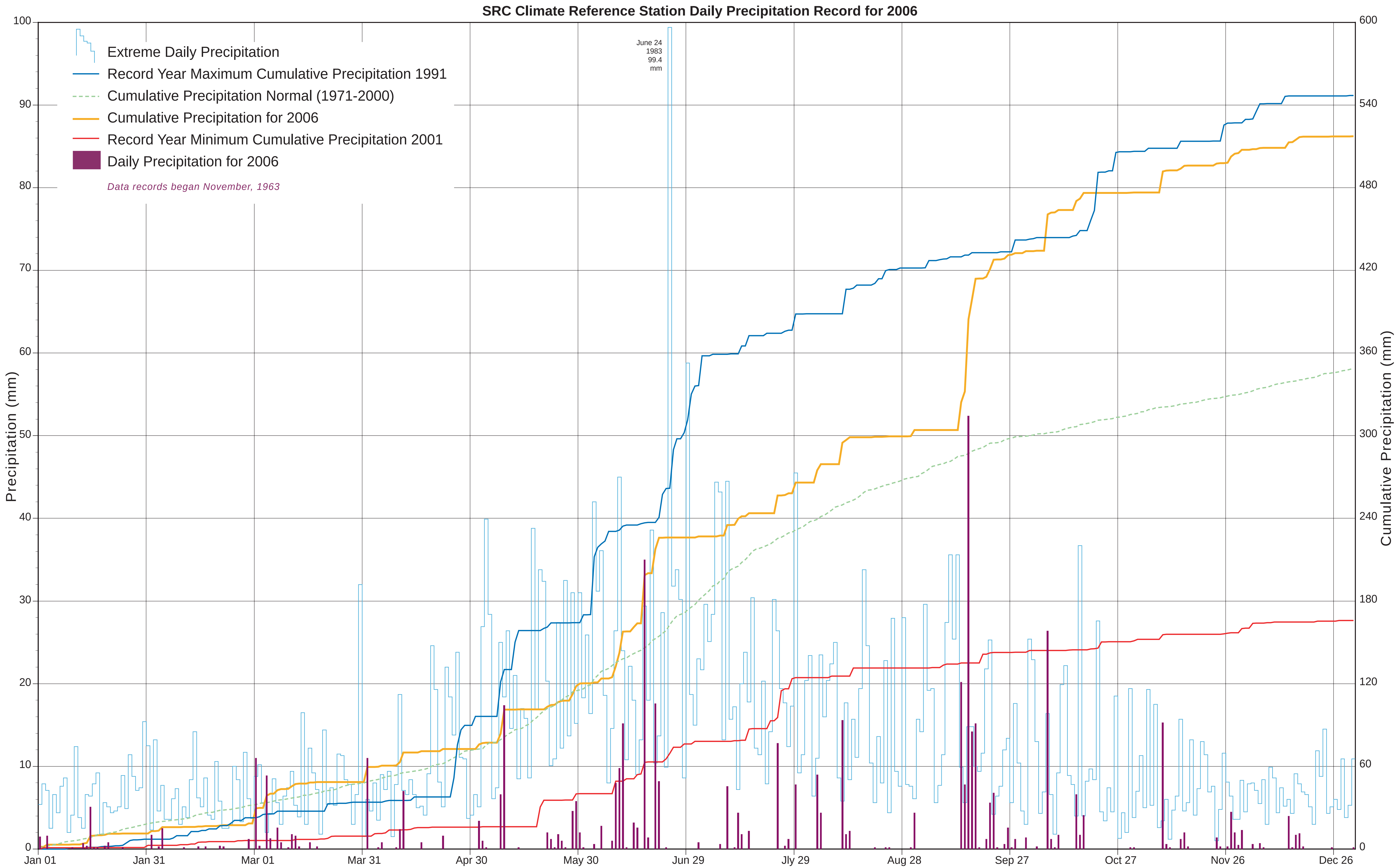
GREATEST EXTREME PRECIPITATION EVENTS (mm)*		
PERIOD	DATE	AMOUNT
0.5 hour	August 11	9.0
0.5 hour	June 17	8.2
1 hour	July 24	10.4
1 hour	August 11	10.2
2 hours	June 17	18.0
2 hours	September 15	14.2
12 hours	September15	42.0
12 hours	June 17	29.4

*recorded daily by tipping bucket April 7th to October 1st

DRIEST MONTH BY % OF NORMAL PRECIPITATION		RANKING	DRIEST MONTH BY PRECIPITATION AMOUNT (mm)	
February	54.1	1	February	7.2
December	54.6	2	December	10.0
January	62.1	3	January	11.3
July	68.6	4	April	24.0
April	101.7	5	March	30.0
August	105.5	6	November	31.0
May	107.9	7	August	38.2
June	177.8	8	July	39.8
March	185.2	9	October	44.0
November	209.5	10	May	47.8
October	268.3	11	June	105.8
September	436.7	12	September	128.4

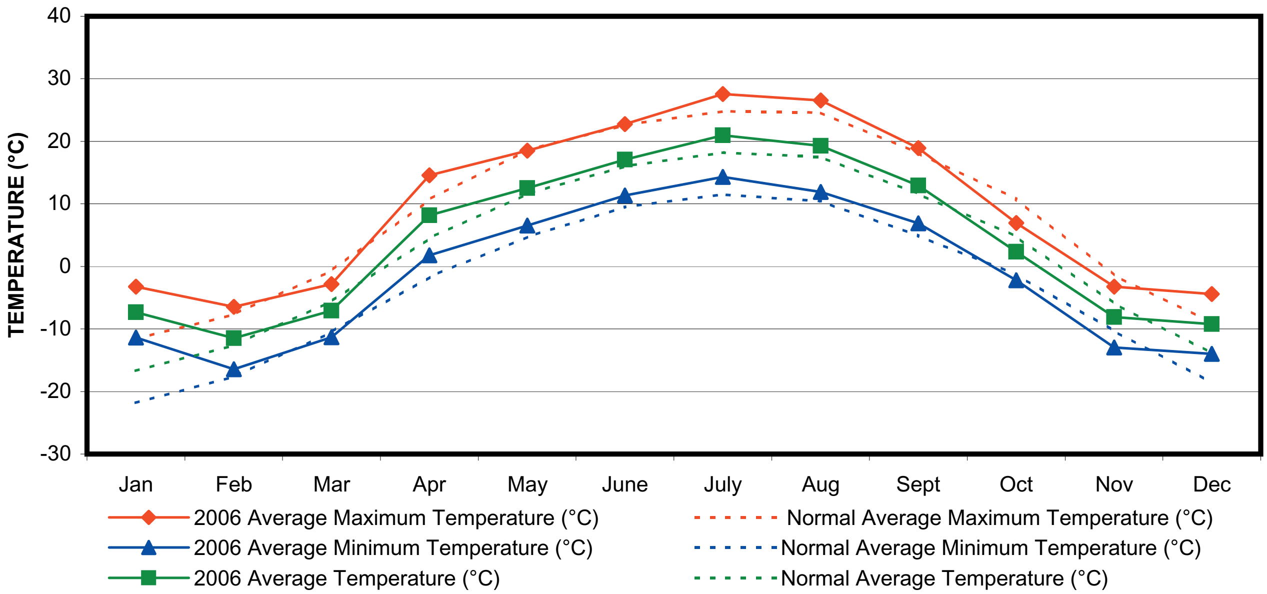
SRC Climate Reference Station Daily Temperature Record for 2006

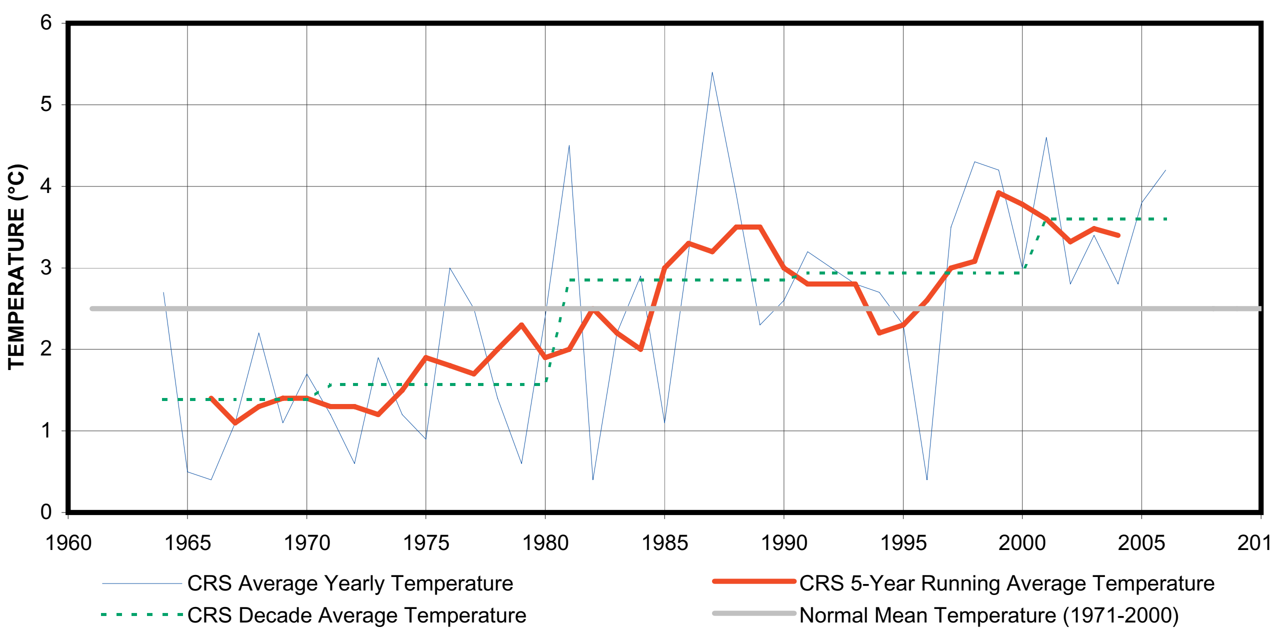



SRC Climate Reference Station Daily Precipitation Record for 2006
Precipitation (mm)
Cumulative Precipitation (mm)
Extreme Daily Precipitation
Record Year Maximum Cumulative Precipitation 1991
Cumulative Precipitation Normal (1971-2000)
Cumulative Precipitation for 2006
Record Year Minimum Cumulative Precipitation 2001
Daily Precipitation for 2006
Data records began November, 1963
June 24
1983
99.4
mm
0
10
20
30
40
50
60
70
80
90
100
0
60
120
180
240
300
360
420
480
540
600
Jan 01
Jan 31
Mar 01
Mar 31
Apr 30
May 30
Jun 29
July 29
Aug 28
Sep 27
Oct 27
Nov 26
Dec 26

Monthly Temperatures and Extreme Values for 2006 and Annual Temperatures (1964-2006)

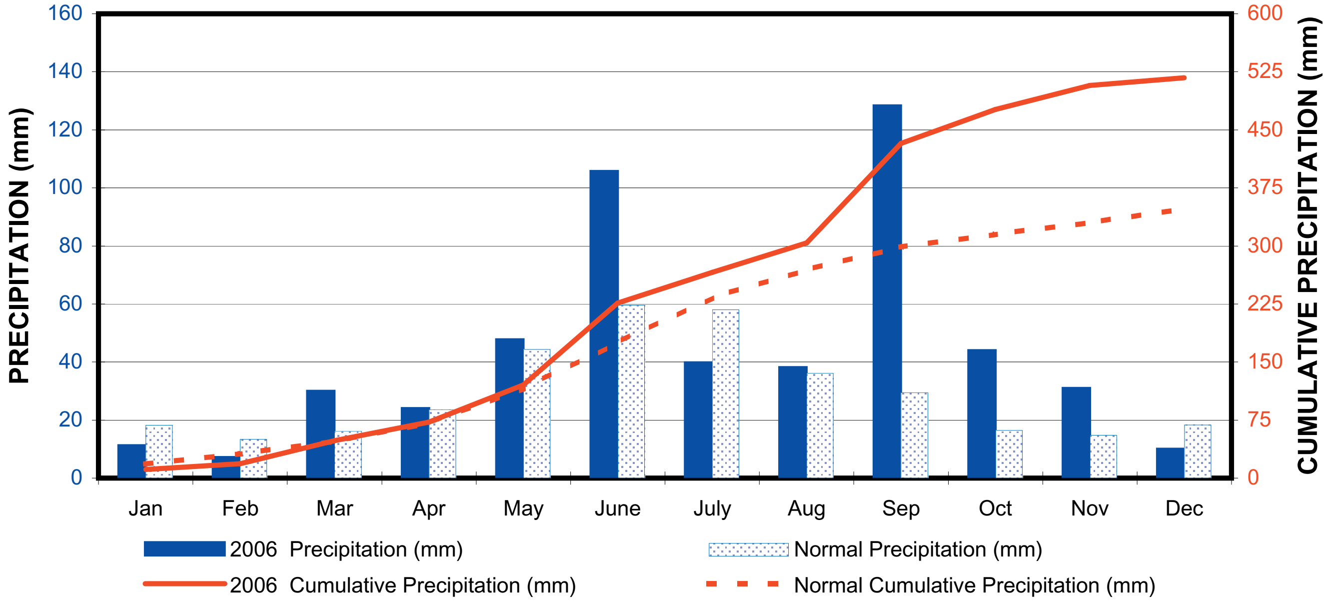
MONTH	AVERAGE MAXIMUM TEMPERATURE (°C)		AVERAGE MINIMUM TEMPERATURE (°C)		AVERAGE TEMPERATURE (°C)		EXTREME VALUES TEMPERATURE (°C)	
	2006	Normal	2006	Normal	2006	Normal	Maximum/Date	Minimum/Date
January	-3.2	-11.6	-11.4	-21.8	-7.3	-16.7	5.1/25	-27.2/21
February	-6.4	-7.7	-16.6	-17.6	-11.5	-12.6	5.4/12	-31.8/16
March	-2.8	-0.7	-11.3	-10.5	-7.1	-5.6	11.1/28	-27.1/03
April	14.6	10.7	1.8	-1.7	8.2	4.5	25.1/29	-5.1/03
May	18.5	18.6	6.5	4.7	12.5	11.6	32.3/22	-3.0/04
June	22.7	22.6	11.4	9.5	17.1	16.0	33.5/28	4.8/13
July	27.6	24.8	14.3	11.5	21.0	18.2	33.2/23	9.8/03
August	26.5	24.6	11.9	10.4	19.3	17.5	34.7/29	7.2/26
September	18.9	18.1	6.9	4.9	12.9	11.6	31.3/04&06	-1.3/19
October	6.9	10.8	-2.2	-1.3	2.4	4.8	21.6/05	-8.7/22
November	-3.2	-1.4	-13.0	-10.3	-8.1	-5.9	6.9/05	-25.7/30
December	-4.4	-9.0	-14.0	-18.6	-9.2	-13.9	4.6/15	-28.2/02
Average	9.6	8.3	-1.3	-3.4	4.2	2.5		

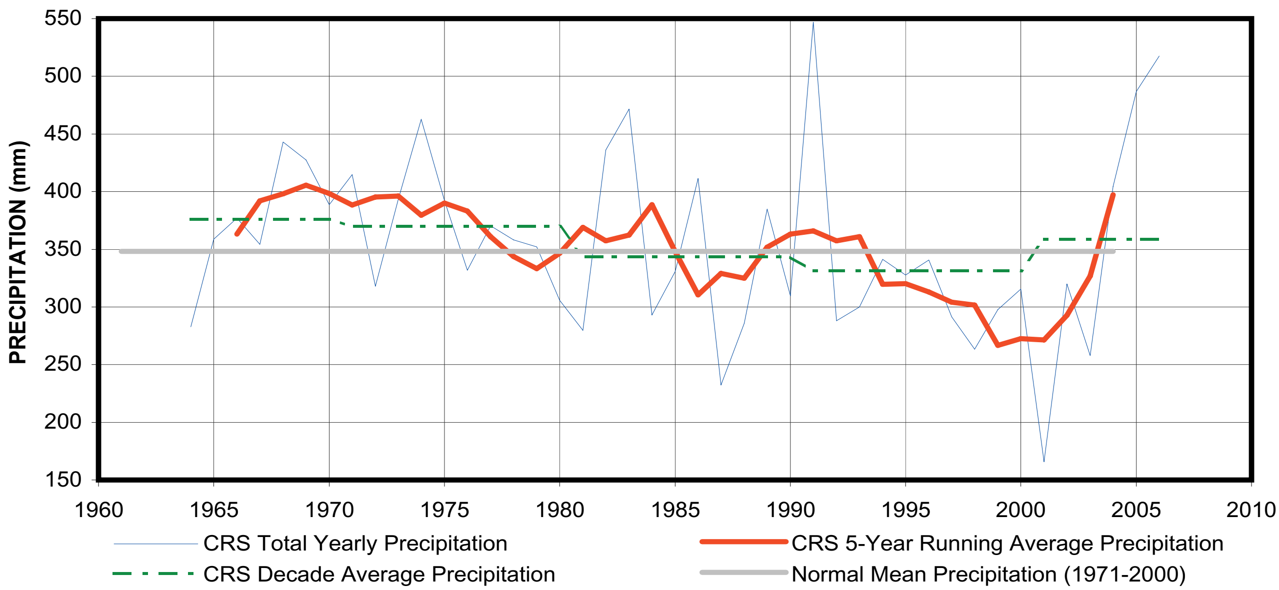




Monthly Precipitation and Extreme Values for 2006 and Total Annual Precipitation (1964-2006)

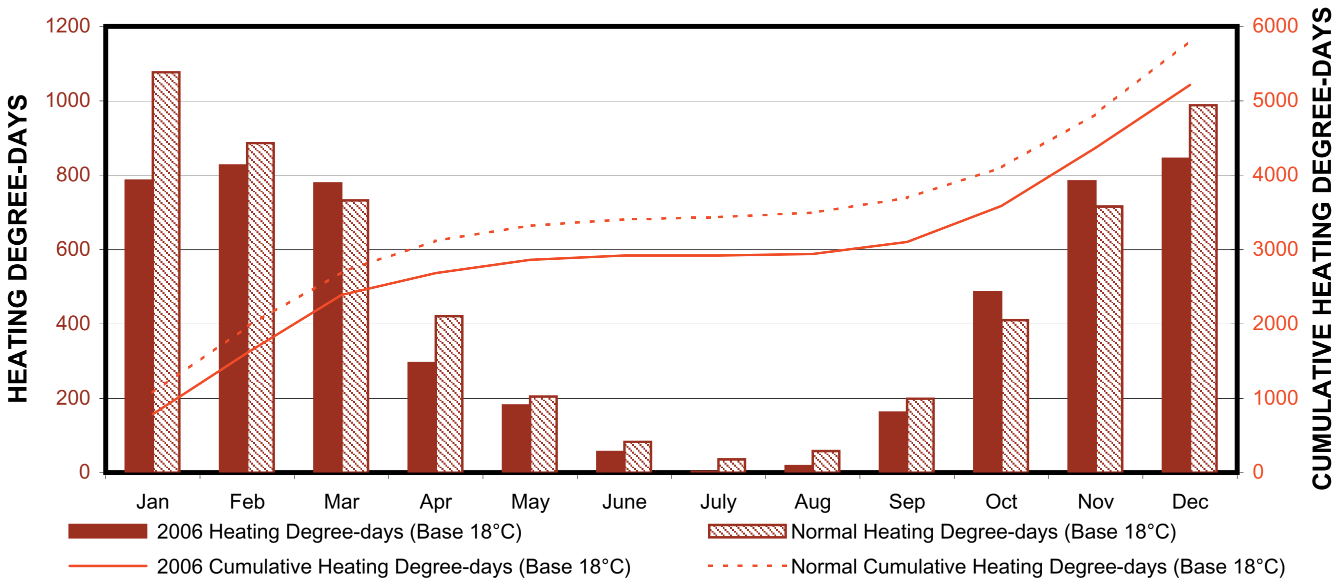
MONTH	PRECIPITATION (mm)			CUMULATIVE PRECIPITATION (mm)			EXTREME DAILY PRECIPITATION (mm)
	2006	Normal	% of Normal	2006	Normal	% of Normal	Maximum/Date
January	11.3	18.2	62.1	11.3	18.2	62.1	5.1/15
February	7.2	13.3	54.1	18.5	31.5	58.7	2.5/04
March	30.0	16.2	185.2	48.5	47.7	101.7	11.0/01
April	24.0	23.6	101.7	72.5	71.3	101.7	11.0/01
May	47.8	44.3	107.9	120.3	115.6	104.1	17.4/09
June	105.8	59.5	177.8	226.1	175.1	129.1	35.0/17
July	39.8	58.0	68.6	265.9	233.1	114.1	12.8/24
August	38.2	36.2	105.5	304.1	269.3	112.9	15.6/11
September	128.4	29.4	436.7	432.5	298.7	144.8	52.4/15
October	44.0	16.4	268.3	476.5	315.1	151.2	26.4/07
November	31.0	14.8	209.5	507.5	329.9	153.8	15.4/08
December	10.0	18.3	54.6	517.5	348.2	148.6	4.0/13
Total	517.5	348.2	148.6				

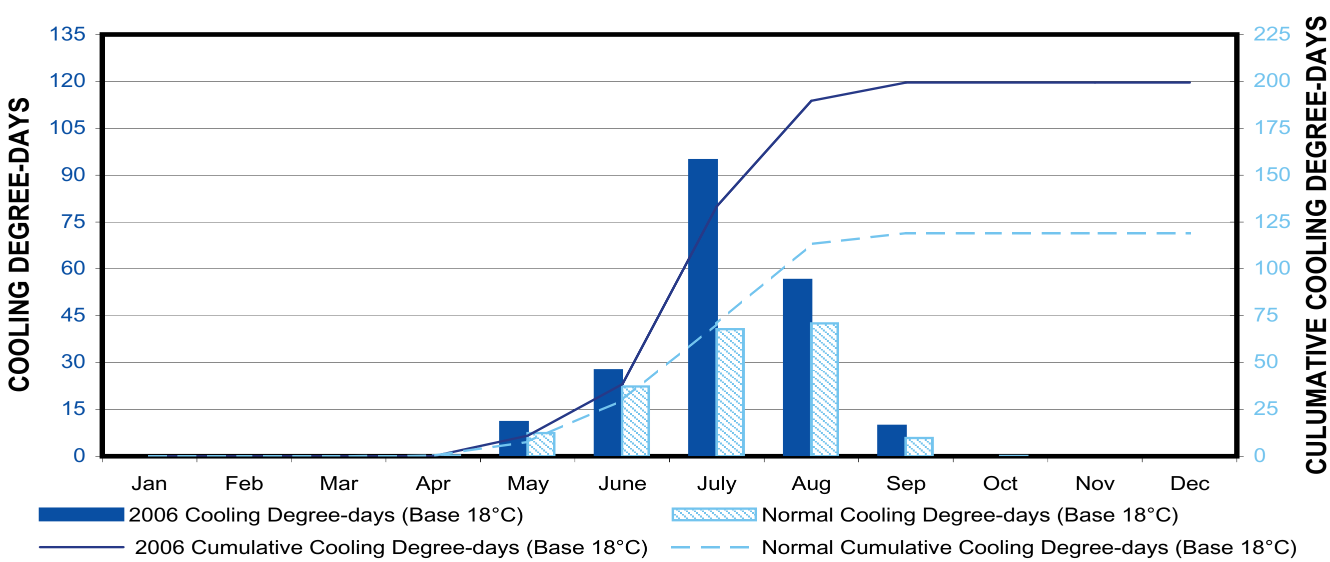




Monthly Heating and Cooling Degree-days, 2006

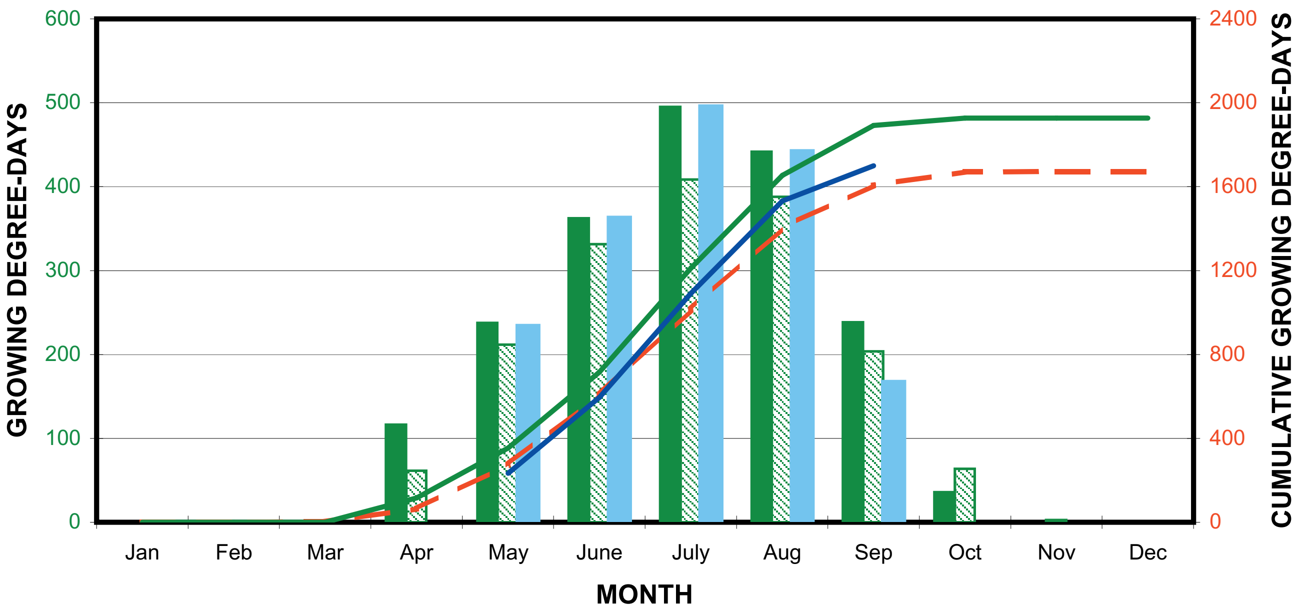
MONTH	HEATING DEGREE-DAYS Base 18°C		CUMULATIVE HEATING DEGREE-DAYS		COOLING DEGREE-DAYS Base 18°C		CUMULATIVE COOLING DEGREE-DAYS	
	2006	Normal	2006	Normal	2006	Normal	2006	Normal
January	784.7	1076.9	784.7	1076.9	0.0	0.0	0.0	0.0
February	825.8	886.2	1610.5	1963.1	0.0	0.0	0.0	0.0
March	777.7	732.4	2388.2	2695.5	0.0	0.0	0.0	0.0
April	294.7	420.7	2682.9	3116.2	0.0	0.3	0.0	0.3
May	180.3	204.4	2863.2	3320.6	10.9	7.4	10.9	7.7
June	55.2	82.8	2918.4	3403.4	27.5	22.3	38.4	30.0
July	2.7	35.3	2921.1	3438.7	94.8	40.7	133.2	70.7
August	17.6	57.7	2938.7	3496.4	56.4	42.5	189.6	113.2
September	161.7	198.9	3100.4	3695.3	9.7	5.8	199.3	119.0
October	485.0	410.2	3585.4	4105.5	0.0	0.1	199.3	119.1
November	783.5	715.8	4368.9	4821.3	0.0	0.0	199.3	119.1
December	844.2	987.7	5213.1	5809.0	0.0	0.0	199.3	119.1
Total	5213.1	5809.0			199.3	119.1		



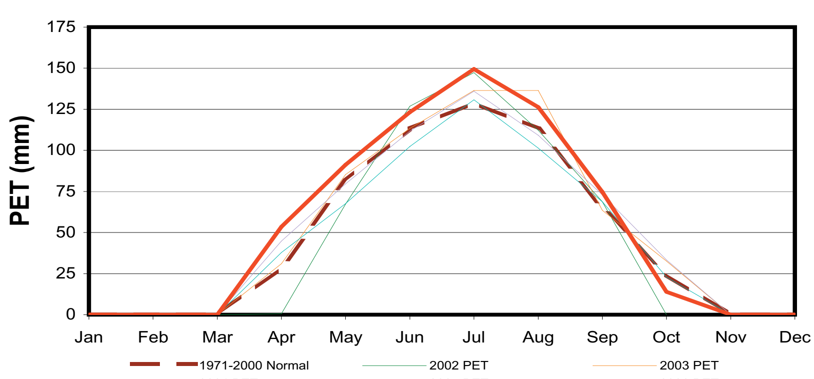


Monthly Growing Degree-days, 2006

MONTH	GROWING DEGREE-DAYS Base 5°C		CUMULATIVE GROWING DD Base 5°C		FROST-FREE GDD Base 5°C	
	2006	Normal	2006	Normal	2006	Cumulative
January	0.0	0.0	0.0	0.0		
February	0.0	0.0	0.0	0.0		
March	0.0	2.4	0.0	2.4		
April	116.3	61.3	116.3	63.7		
May	237.7	211.6	354.0	275.3	233.4	233.4
June	362.3	331.5	716.3	606.8	362.3	595.7
July	495.1	408.4	1211.4	1015.2	495.1	1090.8
August	441.8	387.8	1653.2	1403.0	441.8	1532.6
September	238.5	203.5	1891.7	1606.5	166.6	1699.2
October	35.7	63.7	1927.4	1670.2		
November	0.0	2.6	1927.4	1672.8		
December	0.0	0.1	1927.4	1672.9		
Total	1927.4	1672.9				



Potential Evapotranspiration (PET) using the Thornthwaite Method



MONTH	AVERAGE TEMP °C 2006	PET (mm) 2006	PET 1971-2000 Normal (mm)
Jan	-7.3	0.0	0.0
Feb	-11.5	0.0	0.0
Mar	-7.1	0.0	0.0
Apr	8.2	53.6	28.6
May	12.5	91.1	81.5
June	17.1	123.2	113.2
July	21.0	149.5	128.9
Aug	19.3	126.2	113.3
Sept	12.9	74.7	64.9
Oct	2.4	13.9	24.3
Nov	-8.1	0.0	0.0
Dec	-9.2	0.0	0.0
Total		632.2	554.7

Sunrise and Sunset at Saskatoon, 2006 and 2007

(local time in hours and minutes)

2006	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	9:15	17:05	8:47	17:54	7:52	18:46	6:41	19:41	5:36	20:32	4:52	21:18	4:50	21:30	5:28	20:57	6:18	19:54	7:07	18:44	8:02	17:38	8:53	16:58
2	9:15	17:06	8:45	17:56	7:50	18:48	6:39	19:42	5:34	20:34	4:51	21:19	4:51	21:30	5:29	20:55	6:20	19:52	7:09	18:42	8:04	17:36	8:54	16:57
3	9:15	17:08	8:43	17:58	7:48	18:50	6:36	19:44	5:32	20:35	4:50	21:20	4:52	21:29	5:31	20:53	6:21	19:49	7:11	18:39	8:06	17:34	8:56	16:57
4	9:15	17:09	8:42	18:00	7:46	18:52	6:34	19:46	5:31	20:37	4:50	21:21	4:53	21:29	5:33	20:52	6:23	19:47	7:13	18:37	8:07	17:32	8:57	16:56
5	9:14	17:10	8:40	18:02	7:43	18:54	6:32	19:48	5:29	20:39	4:49	21:22	4:53	21:28	5:34	20:50	6:25	19:45	7:14	18:35	8:09	17:31	8:58	16:56
6	9:14	17:11	8:38	18:04	7:41	18:55	6:30	19:49	5:27	20:40	4:48	21:23	4:54	21:28	5:36	20:48	6:26	19:42	7:16	18:32	8:11	17:29	9:00	16:56
7	9:14	17:13	8:37	18:05	7:39	18:57	6:27	19:51	5:25	20:42	4:48	21:24	4:55	21:27	5:37	20:46	6:28	19:40	7:18	18:30	8:13	17:27	9:01	16:55
8	9:13	17:14	8:35	18:07	7:37	18:59	6:25	19:53	5:23	20:44	4:47	21:24	4:56	21:27	5:39	20:44	6:29	19:38	7:19	18:28	8:15	17:25	9:02	16:55
9	9:12	17:15	8:33	18:09	7:34	19:01	6:23	19:55	5:22	20:45	4:47	21:25	4:57	21:26	5:40	20:42	6:31	19:35	7:21	18:26	8:16	17:24	9:03	16:55
10	9:12	17:17	8:31	18:11	7:32	19:02	6:21	19:56	5:20	20:47	4:46	21:26	4:58	21:25	5:42	20:41	6:33	19:33	7:23	18:23	8:18	17:22	9:04	16:54
11	9:11	17:18	8:29	18:13	7:30	19:04	6:18	19:58	5:18	20:49	4:46	21:27	4:59	21:24	5:44	20:39	6:34	19:31	7:25	18:21	8:20	17:21	9:05	16:54
12	9:11	17:20	8:27	18:15	7:27	19:06	6:16	20:00	5:17	20:50	4:46	21:27	5:00	21:23	5:45	20:37	6:36	19:28	7:26	18:19	8:22	17:19	9:06	16:54
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17	9:06	17:28	8:18	18:24	7:16	19:15	6:05	20:08	5:09	20:58	4:45	21:30	5:06	21:18	5:53	20:27	6:44	19:17	7:35	18:08	8:31	17:12	9:11	16:55
18	9:05	17:29	8:16	18:26	7:14	19:17	6:03	20:10	5:08	20:59	4:45	21:30	5:08	21:17	5:55	20:24	6:46	19:14	7:37	18:06	8:32	17:11	9:11	16:55
19	9:04	17:31	8:14	18:28	7:11	19:18	6:01	20:12	5:06	21:01	4:45	21:31	5:09	21:16	5:57	20:22	6:48	19:12	7:39	18:04	8:34	17:10	9:12	16:55
20	9:03	17:33	8:11	18:30	7:09	19:20	5:59	20:13	5:05	21:02	4:45	21:31	5:10	21:15	5:58	20:20	6:49	19:10	7:40	18:02	8:36	17:08	9:13	16:56
21	9:02	17:34	8:09	18:32	7:07	19:22	5:56	20:15	5:04	21:04	4:46	21:31	5:12	21:13	6:00	20:18	6:51	19:07	7:42	17:59	8:37	17:07	9:13	16:56
22	9:01	17:36	8:07	18:34	7:04	19:23	5:54	20:17	5:02	21:05	4:46	21:31	5:13	21:12	6:02	20:16	6:52	19:05	7:44	17:57	8:39	17:06	9:14	16:57
23	8:59	17:38	8:05	18:35	7:02	19:25	5:52	20:19	5:01	21:06	4:46	21:31	5:14	21:11	6:03	20:14	6:54	19:03	7:46	17:55	8:41	17:05	9:14	16:57
24	8:58	17:40	8:03	18:37	7:00	19:27	5:50	20:20	5:00	21:08	4:47	21:31	5:16	21:09	6:05	20:12	6:56	19:00	7:47	17:53	8:42	17:04	9:14	16:58
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27	8:54	17:45	7:57	18:43	6:53	19:32	5:44	20:25	4:56	21:12	4:48	21:31	5:20	21:05	6:10	20:05	7:01	18:53	7:53	17:47	8:47	17:01	9:15	17:00
28	8:53	17:47	7:54	18:45	6:50	19:34	5:42	20:27	4:55	21:13	4:48	21:31	5:22	21:03	6:11	20:03	7:02	18:51	7:55	17:45	8:49	17:00	9:15	17:01
29	8:51	17:49			6:48	19:36	5:40	20:29	4:54	21:14	4:49	21:31	5:23	21:02	6:13	20:01	7:04	18:49	7:56	17:43	8:50	17:00	9:15	17:02
30	8:50	17:51			6:46	19:37	5:38	20:30	4:54	21:15	4:50	21:31	5:25	21:00	6:15	19:58	7:06	18:46	7:58	17:41	8:51	16:59	9:15	17:03
31	8:48	17:52			6:43	19:39			4:53	21:17			5:26	20:58	6:16	19:56			8:00	17:40			9:15	17:04

Source: National Research Council, Canada, Hertzberg Institute of Astrophysics

Sunrise/set = corresponds to the upper limb of the sun appearing at the horizon

2007	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	9:15	17:05	8:47	17:54	7:53	18:46	6:42	19:40	5:37	20:32	4:52	21:17	4:50	21:30	5:27	20:57	6:18	19:54	7:07	18:44	8:01	17:38	8:53	16:58
2	9:15	17:06	8:45	17:56	7:51	18:48	6:39	19:42	5:35	20:33	4:51	21:18	4:51	21:30	5:29	20:56	6:19	19:52	7:09	18:42	8:03	17:36	8:54	16:58
3	9:15	17:07	8:44	17:58	7:48	18:50	6:37	19:44	5:33	20:35	4:50	21:20	4:52	21:30	5:31	20:54	6:21	19:50	7:10	18:40	8:05	17:35	8:55	16:57
4	9:15	17:08	8:42	17:59	7:46	18:51	6:35	19:45	5:31	20:37	4:50	21:21	4:52	21:29	5:32	20:52	6:23	19:48	7:12	18:38	8:07	17:33	8:57	16:56
5	9:14	17:10	8:40	18:01	7:44	18:53	6:32	19:47	5:29	20:38	4:49	21:22	4:53	21:29	5:34	20:50	6:24	19:45	7:14	18:35	8:09	17:31	8:58	16:56
6	9:14	17:11	8:39	18:03	7:42	18:55	6:30	19:49	5:27	20:40	4:48	21:22	4:54	21:28	5:35	20:48	6:26	19:43	7:16	18:33	8:11	17:29	8:59	16:56
7	9:14	17:12	8:37	18:05	7:39	18:57	6:28	19:51	5:26	20:42	4:48	21:23	4:55	21:27	5:37	20:47	6:27	19:41	7:17	18:31	8:12	17:28	9:01	16:55
8	9:13	17:14	8:35	18:07	7:37	18:58	6:26	19:52	5:24	20:43	4:47	21:24	4:56	21:27	5:38	20:45	6:29	19:38	7:19	18:28	8:14	17:26	9:02	16:55
9	9:13	17:15	8:33	18:09	7:35	19:00	6:23	19:54	5:22	20:45	4:47	21:25	4:57	21:26	5:40	20:43	6:31	19:36	7:21	18:26	8:16	17:24	9:03	16:55
10	9:12	17:16	8:32	18:11	7:33	19:02	6:21	19:56	5:20	20:47	4:47	21:26	4:58	21:25	5:42	20:41	6:32	19:34	7:22	18:24	8:18	17:23	9:04	16:54
11	9:11	17:18	8:30	18:13	7:30	19:04	6:19	19:58	5:19	20:48	4:46	21:27	4:59	21:24	5:43	20:39	6:34	19:31	7:24	18:22	8:20	17:21	9:05	16:54
12	9:11	17:19	8:28	18:14	7:28	19:06	6:17	19:59	5:17	20:50	4:46	21:27	5:00	21:23	5:45	20:37	6:36	19:29	7:26	18:19	8:21	17:20	9:06	16:54
13	9:10	17:21	8:26	18:16	7:26	19:07	6:14	20:01	5:16	20:51	4:46	21:28	5:01	21:23	5:47	20:35	6:37	19:27	7:28	18:17	8:23	17:18	9:07	16:54
14	9:09	17:22	8:24	18:18	7:23	19:09	6:12	20:03	5:14	20:53	4:45	21:28	5:02	21:22	5:48	20:33	6:39	19:24	7:29	18:15	8:25	17:17	9:08	16:54
15	9:08	17:24	8:22	18:20	7:21	19:11	6:10	20:04	5:12	20:54	4:45	21:29	5:04	21:21	5:50	20:31	6:41	19:22	7:31	18:13	8:27	17:15	9:09	16:54
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17	9:06	17:27	8:18	18:24	7:16	19:14	6:06	20:08	5:09	20:57	4:45	21:30	5:06	21:18	5:53	20:27	6:44	19:17	7:35	18:08	8:30	17:12	9:10	16:55
18	9:05	17:29	8:16	18:26	7:14	19:16	6:03	20:10	5:08	20:59	4:45	21:30	5:07	21:17	5:55	20:25	6:45	19:15	7:36	18:06	8:32	17:11	9:11	16:55
19	9:04	17:31	8:14	18:28	7:12	19:18	6:01	20:11	5:07	21:00	4:45	21:31	5:09	21:16	5:56	20:23	6:47	19:13	7:38	18:04	8:34	17:10	9:12	16:55
20	9:03	17:32	8:12	18:29	7:09	19:20	5:59	20:13	5:05	21:02	4:45	21:31	5:10	21:15	5:58	20:21	6:49	19:10	7:40	18:02	8:35	17:09	9:12	16:56
21	9:02	17:34	8:10	18:31	7:07	19:21	5:57	20:15	5:04	21:03	4:46	21:31	5:11	21:14	6:00	20:19	6:50	19:08	7:42	18:00	8:37	17:07	9:13	16:56
22	9:01	17:36	8:08	18:33	7:05	19:23	5:55	20:16	5:03	21:05	4:46	21:31	5:13	21:12	6:01	20:16	6:52	19:05	7:43	17:58	8:39	17:06	9:13	16:57
23	9:00	17:37	8:06	18:35	7:02	19:25	5:53	20:18	5:01	21:06	4:46	21:31	5:14	21:11	6:03	20:14	6:54	19:03	7:45	17:56	8:40	17:05	9:14	16:57
24	8:59	17:39	8:04	18:37	7:00	19:27	5:51	20:20	5:00	21:08	4:46	21:31	5:16	21:10	6:05	20:12	6:55	19:01	7:47	17:54	8:42	17:04	9:14	16:58
25	8:57	17:41	8:01	18:39	6:58	19:28	5:49	20:22	4:59	21:09	4:47	21:31	5:17	21:08	6:06	20:10	6:57	18:58	7:49	17:52	8:43	17:03	9:15	16:59
26	8:56	17:43	7:59	18:40	6:56	19:30	5:47	20:23	4:58	21:10	4:47	21:31	5:18	21:07	6:08	20:08	6:59	18:56	7:51	17:50	8:45	17:02	9:15	16:59
27	8:54	17:45	7:57	18:42	6:53	19:32	5:45	20:25	4:57	21:11	4:48	21:31	5:20	21:05	6:09	20:06	7:00	18:54	7:52	17:48	8:47	17:01	9:15	17:00
28	8:53	17:46	7:55	18:44	6:51	19:33	5:43	20:27	4:56	21:13	4:48	21:31	5:21	21:04	6:11	20:03	7:02	18:51	7:54	17:46	8:48	17:00	9:15	17:01
29	8:52	17:48			6:49	19:35	5:41	20:28	4:55	21:14	4:49	21:31	5:23	21:02	6:13	20:01	7:04	18:49	7:56	17:44	8:50	17:00	9:15	17:02
30	8:50	17:50			6:46	19:37	5:39	20:30	4:54	21:15	4:49	21:31	5:24	21:01	6:14	19:59	7:05	18:47	7:58	17:42	8:51	16:59	9:15	17:03
31	8:49	17:52			6:44	19:39			4:53	21:16			5:26	20:59	6:16	19:57			8:00	17:40			9:15	17:04

[1]Sunrise/set = corresponds to the upper limb of the sun appearing at the horizon

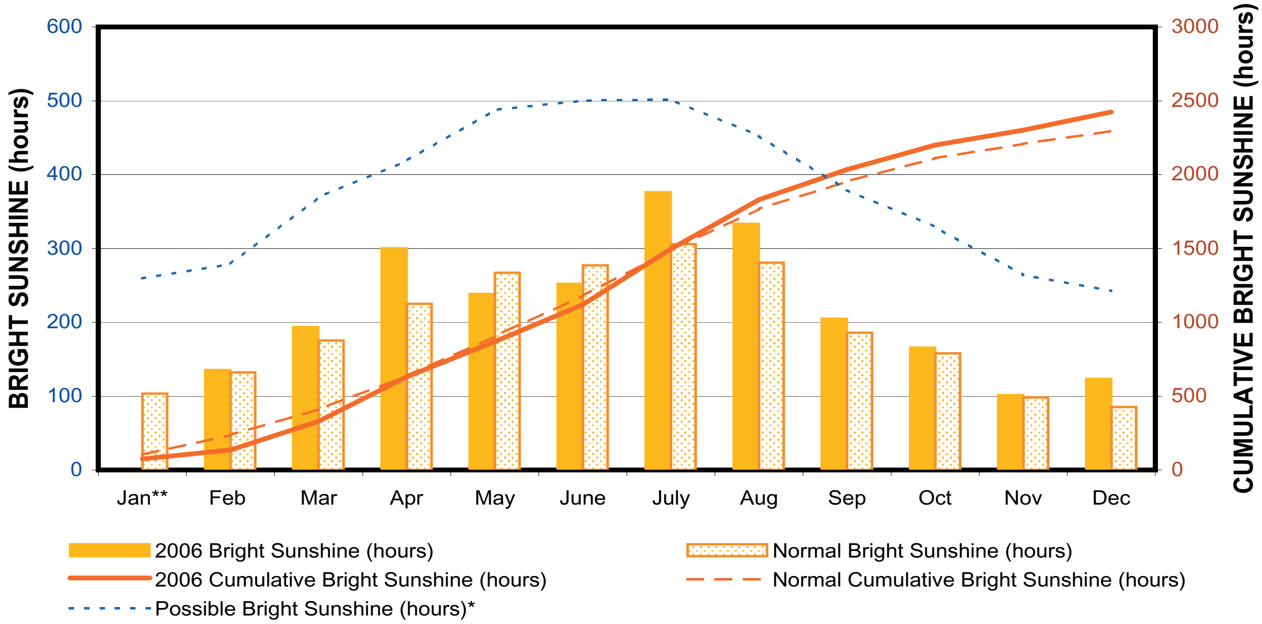
[2]National Research Council of Canada, Hertzberg Institute of Astrophysics

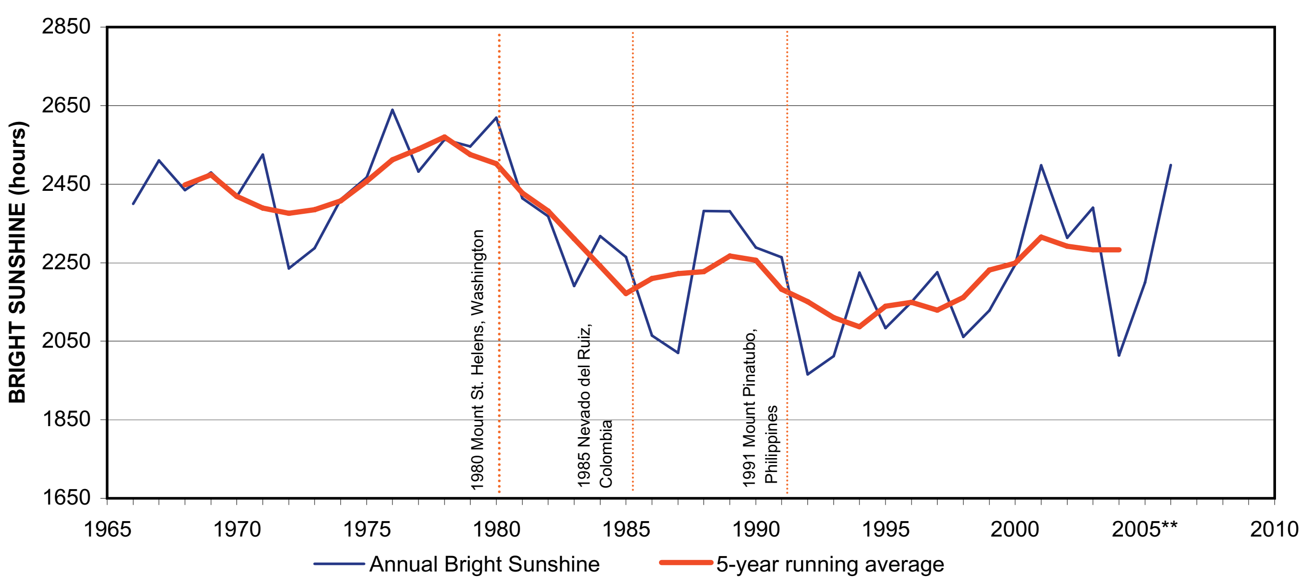
Sunset photo credit: CR Beaulieu

Bright Sunshine for 2006 and Annual Trend

MONTH	BRIGHT SUNSHINE (hours)					CUMULATIVE BRIGHT SUNSHINE (hours)		NUMBER OF BRIGHT SUNSHINE DAYS	
	2006	Normal	% of Normal	Possible*	% of Possible	2006	Normal	2006	NORMAL
January**	m	103.3	m	259.2	m	74.0**	103.3	m	23.8
February	135.5	132.3	102.4	278.9	48.6	135.5	235.6	21	24.2
March	193.5	175.2	110.4	369.4	52.4	329.0	410.8	28	27.1
April	300.4	225.2	133.4	418.4	71.8	629.4	636.0	29	27.3
May	238.4	267.1	89.3	487.6	48.9	867.8	903.1	24	29.5
June	252.2	277.2	91.0	500.1	50.4	1120.0	1180.3	26	28.5
July	376.1	305.7	123.0	501.8	74.9	1496.1	1486.0	31	30.3
August	333.4	280.8	118.7	452.5	73.7	1829.5	1766.8	31	30.1
September	204.8	186.0	110.1	379.2	54.0	2034.5	1952.8	23	27.0
October	165.7	157.9	104.9	329.2	50.3	2200.0	2110.7	25	27.0
November	101.3	98.0	103.4	264.1	38.4	2301.3	2208.7	22	22.2
December	123.3	85.4	144.0	242.4	50.9	2424.6	2294.1	27	22.8
Total	m	2294.1	m	4483.6				m	319.8

*Possible bright sunshine hours calculated from Nat. Res. Council of Canada, Hertzberg Institute of Astrophysics sunrise/set table for 2006
**Bright sunshine recorder in for scheduled re-calibration check.January cumulative value is an estimate.





Global and Diffuse Solar Radiation, 2006
(MJ/m²)

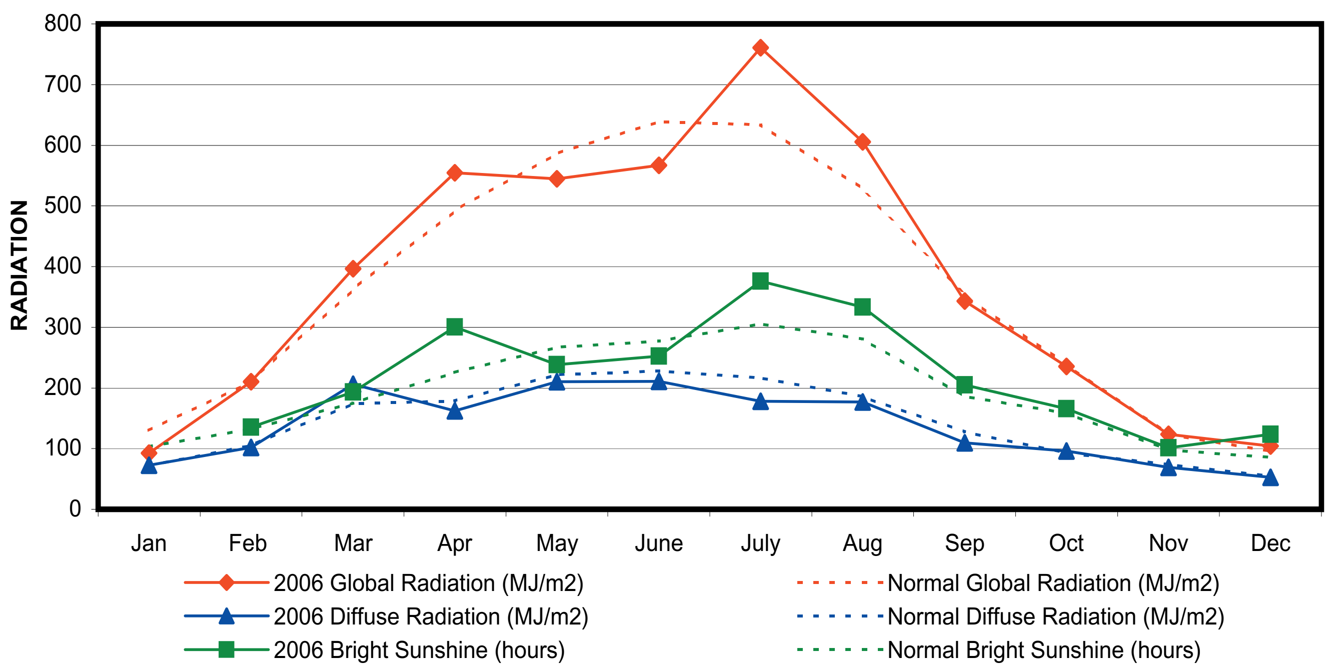
DATE	JAN		FEB		MAR		APR		MAY		JUN		JULY		AUG		SEPT		OCT		NOV		DEC	
	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D
1	1.4	1.3	2.6	2.6	6.6	6.3	7.8	5.7	6.6	5.7	28.6	4.1	27.1	4.8	24.9	4.8	20.8	2.3	8.9	5.0	6.8	2.5	2.9	2.2
2	2.4	1.9	4.0	3.9	12.2	4.3	20.6	2.2	6.0	5.6	23.5	10.3	29.5	4.9	14.7	9.4	20.6	2.2	12.1	3.9	8.4	1.5	4.7	1.2
3	1.8	1.8	3.3	3.3	15.3	3.2	20.0	3.3	8.4	7.7	9.8	7.9	27.5	6.8	16.4	9.5	20.7	2.1	13.8	1.9	2.5	2.5	3.6	1.4
4	3.5	1.5	4.2	3.8	4.0	3.7	18.5	4.5	25.3	6.8	24.1	9.7	26.2	7.3	19.9	10.8	19.9	2.1	8.9	4.1	5.3	2.3	1.9	1.9
5	2.2	2.1	3.3	3.1	12.0	6.8	5.9	5.6	22.4	7.7	13.9	6.2	24.1	8.6	20.0	7.4	16.5	5.9	12.3	2.0	4.8	2.3	2.3	2.3
6	3.5	2.0	7.5	2.6	11.6	6.6	20.1	3.5	23.6	8.9	27.0	5.8	17.9	11.2	25.2	3.3	17.9	3.7	11.6	1.8	1.8	1.8	2.9	2.3
7	1.8	1.8	8.9	2.4	8.3	7.1	17.8	6.1	20.4	7.3	29.0	4.8	20.3	8.1	22.8	5.5	18.0	3.8	1.0	1.0	1.5	1.5	3.5	2.6
8	2.0	2.1	5.6	4.4	8.1	7.6	15.8	9.2	10.6	6.9	7.0	6.2	26.0	6.9	23.1	6.4	17.2	3.8	9.9	3.1	2.6	2.4	3.1	2.7
9	3.0	2.6	3.8	3.8	10.9	8.3	16.3	6.7	5.2	4.5	4.8	4.3	28.7	2.8	16.9	9.6	18.2	3.9	12.9	2.0	7.3	3.4	3.5	1.7
10	2.3	2.1	6.0	4.5	9.8	6.0	12.3	6.6	19.9	10.2	4.7	4.4	27.4	3.3	16.9	8.8	14.9	5.5	10.5	2.5	4.6	2.6	5.1	1.4
11	1.6	1.6	9.5	1.9	10.7	9.4	5.3	5.0	26.7	5.2	8.5	7.6	29.0	3.1	12.8	5.8	16.4	3.9	10.4	3.5	3.2	3.1	4.7	1.2
12	1.9	1.9	8.8	2.1	11.3	8.5	19.9	3.7	15.5	10.3	13.0	10.9	25.8	4.6	14.2	8.6	16.4	3.2	5.9	5.6	3.0	3.0	3.7	1.3
13	2.3	2.1	5.3	4.5	16.7	3.8	16.7	7.4	22.9	7.6	26.7	8.0	21.3	6.9	21.2	3.9	2.5	2.4	12.5	1.7	3.5	3.2	2.3	2.3
14	2.0	1.9	9.1	1.8	12.8	3.8	20.1	6.2	27.8	3.7	20.4	7.6	24.5	5.3	23.9	2.5	1.3	1.3	10.7	2.6	3.2	3.2	2.7	2.0
15	1.9	1.9	8.6	3.0	13.2	10.4	18.0	6.8	27.4	4.3	14.8	7.9	27.7	2.9	23.2	3.3	0.9	0.8	2.1	2.0	5.2	4.5	2.9	1.7
16	1.7	1.7	9.4	3.3	11.6	9.3	10.8	8.1	24.9	7.8	12.7	10.2	24.4	5.7	17.8	6.4	2.5	2.5	4.6	4.6	3.9	2.5	2.0	2.0
17	2.4	2.4	9.9	2.5	15.2	7.0	16.4	9.1	21.5	7.0	5.5	5.1	28.0	2.9	22.7	4.2	2.1	2.1	4.2	4.0	5.4	1.3	3.2	1.6
18	2.7	2.5	9.8	3.9	9.9	8.7	17.6	7.6	25.4	7.2	15.1	10.3	24.3	7.8	22.3	6.0	7.9	6.3	8.9	3.3	4.9	2.8	3.4	2.7
19	3.4	3.3	4.7	4.3	11.5	10.0	18.0	8.3	26.2	6.0	29.0	5.1	25.1	5.3	21.7	4.1	15.0	5.5	3.0	3.0	4.7	2.8	3.9	1.1
20	2.9	2.7	10.2	3.9	13.3	10.1	23.2	3.9	22.6	10.0	4.4	4.0	25.9	6.0	21.9	3.7	3.7	3.5	3.2	3.1	4.2	1.3	3.8	1.0
21	2.6	2.4	6.3	5.2	13.5	10.9	23.2	3.6	21.0	6.7	9.5	7.4	25.9	4.9	21.5	4.7	3.8	3.6	4.1	3.9	4.7	2.2	3.7	1.0
22	3.4	3.1	11.0	2.4	15.8	6.5	18.6	7.5	25.0	4.2	26.5	5.7	24.6	4.5	20.9	5.0	2.7	2.4	10.7	1.8	4.2	2.4	3.7	1.0
23	5.7	1.3	13.1	2.5	18.1	2.9	25.1	2.6	9.8	6.7	20.4	9.2	25.3	5.0	18.0	7.1	8.6	6.2	4.1	3.2	1.4	1.4	2.9	1.6
24	3.4	3.5	13.0	3.5	18.2	3.0	24.7	2.6	6.3	5.6	28.8	4.1	16.1	6.4	17.1	5.2	13.8	3.9	9.9	2.8	5.1	1.4	3.8	1.1
25	5.5	3.6	12.7	4.1	16.9	6.0	24.8	3.8	23.3	9.2	25.9	7.6	27.1	2.7	20.7	4.0	9.2	5.4	7.7	2.8	5.1	1.2	3.7	1.2
26	5.7	1.6	6.2	6.0	4.3	4.0	25.1	2.6	4.3	4.0	27.7	6.5	23.9	5.4	20.0	4.0	9.4	5.3	7.3	2.6	5.0	1.7	3.5	1.2
27	4.3	3.7	6.6	6.0	18.8	3.6	19.9	5.0	9.3	8.1	27.5	4.9	26.5	3.6	21.3	2.5	5.8	4.9	6.2	3.6	1.9	1.9	3.1	1.7
28	3.5	2.9	7.0	6.5	17.1	5.8	23.9	5.0	5.1	4.6	28.7	6.5	19.5	7.5	20.5	3.3	12.9	2.7	5.7	4.4	2.3	2.3	2.0	2.1
29	2.8	2.6			12.6	11.0	24.5	3.2	5.6	5.1	25.8	8.4	24.2	4.9	20.2	4.7	11.2	4.3	4.3	3.7	4.2	1.9	5.2	1.2
30	4.1	3.4			19.1	2.6	23.7	6.9	20.1	9.7	23.5	10.0	21.0	9.0	13.3	6.2	12.2	4.2	5.0	3.5	2.6	2.3	2.8	2.7
31	4.8	3.1			17.3	9.2			25.5	5.8			16.0	8.7	9.6	5.9			3.3	3.1			3.9	1.1
TOTAL	92.5	72.4	210.4	101.8	396.7	206.4	554.6	162.3	544.6	210.1	566.8	210.7	760.8	177.8	605.6	176.6	343.0	109.7	235.7	96.1	123.3	69.2	104.4	52.5

COMMENTS: G= Global Radiation D= Diffuse Radiation Units = MJ/m2

January 21 The fact that the diffuse higher than global is not significant because it is within instrument error.

January 24-25 diffuse ring had slipped due to wind, and readjusted at 1200h on the 25th. January was also a month with a lot of hoar frost.

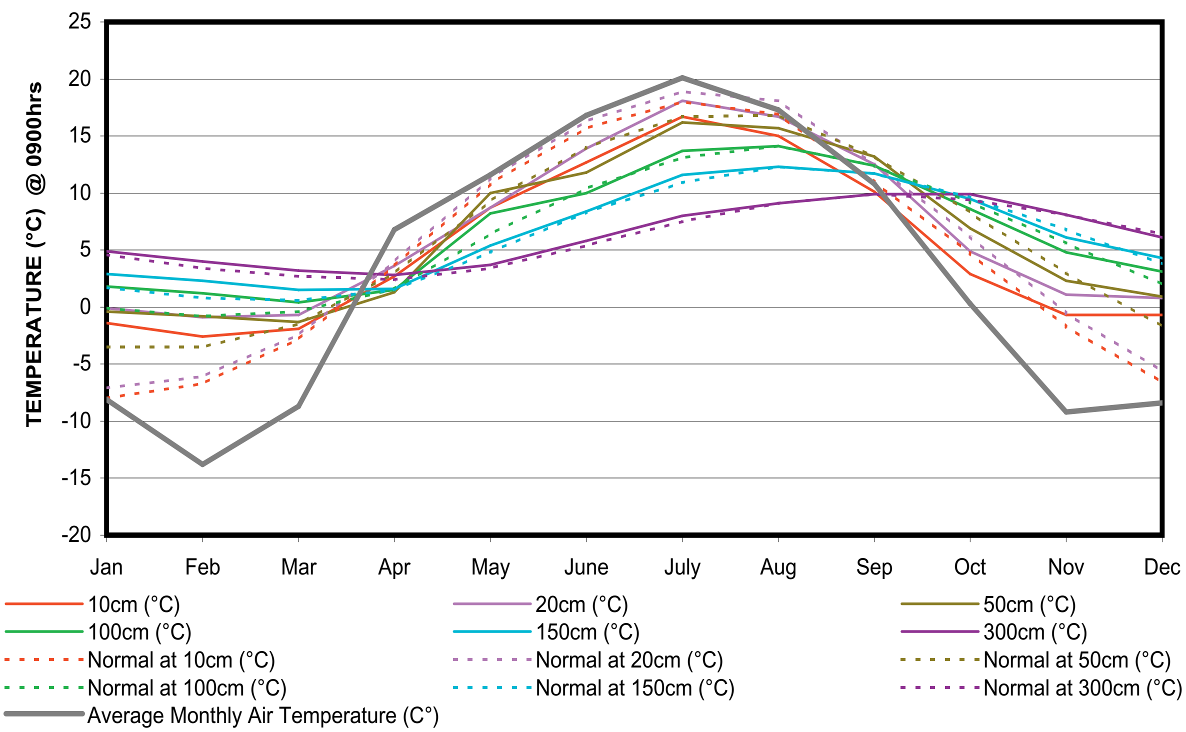
December 28 The fact that the diffuse higher than global is not significant because it is within instrument error.

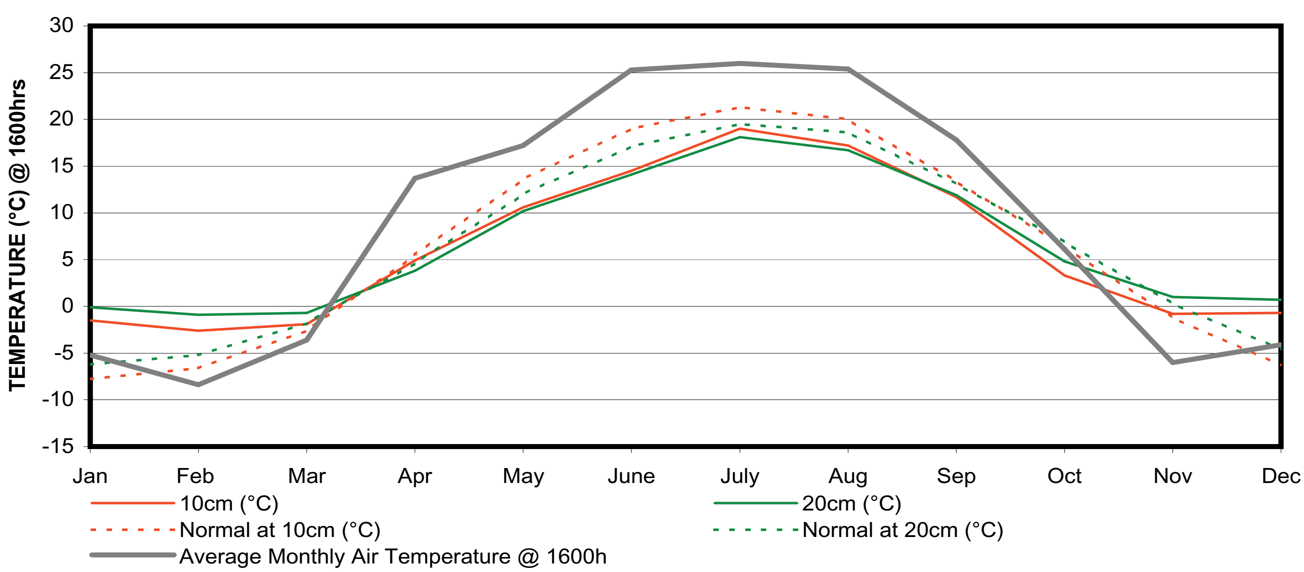


Monthly Average Soil Temperatures, 2006

(10 to 300cm depths)

MONTH	Mean Air Temp @ 0900h (°C)	SOIL TEMPERATURES (C°) @ 0900hrs												SOIL TEMPERATURES @ 1600hrs			
		10cm		20cm		50cm		100cm		150cm		300cm		10cm		20cm	
		2006	NORM	2006	NORM	2006	NORM	2006	NORM	2006	NORM	2005	NORM	2006	NORM	2006	NORM
January	-8.1	-1.4	-8.0	-0.1	-7.1	-0.4	-3.5	1.8	-0.1	2.9	1.7	4.9	4.6	-1.5	-7.8	-0.1	-6.2
February	-13.8	-2.6	-6.7	-0.9	-6.1	-0.8	-3.5	1.2	-0.8	2.3	0.8	4.0	3.4	-2.6	-6.6	-0.9	-5.2
March	-8.7	-1.9	-2.8	-0.7	-2.4	-1.3	-1.5	0.4	-0.4	1.5	0.6	3.2	2.7	-1.9	-2.6	-0.7	-1.8
April	6.8	2.7	3.6	3.6	4.0	1.3	3.0	1.5	1.6	1.6	1.5	2.8	2.4	4.9	5.5	3.8	4.6
May	11.6	8.7	10.8	8.7	11.3	10.0	9.3	8.2	6.4	5.4	4.8	3.7	3.4	10.6	13.6	10.2	12.0
June	16.8	12.7	15.7	13.9	16.3	11.8	14.0	10.0	10.4	8.4	8.3	5.8	5.4	14.5	19.0	14.1	17.1
July	20.1	16.7	18.0	18.1	18.9	16.2	16.7	13.7	13.1	11.6	10.9	8.0	7.5	19.0	21.3	18.1	19.5
August	17.3	15.0	16.9	16.7	18.1	15.7	16.8	14.1	14.1	12.3	12.3	9.1	9.1	17.2	20.0	16.7	18.6
September	10.8	10.1	11.0	12.5	12.5	13.2	13.2	12.4	12.4	11.7	11.7	9.9	9.9	11.7	13.4	11.9	13.1
October	0.3	2.9	4.7	4.9	6.2	6.9	8.3	8.6	9.2	9.5	9.6	9.9	9.4	3.3	6.4	4.8	6.9
November	-9.2	-0.7	-1.7	1.1	-0.5	2.3	3.0	4.8	5.6	6.1	6.8	8.1	8.1	-0.8	-1.2	1.0	0.3
December	-8.4	-0.7	-6.6	0.8	-5.6	0.9	-1.7	3.1	2.0	4.3	3.8	6.1	6.4	-0.7	-6.3	0.7	-4.6

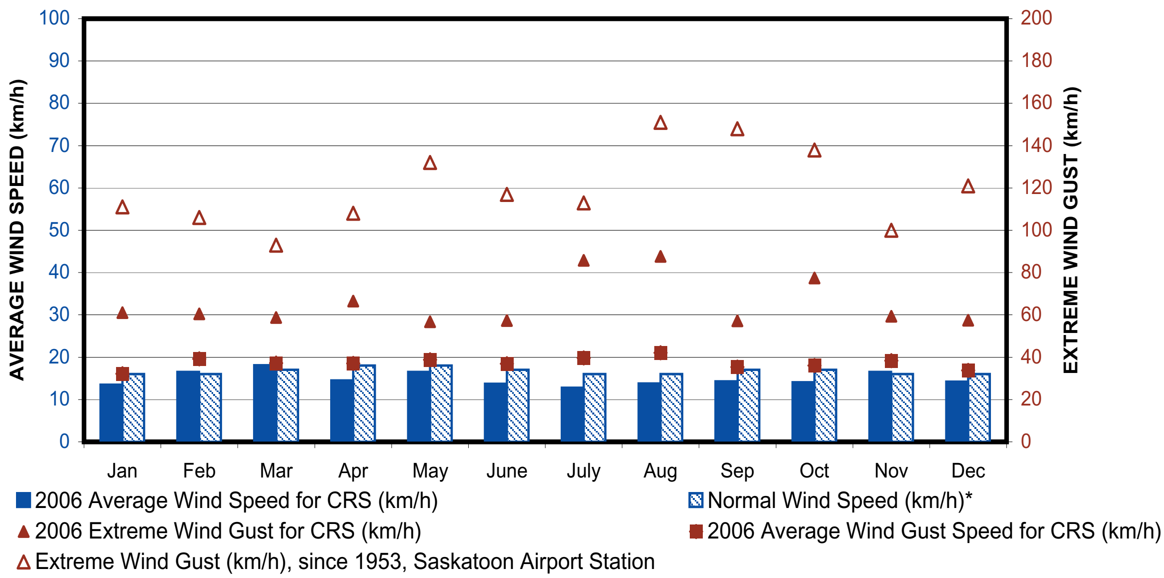




Monthly Average Wind Speed and Extreme Gusts, 2006

MONTH	AVERAGE WIND SPEED (km/h)			EXTREME GUST (km/h)	
	2006 Average	Normal*	2006 Average Wind Gust	2006 Wind Gust for CRS (Speed/direction/date)	Extreme Wind Gust since 1953 (Saskatoon Airport Station) (Speed/direction/date)
January	13.5	16.0	32.2	61.0[NW]23	111.0[W]1986/11
February	16.5	16.0	39.2	60.5[NW]13	106.0[N]1988/22
March	18.1	17.0	37.2	58.8[ESE]17	93.0[W]1959/18
April	14.5	18.0	37.0	66.5[NW]13	108.0[W]1959/06
May	16.5	18.0	38.8	56.7[W]30	132.0[SW]1965/17
June	13.7	17.0	36.9	57.3[NE]14	117.0[S]1986/01
July	12.8	16.0	39.6	85.8[WNW]07	113.0[E]1955/05
August	13.8	16.0	42.1	87.7[WNW]04	151.0[W]1967/14
September	14.3	17.0	35.4	57.2[NE]15	148.0[W]1967/22
October	14.1	17.0	36.0	77.4[WNW]26	138.0[NW]1967/16
November	16.5	16.0	38.4	59.3[NW]16	100.0[W]1976/17
December	14.2	16.0	33.8	57.4[WNW]16	121.0[W]1955/12

*1961-90 Normals used are from the Environment Canada, Saskatoon Airport station



Windchill Calculation Chart[1]

(revised 2001)

V \ T	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
5	4	-2	-7	-13	-19	-24	-30	-36	-41	-47	-53	-58
10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57	**-63**
15	2	-4	-11	-17	-23	-29	-35	-41	-48	-54	**-60**	**-66**
20	1	-5	-12	-18	-24	-31	-37	-43	-49	-56	**-62**	**-68**
25	1	-6	-12	-19	-25	-32	-38	-45	-51	-57	**-64**	**-70**
30	0	-7	-13	-20	-26	-33	-39	-46	-52	-59	**-65**	**-72**
35	0	-7	-14	-20	-27	-33	-40	-47	-53	**-60**	**-66**	**-73**
40	-1	-7	-14	-21	-27	-34	-41	-48	-54	**-61**	**-68**	**-74**
45	-1	-8	-15	-21	-28	-35	-42	-48	-55	**-62**	**-69**	**-75**
50	-1	-8	-15	-22	-29	-35	-42	-49	-56	**-63**	**-70**	**-76**
55	-2	-9	-15	-22	-29	-36	-43	-50	-57	**-63**	**-70**	**-77**
60	-2	-9	-16	-23	-30	-37	-43	-50	-57	**-64**	**-71**	**-78**
65	-2	-9	-16	-23	-30	-37	-44	-51	-58	**-65**	**-72**	**-79**
70	-2	-9	-16	-23	-30	-37	-44	-51	-59	**-66**	**-73**	**-80**
75	-3	-10	-17	-24	-31	-38	-45	-52	-59	**-66**	**-73**	**-80**
80	-3	-10	-17	-24	-31	-38	-45	-52	**-60**	**-67**	**-74**	**-81**

Approximate Thresholds:

-25	Risk of frostbite in prolonged exposure
-35	Frostbite possible in 10 minutes with warm skin suddenly exposed Shorter time if skin is cool at the start.
-60	Frostbite possible in less than 2 minutes with warm skin suddenly exposed. Shorter time if skin is cool at the start.

1: Environment Canada, 2001a, 2001b

where T = Air temperature (°C) and V = Observed wind speed at 10m elevation (km/h).

Saskatchewan Research Council

Annual Weather Summary

latitude 52°09'N Longitude 106°36W asl 497 m Saskatoon

CRS estab. 1963

		2006 VALUE	2005 VALUE	NORMAL (1971-2000) OR EXTREME (1892-2004)
TEMPERATURE	Average annual maximum (°C)	9.6	9.1	8.3
	Extreme annual maximum (°C/date)	34.7 August 29	32.8 July 31	41.0 June 1988
	Average annual minimum (°C)	-1.3	-1.6	-3.4
	Extreme annual minimum (°C/date)	-31.8 February 16	-34.5 January 14	-50.0 Feb. 1893
	Annual **average** (°C)	4.2	3.8	2.5
	No.of Frost-free days (Temperature ≤ 0°C)	179	185	197.1
DEGREE-DAYS	Annual growing (5°C base)	1927.4	1661.8	1672.9
	Annual frost-free growing (5°C base)	1699.2	1444.0	1691.0
	Annual heating (18°C base)	5213.1	5273.6	5808.8
	Annual cooling (18°C base)	199.3	100.0	119.1
PRECIPITATION	Annual total (mm)	517.5	486.8	348.2
	Greatest Daily (mm/date)	52.4 September 15	58.8 June 29	99.4 June 24, 1983
	Greatest Monthly (mm/date)	128.4 September	171.0 June	160.1/June 1991
	Measurable precipitation days (≥ 0.2mm)	139	135	115.7
WIND	Average Annual wind speed (km/h)	14.987.7 WNW	14.5	16.6*
	Peak gust (speed/direction/date)	August 04	109.7 SW June22	151.0 W Aug 14, 1967*
RADIATION	Total annual bright sunshine (hours)	Annual Bright sunshine is not available (January missing)	Annual Bright sunshine is not available (December missing)	2294.1
	% possible bright sunshine			51.2
	% normal bright sunshine			
	Bright Sunshine days			319.9
	% of normal Bright Sunshine days			
	Total annual global radiation(MJ/m²)	4538.4	4407.0	4391.9**
	Total annual diffuse radiation (MJ/m²)	1645.6	1655.4	1729.6**

For Your Information

Normal and Extreme Values

The 1971-2000 normals for CRS have been calculated from original data entered on computerized spreadsheets and checked for correctness. Where suitable, missing data has been replaced with data from the University of Saskatchewan, Kernen Farm station (2.5 km E of CRS) and the Meteorological Service of Canada Airport station (10 km WNW of CRS). Wind normals marked with '*' are from the MSC airport station. Global and Diffuse radiation normals are from 1961-1990 period and are marked with'**'. Extreme values are from the Saskatoon area weather stations extending back to 1882. The earlier records from 1882 to 1901 have several large gaps.

2006 Missing Values

For missing data for diffuse/global instrument - refer to the 'Global and Diffuse Table'.
On September 8th, the wind tower was lowered for routine maintenance for 3½ hours.
There is no Bright Sunshine data for January due to the instrument being sent in for routine calibration.

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

January 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	-3.2	-11.9	-11.6	
	Extreme monthly maximum (°C/date)	5.1/25	4.4/25	7.0/1986/11&1993/30	11.0/1980/23$_{SWT}$
	Average monthly **minimum** (°C)	-11.4	-21.6	-21.8	
	Extreme monthly minimum (°C/date)	-27.2/21	-34.5/14	-43.9/1966/22&1969/28&29	-48.9/1893/31$_{SM}$
	Monthly **average** (°C)	-7.3	-16.8	-16.7	
	No. of Frost-free days (Temp. > 0°C)	0	0	0	
DEGREE-DAYS	Monthly growing (5°C base)	0.0	0.0	0.0	
	Yearly total-to-date growing	0.0	0.0	0.0	
	Monthly heating (18°C base)	784.7	1078.3	1076.9	
	Yearly total-to-date heating	784.7	1078.3	1076.9	
	Monthly cooling (18°C base)	0.0	0.0	0.0	
	Yearly total-to-date cooling	0.0	0.0	0.0	
PRECIPITATION	Monthly total (mm)	11.3	16.0	18.2	66.1/1911$_{SE}$
	Yearly total-to-date (mm)	11.3	16.0	18.2	
	Greatest daily (mm/date)	5.1/15	3.2/01	15.4/1989/30	30.5/1893/23$_{SM}$
	Measurable precipitation days (≥ 0.2mm)	11	14	11.3	
WIND	Average monthly speed (km/h)	13.5	13.4	16.0$_{SA}$	
	Peak gust (speed/direction/date)	61.0^{NW}23	59.7^{N}21		111.0^{W}1986/11$_{SA}$
RADIATION	Monthly bright sunshine (hours)	bright	95.7	103.3	
	% possible bright sunshine	sunshine	36.9	39.8	
	% normal bright sunshine	not available	92.6		
	Bright Sunshine days		24	23.8	
	Monthly global radiation(MJ/m^2)	92.5	124.0	129.9	
	Monthly diffuse radiation (MJ/m^2)	*72.4	79.8	71.4	
SOIL	Average temperature (°C) @ 9:00am grass level	2.2	-10.6		
	10 cm/20 cm	-1.4/-0.1	-8.6/-6.9	-8.0/-7.1	
	50 cm/100cm	-0.4/1.8	-5.2/-1.0	-3.5/-0.1	
	150 cm/300cm	2.9/4.9	1.4/4.5	1.7/4.6	

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1900
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
SWT= S'toon Water Treatment Plant 1974-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

*Diffuse ring slipped for 1½ days.

For Your Information

Saskatchewan people take pride in surviving their extreme weather; especially freeze-the-tail-off-a-brass-monkey type of cold temperatures usually associated with a Saskatchewan January. This January, average temperatures were more like Des Moines, Iowa than what is usually experienced in Saskatoon.[1] Monthly average temperatures were the warmest recorded at CRS along with the highest monthly average minimum temperature. The highest monthly average maximum was only 0.2°C lower than 2001, the record year. Coupled with the high temperatures was a record January for low heating degree-days. Sunshine was not in abundance with overcast skies as shown in the 29% less global radiation than normal. On many mornings the trees were a photographer's delight with their coating of hoar frost which stayed throughout the day due to the low winds. Below normal precipitation was just enough that shoveling became a necessity.

Unlike this January, last January the prairies experienced the coldest temperatures of the winter. On the coldest day in Edmonton, when temperatures dipped below -39°C, residents of a seniors' home were evacuated due to a furnace malfunction. One 83-year old made sure she had her most important items – her boots and her dentures.[2]

[1]Wood, 1996 [2]Phillips 2005

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Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

February 2006		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	-6.4	-5.2	-7.7	
	Extreme monthly maximum (°C/date)	5.4/12	8.3/02	7.9/2002/17	12.8/1931/19 SE
	Average monthly **minimum** (°C)	-16.6	-15.7	-17.6	
	Extreme monthly minimum (°C/date)	-31.8/16	-26.5/07	-41.1/1972/06	-50.0/1893/01 SM
	Monthly **average** (°C)	-11.5	-10.5	-12.6	
	No.of Frost-free days (Temp. > 0°C)	0	0	0.2	
DEGREE-DAYS	Monthly growing (5°C base)	0.0	0.0	0.0	
	Yearly total-to-date growing	0.0	0.0	0.0	
	Monthly heating (18°C base)	825.8	797.1	886.2	
	Yearly total-to-date heating	1610.5	1875.5	1963.1	
	Monthly cooling (18°C base)	0.0	0.0	0.0	
	Yearly total-to-date cooling	0.0	0.0	0.0	
PRECIPITATION	Monthly total (mm)	7.2	16.4	13.3	43.7/1924 SE
	Yearly total-to-date (mm)	18.5	32.4	31.5	
	Greatest daily (mm/date)	2.5/04	7.7/04	14.2/1979/13	30.0/1962/03 SA
	Measurable precipitation days (≥ 0.2mm)	9	7	8.9	
WIND	Average monthly speed (km/h)	16.5	11.9	16.0	
	Peak gust (speed/direction/date)	60.5 NW 13	43.6 NNE 03		106.0 N 1988/22 SA
RADIATION	Monthly bright sunshine (hours)	135.5	143.9	132.3	
	% possible bright sunshine	48.6	51.5	47.4	
	% normal bright sunshine	102.4	108.8		
	Bright Sunshine days	21	26	24.2	
	Monthly global radiation(MJ/m^2)	210.4	219.5	210.1	
	Monthly diffuse radiation (MJ/m^2)	101.8	104.1	105.3	
SOIL	Average temperature (°C) @ 9:00am grass level	-0.8	-5.2		
	10 cm/20 cm	-2.6/-0.9	-4.6/-3.5	-6.7/-6.1	
	50 cm/100cm	-0.8/1.2	-3.5/-1.4	-3.5/-0.8	
	150 cm/300cm	2.3/4.0	0.4/3.0	0.8/3.4	

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1900
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-Present

For Your Information

Above average temperatures continued into February. Maximum temperatures were above -10°C with the exception of four days when they slipped into the minus teens and beyond. Outdoor enthusiasts enjoyed record warm days on the 12th and 13th when maximum temperatures rose to a balmy 5.4ºC and 5.1ºC respectfully. The warm temperatures are reflected in the below average heating degree-days. Coupled with January's below average heating degree-days, the total value is 18% below normal for the two months. The bright sunshine was slightly above normal. Snow fall was about half of normal allowing home owners to engage in "pleasanter" outside activities than shoveling snow.

Not shoveling snow was not an option for the 40 volunteers the CPR enlisted in 1947. They accompanied 4 locomotives near Moose Jaw to free a train buried in wind-packed snowdrifts that had blanketed the southern Prairies. Only aircraft could move about freely. Even in the city of Regina, office workers were advised to stay home as coal, to heat office buildings, was running low.[1]

[1]Phillips, 2005

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

March 2006

Section	Parameter	2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	-2.8	-0.5	-0.7	
	Extreme monthly maximum (°C/date)	11.1/28	8.7/30	20.0/1993/23	$22.8/1910/23_{SE}$
	Average monthly **minimum** (°C)	-11.3	-8.9	-10.5	
	Extreme monthly minimum (°C/date)	-27.1/03	-18.3/16	-38.9/1972/02	$-43.3/1897/14_{SM}$
	Monthly **average** (°C)	-7.1	-4.7	-5.6	
	No. of Frost-free days (Temp. > 0°C)	0	1	1.2	
DEGREE-DAYS	Monthly growing (5°C base)	0.0	0.0	2.4	
	Yearly total-to-date growing	0.0	0.0	2.4	
	Monthly heating (18°C base)	777.7	703.9	732.4	
	Yearly total-to-date heating	2388.2	2579.4	2695.5	
	Monthly cooling (18°C base)	0.0	0.0	0.0	
	Yearly total-to-date cooling	0.0	0.0	0.0	
PRECIPITATION	Monthly total (mm)	30.0	19.9	16.2	$59.0/1927_{SE}$
	Yearly total-to-date (mm)	48.5	52.3	47.7	
	Greatest daily (mm/date)	11.0/01	8.5/06	32.0/1967/30	$32.0/1967/30_{SRC}$
	Measurable precipitation days (≥ 0.2mm)	12	16	9.0	
WIND	Average monthly speed (km/h)	18.1	15.8	17.0	
	Peak gust (speed/direction/date)	$58.8^{ESE}17$	$62.3^{NW}09$		$93.0^{W}1959/18$
RADIATION	Monthly bright sunshine (hours)	193.5	168.7	175.2	
	% possible bright sunshine	52.4	45.6	47.4	
	% normal bright sunshine	110.4	96.3		
	Bright Sunshine days	28	25	27.1	
	Monthly global radiation(MJ/m²)	396.7	387.1	362.4	
	Monthly diffuse radiation (MJ/m²)	206.4	182.0	173.9	
SOIL	Average temperature (°C) @ 9:00am grass level	2.9	-1.9		
	10 cm/20 cm	-1.9/-0.7	-2.3/-1.6	-2.8/-2.4	
	50 cm/100cm	-1.3/0.4	-2.1/-0.9	-1.5/-0.4	
	150 cm/300cm	1.5/3.2	0.4/2.4	0.6/2.7	

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1900
SE= Eby (pioneer) 1901-41
SRC= SK Res. Council 1963-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

March, just like the old saw, "came in like a lion and went out like a lamb". Maximum temperatures were 2.1°C below normal due mainly to the cool temperatures experienced in the first half of the month. With 11 cm of snow falling on the first and 19 additional centimeters by the 18th, the new snow reflected the spring sun's warmth instead of absorbing it. It was not until the 25th that day time temperatures remained consistently above 0°C and quickened the spring melt. Bright sunshine was over 18 hours (about 10%) above normal. Winds were mostly above normal throughout the month with five days recording 'Near Gale' (51-62 km/h) wind gusts. Great for 'extreme' kite flying.

Signs of spring are beginning to appear. The geese have returned and the first gophers have appeared at the climate station; reports of bluebirds and the emergence of pussy willows have also been noted. Scientists are using these observations to help identify ecological changes, such as climate change, that may be affecting our environment. Some species, such as the trembling aspen, are flowering almost a month earlier than they did a century ago.[1]

[1] Beaubien and Freeland, 2000

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Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

April 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	14.6	12.9	10.7	
	Extreme monthly maximum (°C/date)	25.1/29	24.1/08	31.5/2001/28	33.3/1952/28 SA US
	Average monthly **minimum** (°C)	1.8	0.4	-1.7	
	Extreme monthly minimum (°C/date)	-5.1/03	-5.1/30	-27.8/1979/01	-30.5/1979/01 SWT
	Monthly **average** (°C)	8.2	6.7	4.5	
	No.of Frost-free days (Temp. > 0°C)	19	17	10.6	
DEGREE-DAYS	Monthly growing (5°C base)	116.3	82.2	61.3	
	Yearly total-to-date growing	116.3	82.2	63.7	
	Monthly heating (18°C base)	294.7	339.6	420.7	
	Yearly total-to-date heating	2682.9	2919.0	3116.2	
	Monthly cooling (18°C base)	0.0	0.0	0.3	
	Yearly total-to-date cooling	0.0	0.0	0.3	
PRECIPITATION	Monthly total (mm)	24.0	12.8	23.6	86.1/1955 US
	Yearly total-to-date (mm)	72.5	65.1	71.3	
	Greatest daily (mm/date)	11.0/01	4.4/15	24.6/1985/19	30.2/1955/19 US
	Measurable precipitation days (≥ 0.2mm)	8	9	8.4	
WIND	Average monthly speed (km/h)	14.5	18.2	18.0	
	Peak gust (speed/direction/date)	66.5 NW 13	87.1 WSW 15		108.0 W 1959/06
RADIATION	Monthly bright sunshine (hours)	300.4	243.3	225.2	
	% possible bright sunshine	71.8	58.1	53.8	
	% normal bright sunshine	133.4	108.0		
	Bright Sunshine days	29	29	27.3	
	Monthly global radiation(MJ/m^2)	554.6	495.3*	492.2	
	Monthly diffuse radiation (MJ/m^2)	162.3	147.1*	178.5	
SOIL	Average temperature (°C) @ 9:00am — grass level	14.0	11.5		
	10 cm/20 cm	2.7/3.6	3.1/4.3**	3.6/4.0	
	50 cm/100cm	1.3/1.5	2.1/1.4**	3.0/1.6	
	150 cm/300cm	1.6/2.8	1.4/2.2**	1.5/2.4	

Saskatoon Stations
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64
SWT= S'toon Water Treatment Plant 1974-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

Missing data
* 3 days of data
** about 1 day of data

For Your Information

Nature's April Fool's Day prank was a record daily rainfall of 11.0mm washing away the previous 2000 record of 6.0mm. Precipitation by the end of the month was slightly above normal. What was not normal were the temperatures. Average maximum and minimum temperatures were 3.9°C and 3.5°C above normal, respectively. Although not record breaking, the average monthly maximum temperature tied for the 5th warmest while the average monthly minimum temperature tied for the warmest since the station opened in 1963. The monthly average was the 3rd warmest; just below the record of 8.9°C set in 1980. Gardeners did not need to be told that the growing degree-days were 90% higher than normal as trees and spring flowers were observed earlier than usual. April 2006 recorded the 2nd highest growing degree-days since 1963; only 1980 had more at 162.5 days. Along with warm temperatures, outdoor enthusiasts enjoy 75.2 hours of above normal bright sunshine accompanied by days of just enough wind to make kite flying enjoyable.

Weather is a topic that everyone has some interest. This fact was recognized by the Times of London when it began printing a daily weather chart on April 1st, 1875; the first one to appear in a newspaper.[1]

[1] Bradley, 2006

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Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

May 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	18.5	17.4	18.6	
	Extreme monthly maximum (°C/date)	32.3/22	25.6/16	35.0/1988/30	37.2/1936/27 $_{SE}$
	Average monthly **minimum** (°C)	6.5	4.2	4.7	
	Extreme monthly minimum (°C/date)	-3.0/04	-7.0/02	-10.0/1967/02	-12.8/1907/06 $_{SE}$
	Monthly **average** (°C)	12.5	10.8	11.6	
	No. of Frost-free days (Temp. > 0°C)	30	24	25.6	
DEGREE-DAYS	Monthly growing (5°C base)	237.7	189.9	211.6	
	Yearly total-to-date growing	354.0	272.1	275.3	
	Monthly heating (18°C base)	180.3	223.7	204.4	
	Yearly total-to-date heating	2863.2	3142.6	3320.6	
	Monthly cooling (18°C base)	10.9	0.0	7.4	
	Yearly total-to-date cooling	10.9	0.0	7.7	
PRECIPITATION	Monthly total (mm)	47.8	29.4	44.3	178.0/1977 $_{SWT}$
	Yearly total-to-date (mm)	120.3	94.5	115.6	
	Greatest daily (mm/date)	17.4/09	11.8/18	39.9/1985/04	59.0/1999/18 $_{SA}$
	Measurable precipitation days (≥ 0.2mm)	16	11	9.8	
WIND	Average monthly speed (km/h)	16.5	18.1	18.0	
	Peak gust (speed/direction/date)	56.7 ^{W} 30	70.0 ^{SW} 18		132.0 ^{SW} 1965/17 $_{SA}$
RADIATION	Monthly bright sunshine (hours)	238.4	257.6	267.1	
	% possible bright sunshine	48.9	52.8	54.7	
	% normal bright sunshine	89.3	96.4		
	Bright Sunshine days	24	30	29.5	
	Monthly global radiation(MJ/m^2)	544.6	585.5*	586.3	
	Monthly diffuse radiation (MJ/m^2)	210.1	199.6*	222.2	
SOIL	Average temperature (°C) @ 9:00am — grass level	18.8	19.2		
	10 cm/20 cm	8.7/10.0	8.0/9.1	10.8/11.3	
	50 cm/100cm	8.2/6.7	7.1/5.9	9.3/6.4	
	150 cm/300cm	5.4/3.7	4.8/3.4	4.8/3.4	

Saskatoon Stations
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
SWT= S'toon Water Treatment Plant 1974-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

Missing data
* 2 days of missing data

For Your Information

May was a month of contrast with temperatures ranging from a high of 32.3°C to a low of -3.0°C. A daily maximum record was set on the 18th when a temperature of 29.6°C edged out 29.5°C set in 1992. Thirteen of May's maximum temperatures were above 20°C while over one-quarter of the minimum temperatures were 5°C or lower. Starting in mid May, seven temperatures soared to over 25°C topping on the 22nd with a temperature of 32.3°C. On average, May's temperature was just slightly above normal. The last frost day, on May 4th, occurred 14 days earlier than normal. The station recorded the last snow fall on the 2nd. Even though a greater than normal number of precipitation days were recorded during the month, the total precipitation amount was only 3.5 mm above average. The last third of the month saw rain on every day but the 27th.
How important is weather information? During the WWII, the Canadian and American governments banned the publishing and broadcasting of weather information for fear it would fall into enemy hands. Even baseball radio announcers were prevented from commenting on the weather. One announcer supposedly told his audience to stick their head on the window in order to explain why a game had been suspended.[1]

[1] Environment Canada, 2005.

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

June 2006		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	22.7	20.1	22.6	
	Extreme monthly maximum (°C/date)	33.5/28	32.0/22	41.0/1988/05	41.5/1988/06$_{S2}$
	Average monthly **minimum** (°C)	11.4	10.5	9.5	
	Extreme monthly minimum (°C/date)	4.8/13	6.8/25	-3.3/1967/06	-3.9/1917/02$_{US}$
	Monthly **average** (°C)	17.1	15.3	16.0	
	No.of Frost-free days (Temp. > 0°C)	30	30	29.9	
DEGREE-DAYS	Monthly growing (5°C base)	362.3	308.5	331.5	
	Yearly total-to-date growing	716.3	580.6	606.8	
	Monthly heating (18°C base)	55.2	91.9	82.8	
	Yearly total-to-date heating	2918.4	3234.5	3403.4	
	Monthly cooling (18°C base)	27.5	10.4	22.3	
	Yearly total-to-date cooling	38.4	10.4	30.0	
PRECIPITATION	Monthly total (mm)	105.8	171.0	59.5	186.8/1942$_{S}$
	Yearly total-to-date (mm)	226.1	265.5	175.1	
	Greatest daily (mm/date)	35.0/17	58.8/29	99.4/1983/24	99.4/1983/24$_{SRC}$
	Measurable precipitation days (≥ 0.2mm)	14	16	12.5	
WIND	Average monthly speed (km/h)	13.7	15.5	17.0	
	Peak gust (speed/direction/date)	57.3^{NE}14	109.7^{SW}22		117.0^{S}1986/01$_{SA}$
RADIATION	Monthly bright sunshine (hours)	252.2	175.3	277.2	
	% possible bright sunshine	50.4	35.0	55.4	
	% normal bright sunshine	91.0	63.2		
	Bright Sunshine days	26	25	28.5	
	Monthly global radiation(MJ/m^2)	566.8	525.0	638.7	
	Monthly diffuse radiation (MJ/m^2)	210.7	231.6	228.1	
SOIL	Average temperature (°C) @ 9:00am grass level	22.7	21.0		
	10 cm/20 cm	12.7/13.9	12.5/13.6	15.7/16.3	
	50 cm/100cm	11.8/10.0	11.6/9.7	14.0/10.4	
	150 cm/300cm	8.4/5.8	8.0/5.2	8.3/5.4	

Saskatoon Stations
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64
SRC= SK Res. Council 1963-
S= Saskatoon 1941-42
S2=Saskatoon 2 1977-90

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000
calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

June usually receives the most precipitation and this June will probably be no exception with 105.8mm recorded. Two daily records were broken; the first on the 17th with 35.0mm replacing the old 1996 record of 29.4mm and again on the 20th when the 1984 record of 10.4mm was replaced with 17.6mm. With 14 days experiencing rainfall, it is no surprise that the bright sunshine monthly total was 91% of normal (25 hours less than normal). Temperatures were near normal. The slightly warmer than normal monthly average temperature can be attributed to the slightly higher than normal minimum temperatures. Only one daily maximum temperature was set. The 1970 June 2 temperature of 31.1°C was replaced by 33.3°C. Soil temperatures are below average in the upper levels while the lower levels are near normal.

Although this June has had overabundant rainfall, during the drought of 1933 that was not the case. The U.S. Weather Bureau received hundreds of helpful suggestions to break the drought from the use of explosives to mounting huge deflectors on top of the Rocky Mountains to change the course of favourable air currents. Others offered to sell their secrets of guaranteed rainmaking to the government for $25 million. The U.S. government declined.[1]

[1]Phillips, 2002

Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

July 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	27.6	25.3	24.8	
	Extreme monthly maximum (°C/date)	33.2/23	32.8/31	39.3/ 2001/05	40.0/1919/17&1941/19&1946/30 SEUSSA
	Average monthly **minimum** (°C)	14.3	12.4	11.5	
	Extreme monthly minimum (°C/date)	9.8/03	5.8/28	1.7/1967/02&1978/09	-0.6/1918/25 SE
	Monthly **average** (°C)	21.0	18.9	18.2	
	No. of Frost-free days (Temp. > 0°C)	31	31	31	
DEGREE-DAYS	Monthly growing (5°C base)	495.1	429.4	408.4	
	Yearly total-to-date growing	1211.4	1010.0	1015.2	
	Monthly heating (18°C base)	2.7	32.1	35.3	
	Yearly total-to-date heating	2921.1	3266.6	3438.7	
	Monthly cooling (18°C base)	94.8	58.5	40.7	
	Yearly total-to-date cooling	133.2	68.9	70.7	
PRECIPITATION	Monthly total (mm)	39.8	44.4	58.0	162.9/1928 SE
	Yearly total-to-date (mm)	265.9	309.9	233.1	
	Greatest daily (mm/date)	7.8/29	9.6/01	45.5/1968/29	79.2/1946/03 US
	Measurable precipitation days (≥ 0.2mm)	11	12	12.0	
WIND	Average monthly speed (km/h)	12.8	13.2	16.0	
	Peak gust (speed/direction/date)	85.8 WNW 07	69.8 WNW 23		113.0 E 1955/05 SA
RADIATION	Monthly bright sunshine (hours)	376.1	306.0	305.7	
	% possible bright sunshine	74.9	61.0	61.0	
	% normal bright sunshine	123.0	100.1		
	Bright Sunshine days	31	31	30.3	
	Monthly global radiation(MJ/m²)	760.8	708.6	633.5	
	Monthly diffuse radiation (MJ/m²)	177.8	216.1	216.5	
SOIL	Average temperature (°C) @ 9:00am grass level	28.9	25.0		
	10 cm/20 cm	16.7/18.1	15.4/16.8	18.0/18.9	
	50 cm/100cm	16.2/13.7	15.4/13.4	16.7/13.1	
	150 cm/300cm	11.6/8.0	11.4/7.6	10.9/7.5	

Saskatoon Stations

SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64

Normals

Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

Highlights for July:

Record maximum daily temperature
July 23 new = 33.2°C; old 31.0°C/ 2003

Days with maximum temperature > 30°C = 9 Normal 4
Tied 1984 for fourth place for greatest number of days; 2002 = 12 days and 1975&1988 = 10 days

Days with maximum temperature > 32°C = 4 Normal 2

Record Minimum Monthly temperature
July 2006 experienced the second highest extreme minimum monthly temperature. July 1970 recorded the highest minimum monthly temperature at 10.0°C.

Growing Degree-days:
Record high; 495.1/ 2006; old 493.9/ 2002

Heating Degree-days;
Lowest ever at 2.7

Cooling Degree-days:
Second highest; 109.9/2002; 94.8/ 2006

On July 11, 2004 Edmonton experienced a 1-in-200-year record flash flood where hail had to be removed by snow ploughs. Three days later, Peterborough, Ontario also experienced a 1-in-200- year event when 100 to 240 mm of rain swamped the city.

Philips 2005

Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

August 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	26.5	22.5	24.6	
	Extreme monthly maximum (°C/date)	34.7/29	31.6/01	39.7/1998/06	39.7/1998/06 SRC
	Average monthly **minimum** (°C)	11.9	10.2	10.4	
	Extreme monthly minimum (°C/date)	7.2/26	5.0/13	-2.8/1976/28	-2.8/1901/23&1976/28 SM SRC
	Monthly **average** (°C)	19.3	16.4	17.5	
	No.of Frost-free days (Temp. > 0°C)	31	31	30.8	
DEGREE-DAYS	Monthly growing (5°C base)	441.8	352.2	387.8	
	Yearly total-to-date growing	1653.2	1362.2	1403.0	
	Monthly heating (18°C base)	17.6	78.5	57.7	
	Yearly total-to-date heating	2938.7	3345.2	3496.4	
	Monthly cooling (18°C base)	56.4	27.7	42.5	
	Yearly total-to-date cooling	189.6	96.6	113.2	
PRECIPITATION	Monthly total (mm)	38.2	54.0	36.2	178.9/1954 NRC
	Yearly total-to-date (mm)	304.1	363.9	269.3	
	Greatest daily (mm/date)	15.6/11	14.0/25	33.8/1998/17	84.3/1945/03 SA
	Measurable precipitation days ($\geq$ 0.2mm)	10	12	9.8	
WIND	Average monthly speed (km/h)	13.8	14.1	16.0	
	Peak gust (speed/direction/date)	87.7 WNW 04	76.4 WSW 01		151.0 W 1967/14 SA
RADIATION	Monthly bright sunshine (hours)	333.4	223.3	280.8	
	% possible bright sunshine	73.7	49.4	62.1	
	% normal bright sunshine	118.7	79.5		
	Bright Sunshine days	31	28	30.1	
	Monthly global radiation(MJ/m^2)	605.6	516.5	529.0	
	Monthly diffuse radiation (MJ/m^2)	176.6	178.9	185.6	
SOIL	Average temperature (°C) @ 9:00am — grass level	24.3	20.2		
	10 cm/20 cm	15.0/16.7	13.3/15.1	16.9/18.1	
	50 cm/100cm	15.7/14.1	14.5/13.5	16.8/14.1	
	150 cm/300cm	12.9/9.8	12.4/9.6	12.3/9.1	

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1901
SA= S'toon Airport 1942-
NRC= Nat. Res. Council 1952-66
SRC= SK Res. Council 1963-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

Back-to-schoolers may wonder where the summer went. Conditions were just right for summertime outside activities. Temperatures were above average with six days over 30°C. The August 29th temperature record of 34.4°C set in 1972 was replaced by 34.7°C this year. Rainfall was slightly above normal and fell throughout the month with the heaviest downpours on the fourth and eleventh. Winds above 51 km/h occurred on seven days. On the 5th, wind gust over 51 km/h occurred every hour between 10am and 5pm. The same windy weather occurred on the 29th between 10am and 4pm. The strongest wind gust of 87.7 km/h occurred on August 4th.

Wind can be an unpleasant fact-of-life on the prairies. But....

Who has seen the wind? Neither I nor you: But when the leaves hang trembling The wind is passing thro'
Who has seen the wind? Neither you nor I: But when the trees bow down their heads The wind is passing by.
Christina Georgina Rossetti [1]

[1] *About Inc., 2006*

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Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

September 2006

	September 2006	2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	18.9	18.8	18.1	
	Extreme monthly maximum (°C/date)	31.3/04&06	30.8/03	35.6/1978/04	35.6/1978/04$_{SRC}$
	Average monthly **minimum** (°C)	6.9	6.4	4.9	
	Extreme monthly minimum (°C/date)	-1.3/19	-2.2/28	-7.8/1974/30	-11.1/1908/28$_{SE}$
	Monthly **average** (°C)	12.9	12.6	11.6	
	No. of Frost-free days (Temp. > 0°C)	29	29	25.6	
DEGREE-DAYS	Monthly growing (5°C base)	238.5	228.7	203.5	
	Yearly total-to-date growing	1891.7	1590.9	1606.5	
	Monthly heating (18°C base)	161.7	164.7	198.9	
	Yearly total-to-date heating	3100.4	3509.9	3695.3	
	Monthly cooling (18°C base)	9.7	3.4	5.8	
	Yearly total-to-date cooling	199.3	100.0	119.0	
PRECIPITATION	Monthly total (mm)	128.4	81.6	29.4	111.7/1921$_{US}$
	Yearly total-to-date (mm)	432.5	445.5	298.7	
	Greatest daily (mm/date)	52.4/15	35.6/10	35.6/1993/12	44.2/1931/12$_{US}$
	Measurable precipitation days (≥ 0.2mm)	14	8	8.4	
WIND	Average monthly speed (km/h)	14.3	14.1	17.0	
	Peak gust (speed/direction/date)	57.2^{NE}15	66.9^{NNE}10		148.0^{W}1967/22$_{SA}$
RADIATION	Monthly bright sunshine (hours)	204.8	207.4	186.0	
	% possible bright sunshine	54.0	54.8	49.1	
	% normal bright sunshine	110.1	111.5		
	Bright Sunshine days	23	29	27.0	
	Monthly global radiation(MJ/m²)	343.0	380.4	351.8	
	Monthly diffuse radiation (MJ/m²)	109.7	131.6	127.6	
SOIL	Average temperature (°C) @ 9:00am grass level	17.2	15.9		
	10 cm/20 cm	10.1/12.0	9.5/11.5	11.0/12.5	
	50 cm/100cm	12.6/12.7	12.1/12.1	13.2/12.4	
	150 cm/300cm	12.3/10.6	11.8/10.1	11.7/9.9	

Saskatoon Stations
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64
SRC= SK Res. Council 1963-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

Like last September, this September will be remembered for the rain. It did not rain for 40 days or nights but rain was recorded for 39 continuous hours on the 15th and 16th. Between the 13th and 17th 109.8mm of rain was recorded. SRC colleagues' home rain gauges reported between 108mm to 183mm from locations outside the city and between 70mm to 120mm within the city. Ten records were broken; September 13th, 14th, 15th,17th and 22nd have new daily records; the new record of greatest daily amount is 52.4mm and the new record of greatest monthly amount is 128.4mm replacing last year's record of 81.6mm. This total monthly precipitation is the most ever recorded in Saskatoon for September. The old record of 111.7mm was recorded by the University of Saskatchewan in 1921. The Saskatoon Airport's total for this September is 118.0 mm.[1] Number-of-days with precipitation greater than 5mm and greater than 10mm were also set. The first autumnal frost occurred on the 19th ending the growing season with 137 days. Monthly average temperatures were above normal.

It can be cold in September as those on a Regina cheerleading squad can attest. One wise member dressed appropriately when temperatures fell 12° in 3 hours by donning long underwear, leg warmers, two bunny hugs, a turtleneck, a body suit, black pants and a toque.[2]

[1] Environment Canada, 2006, Flysak, 2006. [2] Phillips 2005

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

October 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	6.9	12.1	10.8	
	Extreme monthly maximum (°C/date)	21.6/05	18.6/15	28.5/1980/06&1984/08	$32.2/1943/05_{SAUS}$
	Average monthly **minimum** (°C)	-2.2	0.3	-1.3	
	Extreme monthly minimum (°C/date)	-8.7/22	-6.9/22	-21.5/1991/29,30	$-25.6/1919/26_{SEUS}$
	Monthly **average** (°C)	2.4	6.2	4.8	
	No.of Frost-free days (Temp. > 0°C)	9	17	11.6	
DEGREE-DAYS	Monthly growing (5°C base)	35.7	66.9	63.7	
	Yearly total-to-date growing	1927.4	1657.8	1670.2	
	Monthly heating (18°C base)	485.0	364.8	410.2	
	Yearly total-to-date heating	3585.4	3874.7	4105.5	
	Monthly cooling (18°C base)	0.0	0.0	0.1	
	Yearly total-to-date cooling	199.3	100.0	119.1	
PRECIPITATION	Monthly total (mm)	44.0	10.2	16.4	$69.8/1969_{SRC}$
	Yearly total-to-date (mm)	476.5	455.7	315.1	
	Greatest daily (mm/date)	26.4/07	3.5/02	36.7/1984/16	$41.7/1924/12\&1969/03_{SESA}$
	Measurable precipitation days (≥ 0.2mm)	11	4	6.3	
WIND	Average monthly speed (km/h)	14.1	13.9	17.0	
	Peak gust (speed/direction/date)	$77.4^{WNW}26$	$63.9^{SE}15$		$138.0^{NW}1967/16_{SA}$
RADIATION	Monthly bright sunshine (hours)	165.7	208.0	157.9	
	% possible bright sunshine	50.3	63.3	48.0	
	% normal bright sunshine	104.9	131.7		
	Bright Sunshine days	25	29	27.0	
	Monthly global radiation(MJ/m²)	235.7	265.0	239.1	
	Monthly diffuse radiation (MJ/m²)	96.1	80.8	92.6	
SOIL	Average temperature (°C) @ 9:00am grass level	6.4	7.8		
	10 cm/20 cm	2.9/4.9	4.3/6.3	4.7/6.2	
	50 cm/100cm	6.9/8.6	7.5/8.9	8.3/9.2	
	150 cm/300cm	9.5/9.9	9.5/9.6	9.6/9.4	

Saskatoon Stations
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64
SRC= SK Res. Council 1963-

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

October was cold and wet. Precipitation was 168.3% higher than normal with over half of the monthly total occurring on the 7th. This day saw a new daily precipitation record of 26.4mm replacing the 1997 record of 16.4mm. Two other daily records were set during the month. On the 15th, 6.6mm replaced the 2004 record of 4.0mm and on the 17th, 4.1mm dripped by the old 1984 record of 4.0mm. The first snow flurries of the season were noticed on the 10th. Minimum daily temperature records were set on the 12th and the 13th. The maximum and minimum monthly means were 3.9°C and 0.9°C below normal respectively. The cold temperatures are reflected in the soil temperatures with the upper levels below normal for this time of year. Even though it was a wet October, the bright sunshine hours were slightly above average. Winds above 51 km/h occurred only twice; on the 16th and on the 26th when a 77.4 km/h gust blew through late at night when the average wind speed was 16.5 km/h for the day.

When snow accompanied winds between 50 and 80 km/h, near zero visibility was created over Alberta and Saskatchewan on October 16, 1984. The blizzard caused dozens of accidents. Saskatoon received about 28cm of snow.[1]

[1]Sari, n.d.

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

November 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	-3.2	2.1	-1.4	
	Extreme monthly maximum (°C/date)	6.9/05	12.7/10	19.4/1975/04	21.7/1903/03 $_{SE}$
	Average monthly **minimum** (°C)	-13.0	-5.5	-10.3	
	Extreme monthly minimum (°C/date)	-25.7/30	-21.0/16	-33.5/1985/24	-39.4/1893/30 $_{SM}$
	Monthly **average** (°C)	-8.1	-1.7	-5.9	
	No. of Frost-free days (Temp. > 0°C)	0	5	1.2	
DEGREE-DAYS	Monthly growing (5°C base)	0.0	4.0	2.6	
	Yearly total-to-date growing	1927.4	1661.8	1672.8	
	Monthly heating (18°C base)	783.5	592.2	715.8	
	Yearly total-to-date heating	4368.9	4466.9	4821.3	
	Monthly cooling (18°C base)	0.0	0.0	0.0	
	Yearly total-to-date cooling	199.3	100.0	119.1	
PRECIPITATION	Monthly total (mm)	31.0	17.6	14.8	57.3/1940 $_{SE}$
	Yearly total-to-date (mm)	507.5	473.3	329.9	
	Greatest daily (mm/date)	15.4/08	11.3/02	19.3/1978/04	27.9/1938/01 $_{US}$
	Measurable precipitation days (≥ 0.2mm)	13	10	7.9	
WIND	Average monthly speed (km/h)	16.5	14.0	16.0 $_{SA}$	
	Peak gust (speed/direction/date)	59.3 ^{NW} 16	46.9 ^{N} 14		100.0 ^{W} 1976/17 $_{SA}$
RADIATION	Monthly bright sunshine (hours)	101.3	90.3	98.0	
	% possible bright sunshine	38.4	34.2	37.2	
	% normal bright sunshine	103.4	92.1		
	Bright Sunshine days	22	23	22.2	
	Monthly global radiation(MJ/m^2)	123.3	110.3	123.7	
	Monthly diffuse radiation (MJ/m^2)	69.2	58.6	73.6	
SOIL	Average temperature (°C) @ 9:00am grass level	0.1	2.6		
	10 cm/20 cm	-0.7/1.1	0.1/1.7	-1.7/-0.5	
	50 cm/100cm	2.3/4.8	3.3/5.7	3.0/5.6	
	150 cm/300cm	6.1/8.1	6.9/8.2	6.8/8.1	

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1900
SE= Eby (pioneer) 1901-41
SA= S'toon Airport 1942-
US= Univ. of SK 1915-64

Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

With more than double the normal precipitation and below normal temperatures, November was a snowy, cold month. Daily precipitation records were occurred on the 8th and 23rd with 15.4 cm of snow falling on the former and 1.4 cm falling on the latter. The total precipitation of 507.5 mm is only 39.4 mm shy of the 1991 record year total. Although temperatures averaged 2.2°C below normal, no extreme low temperature records were set. Even with 13 days reporting precipitation, bright sunshine hours were slightly above normal. By month's end, snow on the ground averaged 12 cm. Winds were strong and constant enough to create deep finger drifts across the access road to the climate station.

On November 11th, 1938 Lethbridge also experienced an early November snowfall. This was accompanied by howling winds which whipped the deep snow into huge drifts on the highway measuring more than one meter deep. All street car traffic was brought to a halt. Fortunately, the province, in anticipation of heavier than usual snow falls, had purchased two rotary snowplows and two straight plows.[1]

[1]Phillips, 2005

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Saskatchewan Research Council

Monthly Weather Summary

latitude 52°09'N Longitude 106°36'W asl 497 m Saskatoon

CRS estab. 1963

December 2006

		2006 VALUE	2005 VALUE	NORMAL OR EXTREME FOR CRS 1971-2000	EXTREME FOR SASKATOON STATIONS
TEMPERATURE	Average monthly **maximum** (°C)	-4.4	-4.4	-9.0	
	Extreme monthly maximum (°C/date)	4.6/15	7.4/09	11.2/1997/14	14.4/1939/05$_{SE}$
	Average monthly **minimum** (°C)	-14.0	-11.6	-18.6	
	Extreme monthly minimum (°C/date)	-28.2/02	-25.8/17	-42.2/1973/31	-43.9/1892/22$_{SM}$
	Monthly **average** (°C)	-9.2	-8.0	-13.9	
	No.of Frost-free days (Temp. > 0°C)	0	0	0.2	
DEGREE-DAYS	Monthly growing (5°C base)	0.0	0.0	0.1	
	Yearly total-to-date growing	1927.4	1661.8	1672.9	
	Monthly heating (18°C base)	844.2	806.7	987.7	
	Yearly total-to-date heating	5213.1	5273.6	5809.0	
	Monthly cooling (18°C base)	0.0	0.0	0.0	
	Yearly total-to-date cooling	199.3	100.0	119.1	
PRECIPITATION	Monthly total (mm)	10.0	13.5	18.3	59.2/1956$_{SA}$
	Yearly total-to-date (mm)	517.5	486.8	348.2	
	Greatest daily (mm/date)	4.0/13	2.3/13	14.5/1973/23	28.4/1936/02$_{SE}$
	Measurable precipitation days (≥ 0.2mm)	10	16	11.4	
WIND	Average monthly speed (km/h)	14.2	12.3	16.0	
	Peak gust (speed/direction/date)	57.4^{WNW}16	55.8^{NW}09		121^{W}1955/12$_{SA}$
RADIATION	Monthly bright sunshine (hours)	123.3	not available	85.4	
	% possible bright sunshine	50.9	not available	35.2	
	% normal bright sunshine	144.4	not available		
	Bright Sunshine days	27	not available	22.8	
	Monthly global radiation(MJ/m^2)	104.4	89.8	95.2	
	Monthly diffuse radiation (MJ/m^2)	52.5	45.2	54.3	
SOIL	Average temperature (°C) @ 9:00am — grass level	3.0	-2.0		
	10 cm/20 cm	-0.7/0.8	-2.5/-0.7	-6.6/-5.6	
	50 cm/100cm	0.9/3.1	0.1/2.8	-1.7/2.0	
	150 cm/300cm	4.3/6.1	4.3/6.3	3.8/6.4	

Saskatoon Stations
SM=interrupted readings (NWMP) about 1892-1900
SE= Eby (pioneer) 1901-41
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Normals
Global and diffuse radiation = 1961-1990
Soil Temp. = 1971-2000 calculated by Env. Canada
Wind Normal and Extreme are from Saskatoon Airport

For Your Information

Like December 2005, December 2006 temperatures were well above normal. Both the monthly average maximum and minimum were 4.6°C above normal. The monthly mean of -9.2°C is the 10th warmest December recorded at CRS since 1963. Even though 7 days were above 0°C, there were no daily maximum records set. The warm temperatures are reflected in the heating degree-days which were 14.5% less than normal and especially in the above normal soil temperatures. Precipitation, occurring on 10 days, was 8.3mm below average. 2006 was the second wettest year at CRS with 517.5mm recorded; just 29.4mm less than the record year of 1991. Monthly bright sunshine was plentiful to offset the winter blues at 44.4% or 37.9 hours above normal. Maximum wind speeds reached over 50km/h on the 3rd, 15th and 16th.

What is old is new again. In 1896 near Pense, SK two brothers constructed a 'prairie schooner'. An adaptation of the ice boat, it had runners much wider and broader to suit the prairie snow. With 10m tall sails and favourable winds and snow, the boat could travel at 30km/h. Journalists at the time speculated the west would see snowboat clubs spring up across the country and a new winter sport would emerge. Today winter enthusiasts are using large kites or parachutes and snowboards to take advantage of the winter winds to whisk the rider across the winter landscape.[1]

[1]Phillip, 2005

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Agriculture et Agroalimentaire Canada
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INSTRUMENTS USED AT SASKATOON SRC CRS AND GLOSSARY OF TERMS

(Unless otherwise stated, source for definitions of terms is Environment Canada, 1978)

BEAUFORT WIND SCALE was developed by Admiral Sir Francis Beaufort in 1805 and adopted by the British Navy in 1838. It consisted of 13 degrees of wind strength, from calm to hurricane, based upon the effects of various wind strengths upon the amount of canvas carried by the fully rigged frigates of the period. Over the years it has been modified as needed and in 1946 the scale values (Force Numbers) were defined by ranges of wind speed as measured at a height of 10 meters above the surface. In effect, this transformed the 'Beaufort Wind Force Scale' into the 'Beaufort Wind Speed Scale'. This scale is the current standard scale for visual observations of the wind (Heidorn, 1998).

BRIGHT SUNSHINE is the unobstructed direct radiation from the sun, as opposed to the shading of a location by clouds or by other atmospheric obstructions.

Number of Days is defined as the total number of days when at least 0.1 of an hour of bright sunshine was recorded.

Percentage Possible refers to the ratio of measured bright sunshine hours to the total possible daylight hours in a given period, expressed as a percentage.

Possible daylight hours are taken from the sunrise/set tables provided by the National Research Council of Canada, Herzberg Institute of Astrophysics, Victoria, BC.

Total is the sum of the daily bright sunshine values in hours and tenths of hours as measured by an automated sunshine recorder using voltaic cells.

DEGREE-DAY is an index for various temperature related calculations

Cooling (CDD) is the cooling requirement to achieve a stipulated comfort value in an indoor environment. For most purposes, a temperature of greater than 18°C is considered uncomfortable and supplementary cooling is required. On a specific day, the amount by which 18°C is less than the daily average temperature defines the number of cooling degree-days for that day.

Mathematically:

CDD = (T - 18°C), for that day, where T = daily mean temperature in °C if T is equal to or less than 18°C, CDD = 0.

Monthly and annual values of CDD are obtained by summing daily values.

Growing (GDD) is the growing requirement in order for plant growth to proceed. The air temperature must exceed a critical value appropriate to the plant species in question. For many members of the grass family, including most commercial cereals grown on the prairies, a base temperature of 5.0°C has been established. On a specified day, the difference between the daily average temperature and the 5.0°C base temperature defines the number of growing degree-days.

Mathematically:

GDD = (T - 5.0°C), for that day, where T = daily mean temperature in °C if T is equal to or less than 5.0°C, GDD = 0.

Daily GDD values are summed to provide totals for the appropriate month, growing season or year.

Heating (HDD) is the heating requirement to achieve a stipulated comfort value in an indoor environment. For most purposes, a temperature of less than 18°C is considered uncomfortable and supplementary heating is required. On a specific day, the amount by which 18°C exceeds the daily average temperature defines the number of heating degree-days for that day.

Mathematically:

HDD = (18°C - T), for that day, where T = daily mean temperature in °C if T is equal to or greater than 18°C, HDD = 0.

Monthly and annual values of HDD are obtained by summing daily values.

EXTREME is the highest or lowest value of a particular element recorded during the period in question.

EXTREME ALL YEARS Temporal comparisons at a point are also of value in some types of climatic studies. Therefore, it is desirable to produce the maximum length of reliable climatic record to carry out studies over a period of time. Data are drawn from the following data sets:
Saskatoon, SRC:1963 to present
Saskatoon, University of Saskatchewan:1916 to 1963
Saskatoon, City:1892 to present

Station locations, exposures and measurement procedures were subject to change during this time period. Data are not adjusted and users are cautioned accordingly.

FROST is recorded on each occasion when the daily minimum temperature is equal to or less than 0°C.

NORMAL VALUE (1971-2000) In climatology it is often useful to make spatial comparisons of particular element values over a common time period. At an interior continental site such as Saskatoon, a period of 30 years is required to produce statistically stable estimates of the more variable elements. To facilitate spatial comparisons, the World Meteorological Organization recommends the standard normal (average) period of thirty years. The current normal period for data analysis at CRS is from January 1st, 1971 to December 31st, 2000. Data derived from CRS conform to this standard, except where noted. The normals for CRS have been calculated using the data collected during this standard period. Where gaps existed, data from the nearest climate station were used and referenced as to being used.

POTENTIAL EVAPOTRANSPIRATION (Thornthwaite Method) is the amount of water which will be lost from a surface completely covered with vegetation if there is sufficient water in the soil at all times for the use of the vegetation. It is computed by means of an empirical formula involving mean monthly temperature and average length of day.
Mathematically:
$PET = mT^a$ where PET = Potential of Evaportranspiration; m = % of day length for the month as compared to the year; T = Temperature °C when T is less than or equal to 0; otherwise T = O; and a = yearly heat index. (Thornthwaite and Mather, 1955)

PRECIPITATION

Day is recorded on occasions when the amount of precipitation in a 24-hour period equals or exceeds 0.2 mm water. An asterisk (*) appearing in the average column denotes the occurrence of measurable precipitation on one or more occasions, and that the calculated 30-year average amounts to less than a trace. The so-called climatological day, beginning at 9 a.m. standard time on the date of reference and ending at 9 a.m. the next morning, was employed in record keeping up to January 1994. On February 1, 1994, after consultation with Environment Canada, record keeping was changed to the 24-hour period of 0000 hours - 2400 hours to conform to their reporting of climatological statistics.

Total is the sum of the daily recorded precipitation. The snowfall component of precipitation is recorded as an equivalent amount of liquid water. For particulars on precipitation measurement procedures and instruments, the reader is referred to the Environment Canada publication "*Manual of Climatological Observation*'*s*", 2nd Ed., January, 1978. The notation "T" refers to a trace of precipitation (less than 0.2 mm water equivalent). As of August 7, 1993, total precipitation was measured using the Belfort weighing gauge for the winter season and the tipping bucket during frost-free period.

SEASONS Meteorologists prefer to divide the year into four 3-month periods based primarily on temperature. Thus winter is defined as December, January, and February (DJF); spring as March, April and May (MAM); summer as June, July and August (JJA); and fall as September, October and November (SON). (Lutgens and Tarbuck, 1992)

SOIL TEMPERATURE under a short grass surface with normal snow accumulation, is measured according to procedures outlined in the Environment Canada publication "*Soil Temperature*" January l, 1976. Depths below surface at which soil temperature measurements are made are: 5 cm, 10 cm, 20 cm, 50 cm, 100 cm, 150 cm and 300 cm. Since soil temperature is affected by profile structure and water content, extrapolation of the measured data is difficult.

SOLAR RADIATION

Diffuse - Total is radiation reaching the earth's surface after having been scattered from the direct solar beam. The instrument used is an Eppley pyranometer with a shade ring (See SOLAR RADIATION-Global- Total).

Global - Total is the sum of the direct solar and diffuse radiation during the period in question. Measurements are carried out on a horizontal surface near ground level and integrated over the whole celestial dome, summing the diffuse and direct components of the solar beam. The temperature-compensated Eppley pyranometer is used. The standard metric unit of measurement is the megajoule per square metre (MJ/m^2). (To facilitate comparison with past years' data: 1.0 MJ/m^2 = 23.895 langleys). Comparison is provided with a provisional average based on 16 years of data (l975-1990).

SPELLS - Temperature spells are defined as a sequence of days when the daily maximum temperature is higher than or equal to 30°C (hot spell) or the daily minimum temperature is lower than or equal to -30°C (cold spell).

SUNRISE/SUNSET times have been included in this report. They have been acquired from the National Research Council, Canada, Herzberg Institute of Astrophysics.

TEMPERATURE

Average Annual is the average of the daily average temperatures in degrees Celsius (°C) for one year.

Average Daily is defined as the arithmetic mean of the daily maximum temperature in degrees Celsius (°C) and the daily minimum temperature in degrees Celsius (°C) for the day in question.

Average Maximum is the average of the daily maximum temperatures in degrees Celsius (°C) average over the appropriate time periods. For details concerning measurement procedures, the reader is referred to the Environment Canada publication, "*Manual of Climatological Observations"*, 2nd Ed., January, 1978.

Average Minimum is the average of the daily minimum temperatures in degrees Celsius (°C) averaged over the appropriate time periods. Refer to TEMPERATURE-Average Maximum concerning measurement procedures.

Average Monthly is the average of the daily average temperatures in degrees Celsius (°C) for the month under consideration.

WIND CHILL describes a sensation, the way we feel as a result of the combined cooling effect of temperature and wind. This feeling can't be measured using an instrument, so a mathematical formula was developed in 1939 that related air temperature and wind speed to the cooling sensation. This formula was revised in 2001 by a team of scientists and medical experts from Canada and the U.S. with the Canadian Department of National Defence contributing human volunteers. The new index is based on the loss of heat from the face (Environment Canada 2001a).

WIND SPEED

Average is the average of the hourly wind speeds for the period in question measured in kilometres per hour (km/h). Average hourly wind speeds are obtained from a RM Young Wind Monitor anemometer at a height of 10 m.

Peak Gust refers to the highest instantaneous value recorded by the anemometer system for the period of reference, irrespective of direction and/or duration. Comparison is with published data for Environment Canada, Saskatoon Airport station.

see also **Beaufort Wind Scale**

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