SASKATOON SRC

CLIMATOLOGICAL REFERENCE STATION

ANNUAL SUMMARY, 1992

by

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ABSTRACT

Data concerning temperature, precipitation, soil temperature, evaporation, wind speed, bright sunshine and solar radiation at the Saskatoon Climatological Reference Station (52°09'N, 106°36'W, 497 m MSL) are presented for the year 1992 and compared with the long term historic and standard period (1961-1990) records (Table 1).

1992 had a very cool growing season. The number of growing degree-days were 17.7% below normal. The number of growing degree-days for May to August were 1067 - the lowest in the last thirty years. The previous low value was in 1974 with 1100 growing degree-days for that same time period.

The mean annual temperature was 0.9°C above normal - this was because the months of January, February, March, April, and November recorded above normal conditions - one as much as 7°C above normal.

The extreme maximum temperature occurred in August with a temperature of 33.6°C. The extreme minimum temperature occurred on the last day of 1992 with a temperature of -40°C.

Saskatoon received below normal amounts of precipitation - 258.8 mm less than last year's record breaking amount. The greatest 24 hour rainfall was only 27.8% of the record amount. March, 1992 set a record by being the driest March in the last 30 years. June was also very dry. The cumulative amounts of precipitation were similar to that of 1961, the driest year on record, until July, 1992 when the rainfall amount started to increase (see Figure 1). The wet and cool August and September resulted in a very poor and difficult harvest.

1992 was a year of transition for the Climate Reference Station. The process of automating the station and the use of data logger had its challenges.

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HISTORY AND STATION LOCATION

The first meteorological observations appear to have been taken at or near Saskatoon by the Royal Northwest Mounted Police in 1889. At first only temperatures were recorded. A number of changes were made in the coordinates and as a result there is some disagreement in the early records as to the exact location of the weather observing point. The bulk of the evidence, however, indicates that the location was 52°15'N and 106°20'W, elevation 480 m above sea level. This would place it at Clark's Crossing, on the South Saskatchewan River, approximately 16 km north and east of the centre of the present City of Saskatoon. At that time there was a settlement at Clark's Crossing and also about 10 or 15 families on either side of the river at Saskatoon.

Little is known about the early observers. However, the records show that a Major T.H. Keenan took the observations from March, 1892 until March, 1895. Mr. George Will was the observer from January, 1897 until April, 1897. It is thought that Thomas H. Copeland was involved in the observational program from 1895 to May 1, 1901, at which time it was taken over by Mr. Eby, senior. Continuous observations were taken by the Eby's at a site on 8th Street until October 31, 1942, when the station was closed. Mr. Eby continued the program until his death in 1921. His daughter, Miss E.S. Eby, recorded the observations until April, 1931 and was replaced by her brother, J.M. Eby, who continued the program until the station was closed. 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 long time observer at this site was Mr. Sidney Cox. The Saskatchewan Research Council took over the program in the fall of 1963 at our newly established Climatological Reference Station.

The location of the Saskatchewan Research Council's Climatological Reference Station is latitude 52°09'N and longitude 106°36'W and the elevation is 497 m above mean sea level[1].

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[1] From various sources including the *Physical Environment of Saskatoon, Canada* (E.A. Christiansen (ed.) 1970) and *1974 Annual Meteorological Summary, Saskatoon, Saskatchewan*, (Environment Canada, Atmospheric Environment Service).

The long time observer (16 years) at this present site was Mr. Joe Calvert, who retired from the program in August, 1983. Then Mr. Ray Begrand succeeded Mr. Calvert until September, 1988 when Ms. Virginia Wittrock became the primary observer. The observers for 1992 were Virginia Wittrock, Ray Begrand, Rolf Jahren, Bob MacPherson, Julio Matamala, Brett Smith, and Carol Beaulieu.

The summer of 1992 witnessed a major change in the way observations are carried out at the Saskatchewan Research Council's Climatological Reference Station. The Station was converted to an automated system of data collection. This was done by installing a Campbell Scientific Data Logger at the climate station to automatic sensors. The following data collection duties were turned over to Environment Canada: evaporation, Campbell Stokes bright sunshine, snow survey, snow cover, and manual temperature and precipitation programs.

FOOTNOTES TO CLIMATIC TABLES 1 TO 13

1. The annual values (Table 1) are calculated using the monthly summaries, January to December, 1992 (Tables 2 to 13).

2. 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 period January 1, 1961 to December 31, 1990 for data analysis. Items in this column conform to this standard, except where noted.

3. 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 in this column are drawn from the following data sets:

Saskatoon SRC	1963 to 1992
Saskatoon U. of S.	1916 to 1963
Saskatoon	1892 to 1915

   Station locations, exposures and measurement procedures were subject to change during this time period. Data presented in this column are unadjusted and users are cautioned accordingly.

4. The mean annual temperature is defined as the average of the daily mean temperatures for one year. In the monthly summaries (Tables 2 to 13) the daily mean temperature reported is the average of the daily mean temperatures for the one month under consideration. In turn, the daily mean temperature for a particular day is defined as the arithmetic mean of the daily maximum temperature and the daily minimum temperature for the date.

5. The mean maximum temperature tabulated is the mean of the daily maximum temperatures for one year in the case of Table 1 and for particular months in the cases of Tables 2 to 13. For details concerning measurement procedures, the reader is referred to the Atmospheric Environment Service publication Manual of Climatological Observations, second edition, January, 1978.

6. The mean minimum temperature as tabulated is defined as the mean of the daily minimum temperatures averaged over the appropriate time periods. Refer to note 5 above concerning measurement procedures.

7. The word "extreme" refers to the highest or lowest value of a particular element recorded during the period in question. The highest temperature recorded at Saskatoon SRC during 1992 was 33.5°C (August), while the highest value ever recorded was 41.0°C (June, 1988).

8. A day with frost is recorded on each occasion when the daily minimum temperature is equal to or less than 0°C.

9. A heating degree-day (HDD) is an index of 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 mean temperature defines the number of heating degree-days for that day. Mathematically:

$$HDD = (18°C - T), \text{ for that day,}$$

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.

10. In order for plant growth to proceed, 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 mean temperature and the 5.0°C base temperature defines the number of growing degree-days (GDD). Mathematically:

$$GDD = (T - 5.0°C), \text{ for that day,}$$

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.

11. Total precipitation is the sum of the daily rainfall and daily snowfall amounts recorded. 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 Atmospheric Environment Service publication Manual of Climatological Observations, second edition, January, 1978. The notation T in this column refers to a trace of precipitation (less than 0.2 mm water equivalent). As of August 7, 1992, total precipitation was measured using the Belfort weighing gauge shielded by the Alter windshield.

12. Note that prior to 1960, measurement of snowfall was accomplished using snow rulers set vertically in the ground to obtain the thickness of the newly deposited layer. In obtaining precipitation values a standard water equivalent of one inch of snow yielding one-tenth inch of water was assumed. Since these measurements were inaccurate due to snow drifting, compaction and varying water equivalent, the Nipher snow gauge, which actually catches snow, has been employed at a number of stations (including Saskatoon SRC, Climatological Reference Station) in more recent years. The implementation of the automated recording system in August, 1992 has resulted in the inability to differentiate between rainfall and snowfall using the Belfort weighing gauge, therefore only total precipitation is measured.

13. A precipitation day is recorded on occasions when the amount of precipitation in a 24-hour period equals or exceeds 0.2 mm water (0.01 inch in English units). If both rain and snow occur on the same day, a snow day, a rain day and a precipitation day are all recorded. If only one form of precipitation occurs on a specified date, a precipitation day, a rain day or a snow day are recorded appropriately. Beginning in 1974, observations at Saskatoon SRC refer to the calendar day. Previous to 1974, 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. An asterisk (*) appearing in the normal column denotes the occurrence of measurable precipitation on one or more occasions, and that the calculated 30-year mean amounts to less than a trace.

14. Evaporation measurements are carried out in the period May 1 to October 31 (weather permitting) only, using the International Hydrological Decade class A pan. The data reported is the sum of the daily net evaporation. Particulars of the measurement procedure are contained in the Atmospheric Environment Service publication "Evaporation", May, 1978. The data base available for comparison is the Saskatoon SRC record for the period 1964 to 1990. The notation M refers to missing data.

15. The mean wind speed value reported is the mean of the hourly wind speeds for the period in question. Average hourly wind speeds are obtained from recording instruments. The anemometer employed is a propeller-type aerofoil at a height of 10 m.

16. 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 again with published data for Saskatoon Airport.

17. Total bright sunshine is the sum of the daily bright sunshine values in hours and tenths of hours as recorded by a Campbell-Stokes sunshine recorder. Atmospheric Environment

Service publication, "Bright Sunshine, 1951-1980", Volume 7 supplies information on measurement procedures.

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

19. Total global solar radiation is the sum of the daily values of short wave solar radiation recorded during the period in question (Tables 1 and 27). Measurements are carried out on a horizontal surface at the ground and integrated over the whole celestial dome, summing the diffuse and direct components of the solar beam. The measuring instrument is a temperature-compensated Eppley pyranometer. 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 normal based on sixteen years of data (1975-1990). Diffuse solar radiation is also recorded (Tables 1 and 26). The instrument used is an Eppley pyranometer with a shade ring.

20. The year/day entry appearing in Tables 2 to 13 refers to the year and day on which an extreme event occurred. Reference to the month appears in the table heading. For example, referring to Table 2, the warmest day in January, 1992 was the 28th with a high temperature of 3.0°C, while the warmest January day on record was January 30, 1931 with a high temperature of 10.0°C.

21. Due to missing observations, faulty instrument calibration, lost records, etc., only partial data are available especially during the period 1892 to 1915. The number of years of useful record is therefore cited.

22. Soil temperature, under a short grass surface with normal snow accumulation, is measured according to procedures outlined in the Atmospheric Environment Service publication "Soil Temperature", January 1, 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.

Table 1 **Annual Climatic Summary, Saskatoon SRC, 1992.**

	1992 Values	1991[1] Values	Normals[2] (1961-90) and Extremes[3] (1892-1992)
Mean Annual Temperature[4] (°C)	2.9	3.2	2.0
Mean Maximum Temperature[5] (°C)	8.5	8.9	7.8
Mean Minimum Temperature[6] (°C)	-2.6	-2.4	-3.8
Extreme Maximum Temperature[7] (°C)	33.5 (Aug.)	36.0 (Aug.)	41.0 (June, 1988)
Extreme Minimum Temperature[7] (°C)	-40.0 (Dec.)	-37.5 (Jan.)	-50.0 (Feb., 1893)
Days with Frost[8]	200	192	198
Heating Degree-Days[9] (18°C base)	5549	5562.5	5684
Growing Degree-Days[10] (5°C)	1367	1788.1	1660
Total Precipitation[11] (mm)	288.1	546.9	361.4
Total Rainfall[11] (mm)	b	437.8	250.7
Total Snowfall[12] (cm)	b	109.1	109.7
Greatest 24-hr Precipitation (mm)	27.6 (Aug.)	42.0 (June)	99.4 (June, 1983)
Greatest 24-hr Rainfall (mm)	27.6 (Aug.)	42.0 (June)	99.4 (June, 1983)
Greatest 24-hr Snowfall (cm)	b	14.6 (Oct.)	36.7 (Oct.)
Precipitation Days[13]	115	125	114
Rainfall Days[13]	b	73	62
Snowfall Days[13]	b	53	56
Total Evaporation[14] (mm)	709.4[c]	1021.9 (May-Sept.)	988.3 (May-Sept.)
Mean Wind Speed[15] (km/hr)	15.0 [c]	15.9	16.3
Peak Wind Gust[16] (km/hr)	89 (Dec.)	108 (May)	151 (Aug.)[a]
Total Bright Sunshine[17] (hr)	1965.7	2263.4	2399.3
Total Global Radiation[19] (MJ m^{-2})	4046.2	4266.1	4322.0
Total Diffuse Radiation[19] (MJ m^{-2})	1951.3	1761.0	1729.5

[a] = information from Saskatoon Airport
b = unavailable due to use of automated sensor
[c] = missing one month

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
JANUARY, 1992

Table 2

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	-10.1	-17.1	-17.6	
Monthly Mean Maximum Temperature[5] (°C)	-4.5	-11.6	-12.4	
Monthly Mean Minimum Temperature[6] (°C)	-15.7	-22.6	-22.7	
Extreme Maximum Temperature[7] (°C)	3.0	4.5	7.0	10.0
Year/Day(s)[20]	1992/28	1991/18&21	1986/11	1931/30
Years of Record[21]	1	1	27	94
Extreme Minimum Temperature[7] (°C)	-30.5	-37.5	-43.9	-48.9
Year/Day(s)[20]	1992/14&15	1991/8	1966/22&1969/29	1893/31
Years of Record[21]	1	1	27	94
Days with Frost[8]	31	31	31	
Heating Degree-Days[9] (18°C base)	889.5	1085.0	1043.0	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	19.3	7.1	20.8	
Total Rainfall[11] (mm)	0.2	0.0	0.4	
Total Snowfall[12] (cm)	19.1	7.1	20.0	
Greatest 24-hour Precipitation (mm)	4.9	1.8	15.4	30.5
Year/Day(s)[20]	1992/25	1991/25&26	1989/30	1893/23
Years of Record[21]	1	1	27	94
Greatest 24-hour Rainfall (mm)	0.2	0.0	2.4	2.4
Year/Day(s)[20]	1992/15	--	1989/30	1989/30
Years of Record[21]	1	1	27	94
Greatest 24-hour Snowfall (cm)	4.9	1.8	13.0	30.5
Year/Day(s)[20]	1992/25	1991/25&26	1989/30	1893/23
Years of Record[21]	1	1	27	94
Precipitation Days[13]	11	11	11	
Rainfall Days[13]	1	0	*	
Snowfall Days[13]	11	11	11	
Total Net Evaporation[14] (mm)	--	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	14.4	13.7	15.7	
Peak Gust Speed[16] (km/hr)	69.6	67.8	111.0	
Total Bright Sunshine[17] (hr)	72.6	115.4	104.9	
Percent Possible Bright Sunshine[18]	28	45	41	
Total Global Radiation[19] (MJ m^{-2})	115.4	129.1	129.9	
Total Diffuse Radiation[19] (MJ m^{-2})	89.5	73.8	71.4	
Mean Soil Temperature[22] (°C) (10,50 cm)	-3.1, 0.2	-11.1, -5.4	-8.3, -3.9	
Mean Soil Temperature[22] (°C) (150,300 cm)	3.7, 5.5	1.4, 4.5	1.8, 4.4	

* Denotes the occurrence of measurable precipitation on one or more occasions but the 30-year mean when calculated amounts to less than a trace.

SUMMARY:

January, 1992 was a warm, overcast month. The mean monthly temperature was 7.5°C above normal. Only two years in the last 30 years have had warmer Januaries, 1986 and 1987, with mean temperatures of -8.6°C and -9.3°C respectively. The month's warmth was emphasized by the fact that only 2 days had below normal mean temperatures. There were also 153.5 fewer heating degree-days than normal. January, 1992 did not fluctuate to extreme temperatures. The extreme maximum temperature was 4°C below the 30 year extreme and 7.0°C below the all year extreme, while the extreme minimum temperature was 13.4°C higher than the 30 year mean and 18.4°C higher than the all time extreme. Saskatoon CRS received 19.3 mm precipitation, 12.2 mm above last January's amount. The majority of the precipitation was snowfall, but it did rain (0.2 mm) on the 15th of the month. Saskatoon had an extremely cloudy January, recording only 28% of the total possible bright sunshine. The soil temperatures at all four levels were above normal. The 10 cm, the 50 cm and the 300 cm mean soil temperatures were the warmest in the last 30 years. The 150 cm mean soil depth temperature is lower than 1966 (4.3°C) and 1967 (5.6°C) values.

January, 1992 had the same monthly mean temperature as March 1989 and it was warmer than the 30 year monthly mean temperature for February (-13.8°C).

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
FEBRUARY, 1992

Table 3

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	-9.9	-6.7	-13.8	
Monthly Mean Maximum Temperature[5] (°C)	-5.9	-1.6	-9.0	
Monthly Mean Minimum Temperature[6] (°C)	-13.9	-11.7	-18.3	
Extreme Maximum Temperature[7] (°C)	7.5	7.5	7.5	12.8
Year/Day(s)[20]	1992/27	1991/6	1988/26	1931/19
Years of Record[21]	1	1	27	96
Extreme Minimum Temperature[7] (°C)	-29.5	-26.0	-41.1	-50.0
Year/Day(s)[20]	1992/11	1991/14	1972/6	1893/1
Years of Record[21]	1	1	27	96
Days with Frost[8]	27	25	28	
Heating Degree-Days[9] (18°C base)	806.5	679.0	878.0	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	15.8	15.6	14.5	
Total Rainfall[11] (mm)	0.0	0.0	0.2	
Total Snowfall[12] (cm)	15.8	15.6	14.3	
Greatest 24-hour Precipitation (mm)	10.6	3.0	14.2	20.3
Year/Day(s)[20]	1992/19	1991/12	1979/13	1918/7
Years of Record[21]	1	1	27	96
Greatest 24-hour Rainfall (mm)	0.0	0.0	1.8	8.1
Year/Day(s)[20]	--	--	1968/26	1953/3
Years of Record[21]	1	1	27	95
Greatest 24-hour Snowfall (cm)	10.6	3.0	14.2	20.3
Year/Day(s)[20]	1992/19	1991/12	1979/13	1918/7
Years of Record[21]	1	1	27	96
Precipitation Days[13]	8	10	10	
Rainfall Days[13]	0	0	*	
Snowfall Days[13]	8	10	9	
Total Net Evaporation[14] (mm)	-	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	15.0[a]	14.2	15.8	
Peak Gust Speed[16] (km/hr)	65[a]	69	106	
Total Bright Sunshine[17] (hr)	116.9	99.4	133.2	
Percent Possible Bright Sunshine[18]	42.7	36.3	48.6	
Total Global Radiation[19] (MJ m^{-2})	215.9	185.8	210.1	
Total Diffuse Radiation[19] (MJ m^{-2})	137.8	112.2	105.3	
Mean Soil Temperature[22] (°C) (10,50 cm)	-3.3, -0.5	-3.9, -1.7	-7.3, -4.1	
Mean Soil Temperature[22] (°C) (150,300 cm)	2.7, 4.6	1.0, 2.9	0.8, 3.2	

[a] 12 days missing data.

* denotes the occurrence of measurable precipitation on one or more occasions, and that the calculated 30 year mean amounts to less than a trace.

SUMMARY:

February, 1992 was a mild month with above normal snowfall. The mean temperature was 3.9°C above normal, but it was 3.2°C lower than last February. Saskatoon CRS equalled the 30 year extreme high of 7.5°C for daily temperatures. The mildness of the month was reflected in the lower than normal heating degree days. February had above normal precipitation - almost 9% more precipitation than normal. Most of the precipitation (10.6 cm snow) occurred on the 19th. The last time Saskatoon recorded more snowfall in February was in 1979 when 40.1 cm was recorded. Saskatoon did set new records this month with extremely high soil temperatures (at the 10, 50 and 300 cm depths). The surface soil temperatures rose above the freezing mark at the end of the month. Saskatoon experienced cloudier conditions than normal again this month.

This month's most memorable event was a full blown blizzard on the 19th. There was zero visibility, wind gusts up to the monthly maximum of 65 km/h and travel in most of Saskatchewan was definitely not recommended. Saskatoon also received its greatest 24-hour snowfall during the blizzard (10.6 cm).

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
MARCH, 1992

Table 4

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	-0.6	-5.4	-7.1	
Monthly Mean Maximum Temperature[5] (°C)	3.8	0.4	-2.2	
Monthly Mean Minimum Temperature[6] (°C)	-5.0	-11.1	-12.1	
Extreme Maximum Temperature[7] (°C)	14.5	16.5	15.0	22.8
Year/Day(s)[20]	1992/27	1991/31	1973/24&1981/16	1910/23
Years of Record[21]	1	1	27	96
Extreme Minimum Temperature[7] (°C)	-19.0	-32.5	-38.9	-43.3
Year/Day(s)[20]	1992/9	1991/1	1972/2	1897/14
Years of Record[21]	1	1	27	96
Days with Frost[8]	31	31	30	
Heating Degree-Days[9] (18°C base)	574.5	724.5	727.8	
Growing Degree-Days[10] (5°C base)	2.0	2.5	1.5	
Total Precipitation[11] (mm)	3.0	11.2	19.9	
Total Rainfall[11] (mm)	TR	5.4	1.5	
Total Snowfall[12] (cm)	3.0	5.8	18.8	
Greatest 24-hour Precipitation (mm)	1.4	5.4	32.0	32.0
Year/Day(s)[20]	1992/7	1991/21	1967/30	1967/30
Years of Record[21]	1	1	27	91
Greatest 24-hour Rainfall (mm)	TR	5.4	5.6	7.4
Year/Day(s)[20]	1992/6	1991/21	1968/3	1938/28
Years of Record[21]	1	1	27	96
Greatest 24-hour Snowfall (cm)	1.4	1.8	32.0	32.0
Year/Day(s)[20]	1992/7	1991/17	1967/30	1967/30
Years of Record[21]	1	1	27	91
Precipitation Days[13]	3	9	9	
Rainfall Days[13]	0	1	1	
Snowfall Days[13]	3	8	8	
Total Net Evaporation[14] (mm)	--	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	14.7	14.7	16.6	
Peak Gust Speed[16] (km/hr)	79.0	64.6	87	
Total Bright Sunshine[17] (hr)	194.2	182.2	176.9	
Percent Possible Bright Sunshine[18]	53.1	49.8	48.3	
Total Global Radiation[19] (MJ m^{-2})	383.7	383.6	362.4	
Total Diffuse Radiation[19] (MJ m^{-2})	170.8	155.4	173.9	
Mean Soil Temperature[22] (°C) (10,50 cm)	0.5, 1.4	-2.9,-1.0	-3.1, -1.8	
Mean Soil Temperature[22] (°C) (150,300 cm)	2.5, 3.8	1.1, 2.7	0.4, 2.4	

SUMMARY:

March, 1992 was warm and very dry. Twenty-eight days of the month had above normal temperatures resulting in a mean monthly temperature 6.5°C above normal. The mean monthly maximum and minimum were 6.0°C and 7.1°C respectively. March was not a month of extremes. The highest temperature was 8.3°C lower than the all time extreme, while the lowest temperature was 24.3°C higher. The warmth of the month was reflected in the low number of heating degree days (21% below normal). March, 1992 set a record by being the driest March in the last 30 years. Precipitation totals were below normal. For the year to March 31, Saskatoon's total precipitation is 31% below normal. Bright sunshine hours were 10% higher than normal. Global radiation was above normal and diffuse radiation was lower than normal. The soil temperatures were also setting records. The 10, 50 and 300 cm levels of soil temperatures are all higher than previously recorded for March in the last 30 years; the 150 cm level equalled the March, 1966 temperature.

This March did not have the "*in like a lion - out like a lamb*" cliche. The whole month was very much lamb-like. It makes you wonder what the rest of the year will be like.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
APRIL, 1992

Table 5

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	4.8	6.3	3.5	
Monthly Mean Maximum Temperature[5] (°C)	11.3	12.6	9.9	
Monthly Mean Minimum Temperature[6] (°C)	-1.8	-0.1	-2.0	
Extreme Maximum Temperature[7] (°C)	26.5	22.0	30.6	33.0
Year/Day(s)[20]	1992/27	1991/1	1977/26	1952/28
Years of Record[21]	1	1	27	95
Extreme Minimum Temperature[7] (°C)	-15.0	-4.5	-27.8	-28.3
Year/Day(s)[20]	1992/11	1991/18 & 22	1979/1	1893/5&1954/2
Years of Record[21]	1	1	27	95
Days with Frost[8]	21	14	20	
Heating Degree-Days[9] (18°C base)	400.0	357.5	388.0	
Growing Degree-Days[10] (5°C base)	78.0	55.5	60.2	
Total Precipitation[11] (mm)	12.0	55.8	20.2	
Total Rainfall[11] (mm)	1.8	55.8	10.4	
Total Snowfall[12] (cm)	10.2	T	9.2	
Greatest 24-hour Precipitation (mm)	7.8	23.8	24.6	30.2
Year/Day(s)[20]	1992/9	1991/26	1985/19	1955/19
Years of Record[21]	1	1	27	95
Greatest 24-hour Rainfall (mm)	1.5	23.8	24.6	26.7
Year/Day(s)[20]	1992/30	1991/26	1985/19	1926/23
Years of Record[21]	1	1	27	95
Greatest 24-hour Snowfall (cm)	7.8	T	18.5	20.3
Year/Day(s)[20]	1992/9	--	1983/10	1942/5
Years of Record[21]	1	1	27	95
Precipitation Days[13]	6	7	7	
Rainfall Days[13]	2	7	4	
Snowfall Days[13]	4	0	4	
Total Net Evaporation[14] (mm)	-	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	18.6	17.9	17.6	
Peak Gust Speed[16] (km/hr)	74.3	67	93	
Total Bright Sunshine[17] (hr)	220.0	200.3	231.3	
Percent Possible Bright Sunshine[18]	53	48	56	
Total Global Radiation[19] (MJ m^{-2})	478.0[a]	435.2	492.2	
Total Diffuse Radiation[19] (MJ m^{-2})	214.7[a]	167.7	178.5	
Mean Soil Temperature[22] (°C) (10,50 cm)	5.1, 4.9	5.9, 5.8	3.1, 2.5	
Mean Soil Temperature[22] (°C) (150,300 cm)	3.3, 3.6	3.1, 2.8	1.2, 2.2	

[a] = 2 days missing data

T = Trace amounts

SUMMARY:

April, 1992 was a warm, dry month. The mean monthly temperature was 1.3°C above normal. The maximum temperatures were more influential in boosting the average temperature upward than the minimum temperatures. However, a new daily extreme maximum record was set on April 2 with a temperature of 19.5°C; the previous daily record was 18°C. Fifteen days recorded above normal temperatures, while 11 days recorded below - when it was warm it was very warm, when it was cool it was very cool (for April). Only 21.5% of last year's precipitation amount and 59.5% of normal precipitation was recorded. This makes the total precipitation from January 1 to April 30 only 66.4% of normal. The warm soil conditions that were recorded all winter continued into April in the lower soil levels. The 150 and 300 cm depths were the warmest in the last 30 years. The 50 cm soil depth was the second warmest. April's mean wind speed was near normal. However, strong winds during April 26 to 30 resulted in blowing dust conditions.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
MAY, 1992

Table 6

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	10.6	11.9	11.5	
Monthly Mean Maximum Temperature[5] (°C)	17.4	18.6	18.5	
Monthly Mean Minimum Temperature[6] (°C)	3.8	5.2	4.5	
Extreme Maximum Temperature[7] (°C)	32.5	29.5	35.0	37.2
Year/Day(s)[20]	1992/5	1991/20	1988/30	1936/27
Years of Record[21]	1	1	27	95
Extreme Minimum Temperature[7] (°C)	-1.0	-6.0	-10.0	-19.8
Year/Day(s)[20]	1992/10	1991/2	1967/2	1907/6
Years of Record[21]	1	1	27	95
Days with Frost[8]	5	7	6	
Heating Degree-Days[9] (18°C base)	237.0	197.5	193.1	
Growing Degree-Days[10] (5°C base)	175.5	225.5	209.9	
Total Precipitation[11] (mm)	40.5	80.3	43.9	
Total Rainfall[11] (mm)	40.5	73.7	41.5	
Total Snowfall[12] (cm)	0.0	6.6	2.4	
Greatest 24-hour Precipitation (mm)	14.6	25.0	39.9	51.3
Year/Day(s)[20]	1992/11	1991/8 & 9	1985/4	1909/30
Years of Record[21]	1	1	27	95
Greatest 24-hour Rainfall (mm)	14.6	25.0	39.9	51.3
Year/Day(s)[20]	1992/11	1991/8 & 9	1985/4	1909/30
Years of Record[21]	1	1	27	95
Greatest 24-hour Snowfall (cm)	0.0	6.6	26.2	26.2
Year/Day(s)[20]	--	1991/1	1983/10	1983/10
Years of Record[21]	1	1	27	95
Precipitation Days[13]	11	10	9	
Rainfall Days[13]	11	9	9	
Snowfall Days[13]	0	1	1	
Total Net Evaporation[14] (mm)	183.2	189.7[a]	205.6	
Mean Wind Speed[15] (km/hr)	c	16.4	17.6	
Peak Gust Speed[16] (km/hr)	c	108	98	
Total Bright Sunshine[17] (hr)	244.0	276.4	284.6	
Percent Possible Bright Sunshine[18]	50	56	59	
Total Global Radiation[19] (MJ m^{-2})	551.5	549.3[b]	586.3	
Total Diffuse Radiation[19] (MJ m^{-2})	263.6	211.4[b]	222.2	
Mean Soil Temperature[22] (°C) (10,50 cm)	10.2, 9.8	10.6, 9.7	10.5, 8.9	
Mean Soil Temperature[22] (°C) (150,300 cm)	6.0, 4.6	5.8, 4.0	4.4, 3.1	

[a] = 2 days missing data
[b] = 3 days missing data
c = missing data due to equipment malfunction

SUMMARY:

May, 1992 had below normal temperatures with near normal precipitation. Nineteen days had below normal mean temperatures and only eleven were above normal. The last day of frost was on the 23rd with a temperature of 0°C. The month's coolness was reflected in the high number of heating degree days and low number of growing degree days (maybe that's why my garden isn't up yet!). Precipitation was 92% of normal. The greatest 24-hour precipitation fell on the eleventh (14.6 mm) and was considerably less than last year's extreme (25.0 mm). There were actually more precipitation days recorded this year than last - just not as much precipitation. The cloudiness and coolness of the month is reflected in the low evaporation amounts (11% below normal). The 10 cm soil level is slightly below normal, while the deeper levels of soil temperature are still well above normal.

Saskatoon is one of the dustiest places in the prairie provinces. A dust haze was observed on the 5th and 6th at 0900 hours. There was enough dust in the air to reduce the visibility to less than ten kilometres.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
JUNE, 1992

Table 7

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	15.1	16.8	15.9	
Monthly Mean Maximum Temperature[5] (°C)	21.8	22.2	22.6	
Monthly Mean Minimum Temperature[6] (°C)	8.3	11.4	9.2	
Extreme Maximum Temperature[7] (°C)	30.5	29.5	41.0	41.0
Year/Day(s)[20]	1992/9	1991/1	1988/5	1988/5
Years of Record[21]	1	1	27	96
Extreme Minimum Temperature[7] (°C)	1.5	3.5	-3.3	-3.9
Year/Day(s)[20]	1992/5	1991/20	1967/6	1903/9 & 1917/2
Years of Record[21]	1	1	27	96
Days with Frost[8]	0	0	0	
Heating Degree-Days[9] (18°C base)	107.0	56.0	77.9	
Growing Degree-Days[10] (5°C base)	299.5	350.0	338.8	
Total Precipitation[11] (mm)	21.5	160.1	63.6	
Total Rainfall[11] (mm)	21.5	160.1	63.6	
Total Snowfall[12] (cm)	0.0	0	0	
Greatest 24-hour Precipitation (mm)	6.2	42.0	99.4	99.4
Year/Day(s)[20]	1992/4	1991/3	1983/24	1983/24
Years of Record[21]	1	1	27	96
Greatest 24-hour Rainfall (mm)	6.2	42.0	99.4	99.4
Year/Day(s)[20]	1992/4	1991/3	1983/24	1983/24
Years of Record[21]	1	1	27	96
Greatest 24-hour Snowfall (cm)	0.0	0	0	1.8
Year/Day(s)[20]	--	--	--	1938/29
Years of Record[21]	--	--	27	96
Precipitation Days[13]	9	19	12	
Rainfall Days[13]	9	19	12	
Snowfall Days[13]	0	0	0	
Total Net Evaporation[14] (mm)	228.1	196.3	225.1	
Mean Wind Speed[15] (km/hr)	16.7	17.3	17.0	
Peak Gust Speed[16] (km/hr)	72.4	89.7	117	
Total Bright Sunshine[17] (hr)	253.6	221.2	299.3	
Percent Possible Bright Sunshine[18]	51	44	60	
Total Global Radiation[19] (MJ m^{-2})	586.6	538.7	638.7	
Total Diffuse Radiation[19] (MJ m^{-2})	279.0	248.6	228.1	
Mean Soil Temperature[22] (°C) (10,50 cm)	14.7, 13.3	15.9, 14.7	15.7, 14.0	
Mean Soil Temperature[22] (°C) (150,300 cm)	8.3, 6.0	9.5, 6.1	8.3, 5.3	

SUMMARY:

June, 992 was cool and dry - an extreme contrast to the warm and wet June 1991. The monthly mean temperature was 1.7°C below last year's value and 0.8°C below the normal for 1961-1990. Only 299.5 growing degree-days (GDD) were recorded. There were only three years in the previous thirty that had fewer GDD: 1969 (259.0), 1975 (298.5) and 1985 (236.5). Only 1969 and 1985 had higher heating degree days (129.0 and 156.5 respectively) than this June's (107.0). Very little precipitation fell this month - only 21.5 mm (34% of normal). The total amount for June was much less than the greatest 24-hour precipitation amount recorded last year. To demonstrate the contrast between June '91 and '92, June 1992 received only 13.4% of last year's amount and June '92 had 10 fewer precipitation days than '91. The January 1, 1992 to June 30, 1992 total precipitation is 112.1 mm - only 61.3% of normal.

Saskatoon did not have any frost in June, but there were areas in northeastern Saskatchewan, for example, that did record frost as late as June 19 (Crop and Weather Report, June 22, 1992a).

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 M msl
MONTHLY WEATHER SUMMARY FOR
JULY, 1992

Table 8

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	16.2[a]	18.1	18.4	
Monthly Mean Maximum Temperature[5] (°C)	22.2[a]	24.3	25.1	
Monthly Mean Minimum Temperature[6] (°C)	10.2[a]	11.9	11.6	
Extreme Maximum Temperature[7] (°C)	28.5[a]	29.0	38.5	40.0
Year/Day(s)[20]	1992/13 & 26	1991/13	1984/27	1919/17 & 1941/19
Years of Record[21]	1	1	27	96
Extreme Minimum Temperature[7] (°C)	5.5[a]	7.0	1.7	-0.6
Year/Day(s)[20]	1992/11	1991/24	1967/2	1918/25
Years of Record[21]	1	1	27	96
Days with Frost[8]	0	0	0	
Heating Degree-Days[9] (18°C base)	65.0[a]	30.0	28.7	
Growing Degree-Days[10] (5°C base)	308.5[a]	402.5	409.8	
Total Precipitation[11] (mm)	56.9[a]	58.2	55.8	
Total Rainfall[11] (mm)	56.9[a]	58.2	55.8	
Total Snowfall[12] (cm)	0.0[a]	0.0	0.0	
Greatest 24-hour Precipitation (mm)	17.6[a]	21.7	45.5	79.2
Year/Day(s)[20]	1992/15	1991/4	1968/29	1946/3
Years of Record[21]	1[a]	1	27	96
Greatest 24-hour Rainfall (mm)	17.6[a]	21.7	45.5	79.2
Year/Day(s)[20]	1992/15	1991/4	1968/29	1946/3
Years of Record[21]	1[a]	1	27	96
Greatest 24-hour Snowfall (cm)	0.0	0.0	0.0	0.0
Year/Day(s)[20]	--	--	--	--
Years of Record[21]	1[a]	1	27	96
Precipitation Days[13]	15[a]	11	12	
Rainfall Days[13]	15[a]	11	12	
Snowfall Days[13]	0	0	0	
Total Net Evaporation[14] (mm)	b	230.8	232.8	
Mean Wind Speed[15] (km/hr)	11.6	14.8	15.5	
Peak Gust Speed[16] (km/hr)	71.4	68.4	103.0	
Total Bright Sunshine[17] (hr)	224.7	359.9	333.1	
Percent Possible Bright Sunshine[18]	44.8	71.8	66.5	
Total Global Radiation[19] (MJ m^{-2})	529.3[a]	690.2	633.5	
Total Diffuse Radiation[19] (MJ m^{-2})	252.2[a]	200.0	216.5	
Mean Soil Temperature[22] (°C) (10,50 cm)	16.9, 16.4	18.1, 17.4	18.1, 16.8	
Mean Soil Temperature[22] (°C) (150,300 cm)	10.8, 8.2	12.1, 8.2	11.0, 7.5	

[a] = missing two days of data due to power outage.

[b] = unavailable at press time.

SUMMARY:

The mean temperatures for July, 1992 were below normal. The mean monthly temperature was 2.2°C below the 1961-1990 normal. The mean maximum temperature was 2.9°C below and the mean minimum temperature was 1.4°C below normal. The extreme maximum temperature reached was 28.5°C, while the extreme minimum was 5.5°C. There were only two days in the month (13th and 23rd) that recorded above normal daily mean temperatures. The high number of heating degree-days and low number of growing degree-days further illustrate the coolness of the month. Saskatoon received above normal precipitation this month. The only other month this year (since January, 1992) that has received above normal precipitation is February. Saskatoon has now received 169.0 mm of precipitation - only 70.7% of normal. The peak wind speed was 71.4 km/hr. The amount of bright sunshine was 108.4 hours less than normal. The high diffuse and low global radiation values further illustrate the high amount of cloud cover.

July, 1992 was a cool month. The temperature at grass level (approximately 3 cm above the ground) went below zero on the 11th, 12th and 20th.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
AUGUST, 1992

Table 9

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	15.3[b]	20.6	17.2	
Monthly Mean Maximum Temperature[5] (°C)	22.7[b]	27.8	24.3	
Monthly Mean Minimum Temperature[6] (°C)	7.9[b]	13.4	10.1	
Extreme Maximum Temperature[7] (°C)	33.5[b]	36.0	37.0	37.8
Year/Day(s)[20]	1992/14	1991/31	1984/10	1893/6 & 1949/6
Years of Record[21]	1	1	27	95
Extreme Minimum Temperature[7] (°C)	1.5[b]	8.0	-2.8	-2.8
Year/Day(s)[20]	1992/25	1991/26 & 27	1976/28	1976/28
Years of Record[21]	1	1	27	95
Days with Frost[8]	0	0	0	
Heating Degree-Days[9] (18°C base)	102.0[b]	11.5	63.3	
Growing Degree-Days[10] (5°C base)	284.0[b]	486.0	378.3	
Total Precipitation[11] (mm)	37.2	33.3	35.2	
Total Rainfall[11] (mm)	37.2	33.3	35.2	
Total Snowfall[12] (cm)	0.0	0.0	0.0	
Greatest 24-hour Precipitation (mm)	27.6	17.7	27.9	73.7
Year/Day(s)[20]	1992/28	1991/13	1989/25	1945/3
Years of Record[21]	1	1	27	95
Greatest 24-hour Rainfall (mm)	27.6	17.7	27.9	73.7
Year/Day(s)[20]	1992/28	1991/13	1989/25	1945/3
Years of Record[21]	1	1	27	95
Greatest 24-hour Snowfall (cm)	0.0	0.0	0.0	0.0
Year/Day(s)[20]	--	--	--	--
Years of Record[21]	1	1	27	95
Precipitation Days[13]	9	8	9	
Rainfall Days[13]	9	8	9	
Snowfall Days[13]	0	0	0	
Total Net Evaporation[14] (mm)	194.0	255.9	206.6	
Mean Wind Speed[15] (km/hr)	14.3[b]	14.9[a]	15.5	
Peak Gust Speed[16] (km/hr)	68	69	105	
Total Bright Sunshine[17] (hr)	225.7[b]	320.6	294.8	
Percent Possible Bright Sunshine[18]	49.8	71	65	
Total Global Radiation[19] (MJ m^{-2})	451.6	550.6[a]	529.0	
Total Diffuse Radiation[19] (MJ m^{-2})	191.0	187.2[a]	185.6	
Mean Soil Temperature[22] (°C) (10,50 cm)	15.6[a], 19.2[a]	18.3, 18.1	16.7, 16.8	
Mean Soil Temperature[22] (°C) (150,300 cm)	12.2[a], 9.6[a]	13.5, 10.0	12.4, 9.3	

[a] - 1 day missing data [b] - 3 days missing data

SUMMARY:

August, 1992 was a cool wet month. The mean monthly temperature was 1.9°C below normal. The monthly mean maximum was 5.1°C below last year's value and the monthly mean minimum was 5.5°C lower. August did have a few days of hot weather. The 13, 14 and 15th all recorded temperatures above 30°C. The number of heating and growing degree-days further illustrate the coolness of the month. The number of growing degree days were 75% of normal, while the heating degree-days were 161% of normal. Saskatoon CRS received 2 mm more precipitation than the 1961-1990 normal. The station received 27.6 mm on the 28th of August - almost equalling the 1961-1990 extreme value. The evaporation amount was 12.6 mm less than normal and 61.9 mm less than 1991. The total bright sunshine amount was well below normal.

It was so cool on the prairies in August that snow was recorded in much of Alberta and parts of Saskatchewan on the 22nd. One almost thought it was October instead of August.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 M msl
MONTHLY WEATHER SUMMARY FOR
SEPTEMBER, 1992

Table 10

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	10.0	11.9	11.3	
Monthly Mean Maximum Temperature[5] (°C)	16.1	18.8	17.7	
Monthly Mean Minimum Temperature[6] (°C)	3.8	4.9	4.8	
Extreme Maximum Temperature[7] (°C)	31.5	33.0	35.6	35.6
Year/Day(s)[20]	1992/30	1991/1	1978/4	1978/4
Years of Record[21]	1	1	27	93
Extreme Minimum Temperature[7] (°C)	-3.0	-3.0	-7.8	-11.1
Year/Day(s)[20]	1992/16 & 18	1991/27	1978/30	1908/28
Years of Record[21]	1	1	27	93
Days with Frost[8]	6	3	4	
Heating Degree-Days[9] (18°C base)	237.0	204.5	199.6	
Growing Degree-Days[10] (5°C base)	148.0	199.6	196.2	
Total Precipitation[11] (mm)	37.8	20.4	32.8	
Total Rainfall[11] (mm)	37.8	20.4	31.1	
Total Snowfall[12] (cm)	0.0	0.0	1.8	
Greatest 24-hour Precipitation (mm)	19.2	8.6	29.6	44.2
Year/Day(s)[20]	1992/4	1991/29	1980/3	1931/12
Years of Record[21]	1	1	27	93
Greatest 24-hour Rainfall (mm)	19.2	8.6	29.6	44.2
Year/Day(s)[20]	1992/4	1991/29	1980/3	1931/12
Years of Record[21]	1	1	27	93
Greatest 24-hour Snowfall (cm)	0.0	0.0	17.6	17.6
Year/Day(s)[20]	--	--	1982/28	1982/28
Years of Record[21]	1	1	27	93
Precipitation Days[13]	12	10	9	
Rainfall Days[13]	12	10	9	
Snowfall Days[13]	0	0	0	
Total Net Evaporation[14] (mm)	104.1	149.2	125.8	
Mean Wind Speed[15] (km/hr)	16.3	16.5	16.7	
Peak Gust Speed[16] (km/hr)	77.3	85	89	
Total Bright Sunshine[17] (hr)	148.7	186.2	188.9	
Percent Possible Bright Sunshine[18]	39	49	50	
Total Global Radiation[19] (MJ m^{-2})	a	354.3	351.8	
Total Diffuse Radiation[19] (MJ m^{-2})	a	135.8	127.6	
Mean Soil Temperature[22] (°C) (10,50 cm)	9.3, 12.4	12.1, 14.8	11.2, 13.3	
Mean Soil Temperature[22] (°C) (150,300 cm)	11.0, 9.9	13.0, 10.8	11.9, 9.9	

a = unavailable at press time

SUMMARY:

September, 1992 was cool and wet - not very conducive for harvesting crops. The mean monthly temperature was 1.3°C below normal, while the mean maximum and mean minimum temperatures were 1.6°C and 1.0°C below normal respectively. The extreme maximum of the month occurred on the 30th, but it was 4.1°C below the 1961-1990 extreme. The extreme minimum was the same as last year's, and it did not get as cold as the -11.1°C that occurred in 1908. The higher than normal number of heating degree-days probably made a few furnaces around Saskatoon start. The low number of growing degree-days did not help the crops and gardens (*e.g.* corn, tomatoes) ripen too readily. Above normal rainfall was recorded. The greatest 24-hour rainfall event was on the fourth when 19.2 mm was recorded. The mean wind speed was near normal, while the peak gust was well below normal. The amount of sunshine recorded this month has continued to be below normal. The 10, 50 and 150 cm soil temperature levels were below normal by 1.9, 0.9 and 0.9°C respectively.

This cool fall in Saskatchewan has led to only 45% of all crops being harvested as of September 28, 1992 (Crop and Weather Report 1992b). Hopefully the warmth of the last day of the month will continue and allow the harvest to finish.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
OCTOBER, 1992

Table 11

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	4.5	1.1	4.8	
Monthly Mean Maximum Temperature[5] (°C)	9.8	6.1	10.9	
Monthly Mean Minimum Temperature[6] (°C)	-0.9	-4.0	-1.3	
Extreme Maximum Temperature[7] (°C)	28.0	24.0	28.5	32.2
Year/Day(s)[20]	1992/1	1991/11	1984/8	1943/5
Years of Record[21]	1	1	27	93
Extreme Minimum Temperature[7] (°C)	-12.5	-21.5	-19.5	-25.6
Year/Day(s)[20]	1992/18	1991/29 & 30	1984/30 & 31	1919/26
Years of Record[21]	1	1	27	93
Days with Frost[8]	20	22	19	
Heating Degree-Days[9] (18°C base)	414.0	528.0	405.2	
Growing Degree-Days[10] (5°C base)	71.5	66.5	62.2	
Total Precipitation[11] (mm)	13.6[c]	64.3	18.0	
Total Rainfall[11] (mm)	13.6[c]	30.9	7.9	
Total Snowfall[12] (cm)	a	33.4	9.6	
Greatest 24-hour Precipitation (mm)	5.8[c]	27.6	36.7	36.7
Year/Day(s)[20]	1992/4	1991/21	1984/16	1984/16
Years of Record[21]	1	1	27	93
Greatest 24-hour Rainfall (mm)	5.8	13.0	23.1	34.0
Year/Day(s)[20]	1992/4	1991/21	1969/2	1914/5
Years of Record[21]	1	1	27	93
Greatest 24-hour Snowfall (cm)	a	14.6	36.7	36.7
Year/Day(s)[20]	--	1991/21	1984/16	1984/16
Years of Record[21]	1	1	27	93
Precipitation Days[13]	9[c]	14	6	
Rainfall Days[13]	9	8	4	
Snowfall Days[13]	a	7	3	
Total Net Evaporation[14] (mm)	--	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	14.8	18.1	17.1	
Peak Gust Speed[16] (km/hr)	73	80	96	
Total Bright Sunshine[17] (hr)	149.1	127.7	166.4	
Percent Possible Bright Sunshine[18]	45	39	51	
Total Global Radiation[19] (MJ m^{-2})	b	226.4	239.1	
Total Diffuse Radiation[19] (MJ m^{-2})	b	122.5	92.6	
Mean Soil Temperature[22] (°C) (10,50 cm)	4.7, 8.9	5.1, 9.4	4.5, 8.1	
Mean Soil Temperature[22] (°C) (150,300 cm)	9.4, 9.4	10.8, 10.2	9.7, 9.5	

a = unavailable
b = unavailable at press time
c = estimate from the tipping bucket

SUMMARY:

October, 1992 had below normal precipitation and a near normal mean temperature. The mean temperature was 0.3°C below normal but was 3.4°C above last year's value. The extreme maximum was only 0.5°C below the 1961-1990 extreme. October 10th to the 20th had minimum temperatures that were below freezing. The number of heating degree-days was lower than last year's, and the growing degree-days were higher. Saskatoon did receive some snow in October - there was enough snow on the 13th and 14th to cover the ground. Unfortunately, due to instrumentation problems, the exact amount is unavailable. (Total October monthly precipitation at this site was 16.2 mm as recorded by Environment Canada). The greatest 24-hour rainfall was only 25% of the 1961-90 value. The total amount of bright sunshine recorded was below normal for the sixth consecutive month. The 10 and 50 cm soil temperatures were above normal, while the 150 and 300 cm soil temperatures were below normal.

At Halloween, we were reminded of the cool growing season by the lack of carved pumpkins. Only 1365.5 growing degree-days were recorded in 1992. This is the lowest number of growing degree-days since 1968 - the start of the record of growing degree-days at this Climate Reference Station.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
NOVEMBER, 1992

Table 12

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	-2.2	-8.0	-6.1	
Monthly Mean Maximum Temperature[5] (°C)	0.6	-4.0	-1.5	
Monthly Mean Minimum Temperature[6] (°C)	-5.0	-12.0	-10.5	
Extreme Maximum Temperature[7] (°C)	5.0	7.0	19.4	21.7
Year/Day(s)[20]	1992/6	1991/12	1975/4	1903/3
Years of Record[21]	1	1	28	94
Extreme Minimum Temperature[7] (°C)	-13.0	-25.0	-33.5	-39.4
Year/Day(s)[20]	1992/25	1991/6	1985/24	1893/30
Years of Record[21]	1	1	28	94
Days with Frost[8]	28	28	29	
Heating Degree-Days[9] (18°C base)	603.0	787.0	692	
Growing Degree-Days[10] (5°C base)	0.0	0.0	2.8	
Total Precipitation[11] (mm)	14.5	20.7	14.9	
Total Rainfall[11] (mm)	a	0.0	2.2	
Total Snowfall[12] (cm)	a	20.7	13.2	
Greatest 24-hour Precipitation (mm)	7.6	11.6	19.3	27.9
Year/Day(s)[20]	1992/22	1991/25	1978/4	1938/1
Years of Record[21]	1	1	28	94
Greatest 24-hour Rainfall (mm)	a	0.0	14.5	14.5
Year/Day(s)[20]	-	-	1978/4	1978/4
Years of Record[21]	1	1	28	94
Greatest 24-hour Snowfall (cm)	a	11.6	17.5	27.9
Year/Day(s)[20]	-	1991/25	1982/6	1938/1
Years of Record[21]	1	1	28	94
Precipitation Days[13]	12	6	8	
Rainfall Days[13]	a	0	1	
Snowfall Days[13]	a	6	7	
Total Net Evaporation[14] (mm)	-	-	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	14.6	16.6	15.3	
Peak Gust Speed[16] (km/hr)	69.7	70.9	100.0	
Total Bright Sunshine[17] (hr)	45.1	80.1	101.8	
Percent Possible Bright Sunshine[18]	17	30	39	
Total Global Radiation[19] (MJ m^{-2})	b	129.6	123.7	
Total Diffuse Radiation[19] (MJ m^{-2})	b	84.3	73.6	
Mean Soil Temperature[22] (°C) (10,50 cm)	0.6, 4.8	-1.0, 3.6	-1.7, 2.6	
Mean Soil Temperature[22] (°C) (150,300 cm)	6.9, 7.8	7.3, 8.8	6.8, 8.1	

a = unavailable
b = unavailable at printing time

SUMMARY:

November, 1992 was a very warm and cloudy month. The monthly mean temperature was 3.9°C above normal and 6.6°C above last year's value. The extreme maximum temperature was 14.4°C below the 1961-1990 extreme, while the extreme minimum temperature was 20.5°C higher. The warmth of the month was further exhibited by the low number of heating degree-days. The precipitation was only 0.4 mm below normal with the greatest amount occurring on the 22nd. Saskatoon is now 19.9% below normal for total precipitation for the period January 1 to November 30, 1992. There was very little sunshine in November - 56.1 hours less than normal. Saskatoon has now recorded seven consecutive months with below normal sunshine. The soil temperatures, like the air temperatures, were above normal for all levels except the 300 cm level. It was a calm month with the maximum wind speed 30 km/hr less than the extreme.

The month was so cloudy that for 18 days no sunshine was recorded. The extended period with no sunshine was between the 13th and the 22nd. No wonder there seemed to be more sick people than normal.

SASKATOON
SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'n 106° 36'w 497 m MSL
MONTHLY WEATHER SUMMARY FOR
DECEMBER, 1992

Table 13

Element	1992 Value	1991 Value	Mean or Extreme Value 1961 - 1990	Extreme All Years
Monthly Mean Temperature[4] (°C)	-18.0	-11.0	-14.8	
Monthly Mean Maximum Temperature[5] (°C)	-13.7	-6.7	-9.8	
Monthly Mean Minimum Temperature[6] (°C)	-22.3	-15.2	-19.3	
Extreme Maximum Temperature[7] (°C)	1.0	4.5	9.5	13.3
Year/Day(s)[20]	1992/1	1991/21	1987/7	1939/5
Years of Record[21]	1	1	28	94
Extreme Minimum Temperature[7] (°C)	-40.0	-39.0	-42.2	-43.9
Year/Day(s)[20]	1992/31	1991/3	1973/31	1892/22
Years of Record[21]	1	1	28	94
Days with Frost[8]	31	31	31	
Heating Degree-Days[9] (18°C base)	1113.5	902.0	987.7	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	16.0	19.9	20.6	
Total Rainfall[11] (mm)	a	0.0	0.9	
Total Snowfall[12] (cm)	a	19.9	20.5	
Greatest 24-hour Precipitation (mm)	4.5	5.56	14.5	20.6
Year/Day(s)[20]	1992/1	1991/4&5	1973/23	1936/24
Years of Record[21]	1	1	28	93
Greatest 24-hour Rainfall (mm)	a	0.0	8.0	8.0
Year/Day(s)[20]	--	--	1989/3	1989/3
Years of Record[21]	1	1	28	94
Greatest 24-hour Snowfall (cm)	a	5.5	14.5	20.6
Year/Day(s)[20]	--	1991/4&5	1973/23	1936/24
Years of Record[21]	1	1	28	93
Precipitation Days[13]	10	10	13	
Rainfall Days[13]	a	0	1	
Snowfall Days[13]	a	10	12	
Total Net Evaporation[14] (mm)	--	--	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	13.8	16	15.7	
Peak Gust Speed[16] (km/hr)	89.4	66.5	97.0	
Total Bright Sunshine[17] (hr)	71.1	94.0	84.2	
Percent Possible Bright Sunshine[18]	29.7	39.0	35	
Total Global Radiation[19] (MJ m^{-2})	b	93.3	95.2	
Total Diffuse Radiation[19] (MJ m^{-2})	b	62.1	54.3	
Mean Soil Temperature[22] (°C) (10,50 cm)	-3.5, 2.0	-3.9, 0.4	-6.6, -1.7	
Mean Soil Temperature[22] (°C) (150,300 cm)	4.9, 6.7	5.1, 7.0	3.9, 6.3	

a = unavailable
b = unavailable at printing time

SUMMARY:

December, 1992 was a complete contrast to December 1991. December 1992 was cold. The mean monthly temperature was 3.2°C below normal and 7°C below last year's value. The extreme temperatures were on the first (1.0°C) and last (40.0°C) days. While -40.0°C was cold, it was still 3.9°C warmer than the all time extreme and 2.2°C warmer than the 30 year extreme. The coldness of the month was exemplified by the high number of heating degree days - 125.8 above normal. Saskatoon had normal precipitation amounts (4.6 mm less than the 1961-1990 normal). December continued the below normal cloudiness trend resulting in eight consecutive months with below normal sunshine amounts.

People will remember December, 1992 for the severe storm that struck the province on Christmas Eve. Saskatoon's temperature dropped from a -4.0°C to -22°C; also 1.4 mm of precipitation and peak wind speeds of 89.4 km/hr were recorded.

Unfortunately, this is the last monthly weather summary. It has been a pleasure compiling it for you. I hope it has been of use and of interest to all of you.

Table 14 Soil Temperature and Snow Cover at Saskatoon SRC, January 1992*.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	-3.4	3.0	31	1	18
10	-3.1	2.5	31	5	17
20	-1.9	3.0	31	10	19
50	0.2	1.5	13	15	22
100	2.3	1.0	0	20	22
150	3.7	1.5	0	25	23
300	5.5	1.0	0	31	24

Table 15 Soil Temperature and Snow Cover at Saskatoon SRC, February 1992*

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	-3.6	4.5	28	1	25
10	-3.3	4.5	28	5	23
20	-2.2	3.5	28	10	23
50	-0.5	1.0	28	15	24
100	1.3	0.5	0	20	23
150	2.7	1.0	0	25	24
300	4.6	1.0	0	28	8

Table 16 Soil Temperature and Snow Cover at Saskatoon SRC, March 1992*

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	0.0	5.0	25	1	6.5
10	0.5	3.5	15	5	0
20	1.5	4.0	0	10	2
50	1.4	2.5	1	15	0
100	1.5	0.5	0	20	1
150	2.5	0.0	0	25	0
300	3.8	0.5	0	31	0

* at 0900 h

Table 17 Soil Temperature and Snow Cover at Saskatoon SRC, April 1992*.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	4.2	10.5	0	1	0
10	5.1	10.0	0	5	0
20	6.2	9.5	0	10	7
50	4.9	6.5	0	15	0
100	3.3	3.0	0	20	0
150	3.3	2.0	0	25	0
300	3.6	0.5	0	30	0

Table 18 Soil Temperature and Snow Cover at Saskatoon SRC, May 1992*

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	9.5	7.0	0	1	0
10	10.2	7.0	0	5	0
20	11.6	5.5	0	10	0
50	9.8	3.0	0	15	0
100	7.0	2.5	0	20	0
150	6.0	2.5	0	25	0
300	4.6	1.5	0	31	0

Table 19 Soil Temperature and Snow Cover at Saskatoon SRC, June 1992*

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	14.3	10.0	0	1	0
10	14.7	9.5	0	5	0
20	16.1	9.0	0	10	0
50	13.3	5.0	0	15	0
100	9.7	2.5	0	20	0
150	8.3	2.5	0	25	0
300	6.0	1.0	0	30	0

* at 0900 h

Table 20 **Soil Temperature and Snow Cover at Saskatoon SRC, July 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	16.8	6.0	0
10	16.9	6.5	0
20	18.1	4.5	0
50	16.4	2.0	0
100	11.9	2.0	0
150	10.8	1.5	0
300	8.2	1.5	0

Table 21 **Soil Temperature and Snow Cover at Saskatoon SRC, August 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	15.6	10.5	0
10	16.3	10.5	0
20	17.1	8.0	0
50	19.2	4.0	0
100	13.1	1.5	0
150	12.2	1.0	0
300	9.6	1.5	0

Table 22 **Soil Temperature and Snow Cover at Saskatoon SRC, September 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	8.9	7.0	0
10	9.3	7.0	0
20	10.8	5.5	0
50	12.4	4.0	0
100	10.4	2.0	0
150	11.0	2.0	0
300	9.9	0.5	0

* at 0900 h

Table 23 **Soil Temperature and Snow Cover at Saskatoon SRC, October 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	4.3	13.0	2
10	4.7	12.5	1
20	6.2	11.0	0
50	8.9	7.0	0
100	8.4	3.5	0
150	9.4	2.5	0
300	9.4	0.5	0

Table 24 **Soil Temperature and Snow Cover at Saskatoon SRC, November 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	0.6	4.0	30
10	0.6	4.0	23
20	1.7	3.0	10
50	4.8	2.5	0
100	5.3	2.0	0
150	6.9	2.0	0
300	7.8	1.0	0

Table 25 **Soil Temperature and Snow Cover at Saskatoon SRC, December 1992*.**

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days
5	-3.5	7.0	31
10	-3.5	7.0	31
20	-2.0	6.5	26
50	2.0	4.0	6
100	3.1	2.5	0
150	4.9	2.5	0
300	6.7	1.5	0

* at 0900 h

Table 26 Diffuse Solar Radiation (MJm^{-2}) at Saskatoon SRC, 1992.

DAY	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	2.0	2.9	5.6	7.3	8.4	14.3	11.9	M	6.9	2.9	2.1	2.2
2	2.6	4.0	5.6	4.8	10.8	9.8	13.1	M	5.3	2.9	1.1	2.1
3	3.9	3.9	4.5	6.3	7.7	10.1	11.1	M	7.4	3.1	2.7	2.5
4	2.9	4.7	6.8	6.8	9.0	8.0	9.5	6.3	2.0	3.9	2.1	1.8
5	1.9	3.8	3.6	8.1	8.5	9.6	11.2	8.4	2.3	3.4	2.0	1.5
6	1.7	5.1	2.8	6.5	7.6	7.7[a]	9.3	8.1	5.9	4.7	2.9	1.9
7	3.0	6.4	4.1	9.3	8.5	6.0	8.5	6.5	6.7	4.4	2.3	1.8
8	2.2	4.3	5.5	8.2	5.3	6.3	8.5	7.1	6.4	3.7	1.6	2.2
9	2.7	4.4	5.2	8.7	4.4[a]	10.3	10.2	6.8	5.9	3.3	1.1	2.0
10	2.9	4.0	8.2	7.6	11.4	7.8	11.1	6.7	3.0	3.3	2.3	1.9
11	1.2	5.0	5.5	6.8	4.0	9.6	6.0	10.3	3.6	3.3	2.6	2.0
12	2.1	4.8	4.5	7.8	12.5	8.7	7.4	8.5	4.8	4.3	2.3	1.6
13	2.4[a]	5.3	4.2	M	10.3	7.9	11.2	4.3	6.7	2.7	1.7	1.4
14	2.4	4.8	4.0	M	9.6	12.1	8.8	7.7	3.9	4.5	1.7	1.9
15	2.8	5.2[a]	4.8	6.8	7.3	6.9	4.8	5.7	6.9	3.8	2.3	1.1
16	2.6	4.1	7.9	6.7	7.6	8.0	8.7	6.0	5.0	3.8	1.2	2.0
17	3.2	3.9[a]	9.0	8.9	6.7	8.5	7.4	4.9	5.4	3.1	1.2	1.5
18	3.2	4.8	5.2	6.4	8.8	7.3	10.4	6.7	7.2	3.3	1.3	2.0
19	3.1	2.9	6.5	6.5	7.1	12.2	9.6	6.9	5.3	2.2	1.9	2.0
20	3.5	5.9	4.8[a]	5.9	4.6[a]	9.8	9.8	5.4	5.5	4.2	1.4	1.9
21	3.5	4.6	6.3	9.5	7.4[a]	8.6	6.5	8.5	3.1	3.1	1.0	0.0
22	3.1	7.7	4.6	5.6	12.3	7.9	7.7	5.4[a]	4.2	2.7	1.0	2.0
23	2.9	4.8	5.6	8.2	11.4	12.9	7.3	7.6	4.0	2.1	2.2	2.0
24	2.9	7.1	6.4	8.6	12.0	8.4	6.5	10.7	9.4	2.8	2.1	2.0
25	3.7	5.7	5.1	5.8	8.9	14.7	4.4	7.1	5.1	2.1	1.9	2.1
26	3.0	5.0	5.5	7.5	6.7	10.2	6.8	7.2	3.3	4.0	1.8	2.0
27	3.1	4.6	6.6	9.8	7.0	6.9	7.1	M	4.0	3.2	1.6	2.2
28	3.1	3.2	6.6	10.4	11.3	10.2	9.5	5.7	4.0	1.3	1.3	1.9
29	3.4	4.9	5.0	11.3	8.8	8.1	7.9	7.6	3.5	3.2	2.0	1.5
30	4.4		4.7	8.6	10.3	10.2	M	8.0	2.9	.6*	1.9	2.2
31	4.1		6.1		7.8		M			.9		2.0
TOTAL	89.5	137.8	170.8	214.7	263.6	279.0	252.2	191.0	145.1	96.9	53.6	57.1

M = missing data
* = missing from 0800h to 1400h
a = possible instrumentation problem

Table 27 Global Solar Radiation (MJm^{-2}) at Saskatoon SRC, 1992.

DAY	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	2.4	6.1	11.0	15.9	16.4	19.4	13.0	M	9.7	12.2	2.3	3.2
2	3.1	6.7	10.3	18.1	19.7	21.1	21.9	M	7.9	12.1	1.2	3.8
3	4.1	4.2	11.0	17.1	23.8	12.9	16.5	M	13.6	12.2	5.2	3.2
4	2.9	8.0	9.5	17.0	20.7	8.2	19.9	22.6	2.3	4.5	2.2	3.9
5	1.9	7.1	3.8	9.3	23.7	9.6	13.5	19.3	2.6	11.9	2.1	4.0
6	1.9	5.4	2.9	6.9	23.3	7.7	14.5	21.4	9.6	9.2	3.6	4.4
7	3.0	8.0	5.3	16.7	11.6	28.4	25.1	21.2	14.9	10.5	3.0	4.0
8	2.2	6.8	13.7	16.4	5.4	24.8	12.6	18.7	8.0	8.7	1.7	3.3
9	4.4	5.6	15.1	15.7	4.4	25.5	13.6	12.9	7.1	11.1	1.2	3.4
10	3.6	7.6	10.7	20.4	13.1	23.0	15.6	22.1	17.5	10.3	5.2	3.9
11	1.2	5.4	13.2	21.6	4.1	14.0	26.5	18.6	16.7	10.2	4.1	3.0
12	2.2	5.7	13.3	19.9	18.8	10.0	23.0	22.9	7.1	7.8	5.5	1.8
13	2.4	6.7	14.4	M	22.1	8.2	20.8	22.5	9.5	3.1	1.9	1.6
14	4.8	6.3	14.7	M	17.0	21.5	19.0	18.7	17.2	6.9	1.8	3.1
15	3.1	5.2	13.8	19.1	10.9	27.0	5.0	21.1	8.0	9.1	2.7	1.2
16	4.4	4.2	11.2	16.2	18.8	26.5	22.6	10.2	13.5	5.7	1.3	4.3
17	3.2	3.9	12.0	12.3	26.4	19.3	21.7	21.5	9.8	9.8	1.3	1.6
18	3.8	9.6	14.9	9.3	23.0	7.5	15.2	20.1	9.3	7.9	1.3	2.9
19	3.1	3.0	6.8	6.9	22.1	17.1	16.6	16.1	12.5	2.3	1.0	4.6
20	4.5	9.5	4.8	22.2	4.6	15.8	19.3	21.5	10.0	5.0	1.5	2.2
21	4.6	9.5	14.2	19.0	7.4	25.2	22.9	12.7	15.1	9.0	1.1	2.5
22	3.9	7.7	15.9	22.2	14.4	25.9	24.5	5.4	13.2	7.2	1.0	4.2
23	4.7	10.6	15.7	8.6	17.8	22.4	21.1	10.1	12.6	8.6	2.4	4.4
24	2.9	9.0	15.2	18.2	21.5	26.9	7.2	12.8	9.6	7.0	2.5	3.2
25	3.9	9.6	17.2	23.0	24.7	19.0	25.4	17.6	7.5	8.5	5.1	2.6
26	5.5	10.6	16.7	20.7	27.1	24.3	19.3	11.2	13.7	5.7	4.6	2.1
27	5.2	11.2	14.8	19.9	25.5	27.3	21.3	M	12.6	4.3	4.7	3.0
28	4.8	11.4	9.0	18.7	21.0	18.5	19.2	9.7	12.6	1.4	1.4	2.0
29	6.6	11.3	18.3	16.8	25.4	24.7	12.5	8.4	12.7	4.6	5.1	1.7
30	4.7		18.1	19.9	10.9	24.9	M	15.0	13.3	.6*	2.1	3.4
31	6.4		16.3		25.9		M	17.3		1.0		2.8
TOTAL	115.4	215.9	383.7	478.0	551.5	586.6	529.3	451.6	329.9	228.6	80.4	95.3

M = missing data
* = missing from 0800h to 1400h

Table 28 Some Significant Climatic Events, 1992.

FROST FREE SEASON

Last Spring Frost	First Fall Frost	Length of Season
1992 May 23	September 14	114
1991 May 27	September 18	113
Normal May 19 (1961-1990)	September 15	119

SNOW SEASON

Greatest Depth of Snow on Ground (cm)

	Jan.	Feb.	Mar.	Apr.	Oct.[2]	Nov.[2]	Dec.[2]
1992	24	8	0	0			
1991	14	13	12	0			

	Cessation[1] of Snow Pack	Last Spring Snowfall
1992	March 10	April 18
1991	March 19	May 1

WEATHER "SPELLS"[3,4,5,6]

	1992		1991	
Longest Cool Spell	15 days	June 28 - July 12	18 days	Oct 21 - Nov 7
Longest Cold Spell	5 days	Dec 27 - Dec 31	5 days	Jan 5 - Jan 9
Longest Warm Spell	19 days	Jan 19 - Feb 6 Mar 18 - Apr 5 Nov 6 - Nov 24	18 days	Mar 27 - Apr 13
Longest Hot Spell	3 days	Aug 13 - Aug 15	6 days	Aug 8 - Aug 13
Longest Dry Spell	16 days	Jan 26 - Feb 10	16 days	Dec 14 - Dec 29
Longest Wet Spell	7 days	Nov 25 - Dec 1	6 days	June 2 - June 7 June 21 - June 26 June 28 - July 3

1 First day on the first interval of at least 5 days duration in which snow cover is reduced to less than 1 cm depth.
2 No longer being measured.
3 Temperature "spells" are defined as a sequence of days when the daily mean temperature during the year in question is higher (warm spell) or lower (cool spell) than the long-term daily mean for the date in question.
4 Precipitation "spells" are defined as the sequence of days with precipitation amounts greater than trace (wet spells) or precipitation amounts of trace or less (dry spells).
5 A cold spell refers to the number of consecutive days with minimum temperatures less than or equal to -30°C.
6 A hot spell refers to the number of consecutive days with maximum temperatures equal to or greater than 30°C.

Table 29 Times of Sunrise at Saskatoon, 1992 (local time, in hours and minutes).

DATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	9.16	8.49	7.53	6.42	5.37	4.52	4.50	5.28	6.18	7.07	8.02	8.53
2	9.15	8.47	7.51	6.39	5.35	4.51	4.51	5.29	6.20	7.09	8.03	8.54
3	9.15	8.46	7.48	6.37	5.33	4.50	4.52	5.31	6.21	7.11	8.05	8.55
4	9.15	8.44	7.46	6.35	5.31	4.50	4.52	5.32	6.23	7.12	8.07	8.57
5	9.15	8.42	7.44	6.32	5.29	4.49	4.53	5.34	6.24	7.14	8.09	8.58
6	9.15	8.41	7.42	6.30	5.27	4.48	4.54	5.36	6.26	7.16	8.11	8.59
7	9.14	8.39	7.39	6.28	5.25	4.48	4.55	5.37	6.28	7.17	8.12	9.01
8	9.14	8.37	7.37	6.25	5.24	4.47	4.56	5.39	6.29	7.19	8.14	9.02
9	9.13	8.35	7.35	6.23	5.22	4.47	4.57	5.40	6.31	7.21	8.16	9.03
10	9.13	8.34	7.33	6.21	5.20	4.46	4.58	5.42	6.33	7.23	8.18	9.04
11	9.12	8.32	7.30	6.19	5.19	4.46	4.59	5.44	6.34	7.24	8.20	9.05
12	9.12	8.30	7.28	6.16	5.17	4.46	5.00	5.45	6.36	7.26	8.21	9.06
13	9.11	8.28	7.26	6.14	5.15	4.46	5.01	5.47	6.38	7.28	8.23	9.07
14	9.10	8.26	7.23	6.12	5.14	4.45	5.03	5.48	6.39	7.30	8.25	9.08
15	9.09	8.24	7.21	6.10	5.12	4.45	5.04	5.50	6.41	7.31	8.27	9.09
16	9.08	8.22	7.19	6.08	5.11	4.45	5.05	5.52	6.42	7.33	8.28	9.10
17	9.08	8.20	7.16	6.05	5.09	4.45	5.06	5.53	6.44	7.35	8.30	9.10
18	9.07	8.18	7.14	6.03	5.08	4.45	5.08	5.55	6.46	7.37	8.32	9.11
19	9.06	8.16	7.12	6.01	5.06	4.45	5.09	5.57	6.47	7.38	8.34	9.12
20	9.05	8.14	7.09	5.59	5.05	4.45	5.10	5.58	6.49	7.40	8.35	9.12
21	9.03	8.12	7.07	5.57	5.04	4.45	5.12	6.00	6.51	7.42	8.37	9.13
22	9.02	8.10	7.05	5.55	5.02	4.46	5.13	6.02	6.52	7.44	8.39	9.14
23	9.01	8.08	7.02	5.53	5.01	4.46	5.14	6.03	6.54	7.45	8.40	9.14
24	9.00	8.06	7.00	5.51	5.00	4.46	5.16	6.05	6.56	7.47	8.42	9.14
25	8.59	8.04	6.58	5.48	4.59	4.47	5.17	6.06	6.57	7.49	8.44	9.15
26	8.57	8.02	6.55	5.46	4.58	4.47	5.19	6.08	6.59	7.51	8.45	9.15
27	8.56	7.59	6.53	5.44	4.56	4.48	5.20	6.10	7.01	7.53	8.47	9.15
28	8.55	7.57	6.51	5.42	4.55	4.48	5.22	6.11	7.02	7.54	8.48	9.15
29	8.53	7.55	6.48	5.40	4.54	4.49	5.23	6.13	7.04	7.56	8.50	9.16
30	8.52	0.00	6.46	5.38	4.54	4.49	5.25	6.15	7.06	7.58	8.51	9.16
31	8.50	0.00	6.44	0.00	4.53	0.00	5.26	6.16	0.00	8.00	0.00	9.16

Table 30 Times of Sunset at Saskatoon, 1992 (local time, in hours and minutes).

DATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	17.04	17.51	18.45	19.40	20.31	21.17	21.31	20.58	19.55	18.45	17.39	16.58
2	17.05	17.53	18.47	19.41	20.33	21.18	21.30	20.56	19.53	18.43	17.37	16.58
3	17.06	17.55	18.49	19.43	20.34	21.19	21.30	20.55	19.51	18.41	17.35	16.57
4	17.07	17.57	18.51	19.45	20.36	21.20	21.29	20.53	19.48	18.38	17.33	16.57
5	17.08	17.59	18.52	19.46	20.38	21.21	21.21	20.51	19.46	18.36	17.31	16.56
6	17.09	18.01	18.54	19.48	20.39	21.22	21.28	20.49	19.44	18.34	17.30	16.56
7	17.11	18.02	18.56	19.50	20.41	21.23	21.28	20.48	19.42	18.31	17.28	16.55
8	17.12	18.04	18.58	19.52	20.42	21.24	21.27	20.46	19.39	18.29	17.26	16.55
9	17.13	18.06	18.59	19.53	20.44	21.25	21.26	20.44	19.37	18.27	17.25	16.55
10	17.15	18.08	19.01	19.55	20.46	21.26	21.26	20.42	19.35	18.25	17.23	16.54
11	17.16	18.10	19.03	19.57	20.47	21.26	21.25	20.40	19.32	18.22	17.22	16.54
12	17.17	18.12	19.05	19.58	20.49	21.27	21.24	20.38	19.30	18.20	17.20	16.54
13	17.19	18.14	19.07	20.00	20.51	21.28	21.23	20.36	19.28	18.18	17.18	16.54
14	17.20	18.16	19.08	20.02	20.52	21.28	21.22	20.34	19.25	18.16	17.17	16.54
15	17.22	18.17	19.10	20.04	2.054	21.29	21.21	20.32	19.23	18.14	17.16	16.54
16	17.23	18.19	19.12	20.05	20.55	21.29	21.20	20.30	20.18	18.11	17.14	16.54
17	17.25	18.21	19.14	20.07	20.57	21.30	21.19	20.28	19.18	18.09	17.13	16.55
18	17.27	18.23	19.15	20.09	20.58	21.30	21.18	20.26	19.16	18.07	17.11	16.55
19	17.28	18.25	19.17	20.10	21.00	21.30	21.17	20.24	19.13	18.05	17.10	16.55
20	17.30	18.27	19.19	20.12	21.01	21.31	21.16	20.22	19.11	18.03	17.09	16.56
21	17.32	18.29	19.21	20.14	21.03	21.31	21.14	20.20	19.09	18.01	17.08	16.56
22	17.33	18.30	19.22	20.16	21.04	21.31	21.13	20.17	19.06	17.59	17.07	16.57
23	17.35	18.32	19.24	20.17	21.05	21.31	21.12	20.15	19.04	17.56	17.06	16.57
24	17.37	18.34	19.26	20.19	21.07	21.31	21.10	20.13	19.02	17.54	17.04	16.58
25	17.39	18.36	19.27	20.21	21.08	21.32	21.09	20.11	18.59	17.52	17.03	16.58
26	17.40	18.38	19.29	20.22	21.10	21.32	21.07	20.09	18.57	17.50	17.02	16.59
27	17.42	18.40	19.31	20.24	21.11	21.31	21.06	20.07	18.55	17.48	17.02	17.00
28	17.44	18.41	19.33	20.26	21.12	21.31	21.04	20.04	18.52	17.46	17.01	17.01
29	17.46	18.43	19.34	20.27	21.13	21.31	21.03	20.02	18.50	17.44	17.00	17.02
30	17.48	0.00	19.36	20.29	21.15	21.31	21.01	20.00	18.48	17.43	16.59	17.02
31	17.49	0.00	19.38	0.00	21.16	0.00	21.00	19.58	0.00	17.41	0.00	17.03

REFERENCES

Saskatchewan Agriculture and Food. 1992a. Crop and Weather Report, June 22, Regina, Saskatchewan.

Saskatchewan Agriculture and Food. 1992b. Crop and Weather Report, June 28, Regina, Saskatchewan.

Figure 1. Year 1992 Daily Temperature and Cumulative Precipitation

In order to present the maximum length of climatic record for the Saskatoon area, data from several sources have been pooled to produce the historic record shown in this figure. For data sources please refer to Footnotes for Climatic Tables, note 3. The seasons shown are defined on an astronomical basis.

Errata: 1991 not 1942 was the year with the all time record maximum yearly total precipitation.

YEAR 1986

DAILY TEMPERATURE AND ACCUMULATIVE PRECIPITATION

SASKATOON SRC (52°09'N, 106°36'W, 497m MSL)

WINTER | SPRING | SUMMER | AUTUMN

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

TEMPERATURE (°C)

ACCUMULATIVE PRECIPITATION (MM)

LEGEND

TEMPERATURE

- EXTREME MAXIMUM TEMPERATURE - PERIOD 1892-1985
- MEAN DAILY MAXIMUM TEMPERATURE - PERIOD 1916-1975
- MEAN DAILY TEMPERATURE FOR THE PERIOD 1892-1970
- MEAN DAILY MINIMUM TEMPERATURE - PERIOD 1916-1975
- EXTREME MINIMUM TEMPERATURE - PERIOD 1892-1985
- DAILY TEMPERATURE FOR CURRENT YEAR

PRECIPITATION

- ALL TIME RECORD MAXIMUM YEARLY TOTAL PRECIPITATION - YEAR 1942
- NORMAL YEARLY TOTAL PRECIPITATION FOR PERIOD 1902 - 1974
- ALL TIME RECORD MINIMUM YEARLY TOTAL PRECIPITATION - YEAR 1961 (U of S Phy.)
- CURRENT TOTAL PRECIPITATION