



# SRC CLIMATE REFERENCE STATION DAILY DATA REPORT

## SASKATOON STATION 4057180

Saskatchewan 52°09' N 106°36' W 497 m asl Estab. 1963

Preliminary **JUNE 2016**

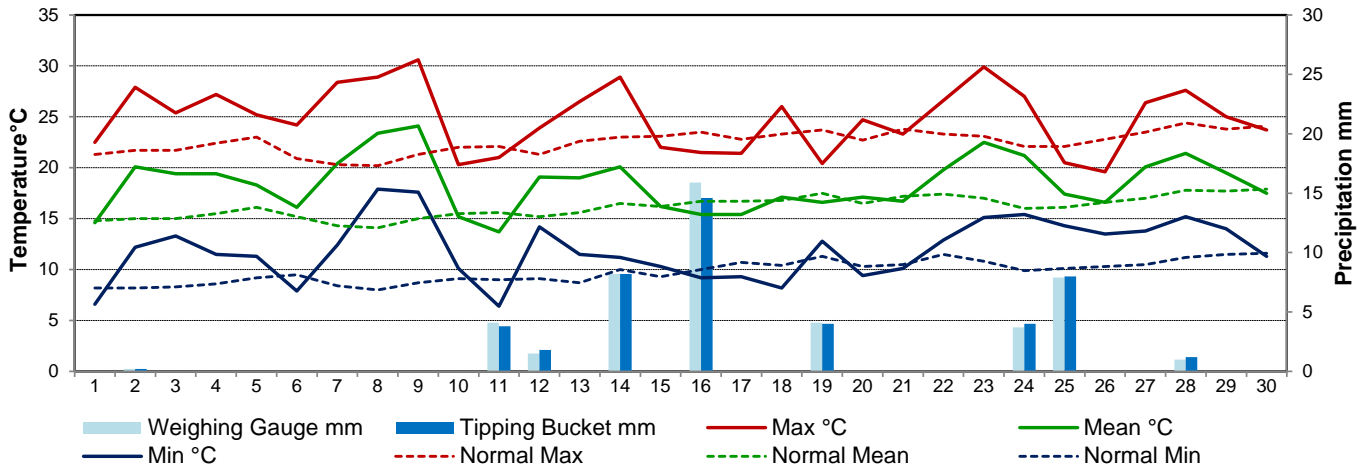
| Day          | Temperature |            |      |            |      |             | Degree-days      |           |           | Precipitation  |                   |       | Relative Humidity |                | Station Pressure (sea level) |                |
|--------------|-------------|------------|------|------------|------|-------------|------------------|-----------|-----------|----------------|-------------------|-------|-------------------|----------------|------------------------------|----------------|
|              | Max         | Normal Max | Min  | Normal Min | Mean | Normal Mean | Growing          | Heating   | Cooling   | Weighing Gauge | Tipping Bucket    | Notes | Max ½ hr Avg      | Min ½ hr Avg   | Max ½ hr Avg                 | Min ½ hr Avg   |
|              | °C          | 1981-2010  | °C   | 1981-2010  | °C   | 1981-2010   | 5°C base         | 18°C base | 18°C base | mm             | mm                |       | %                 | %              | mbar                         | mbar           |
|              |             |            |      |            |      |             |                  |           |           |                |                   |       |                   |                |                              |                |
| 1            | 22.5        | 21.3       | 6.6  | 8.2        | 14.6 | 14.8        | 9.6              | 3.4       | 0.0       | 0.0            | 0.0               |       | 91                | 33             | 1016                         | 1010           |
| 2            | 27.9        | 21.7       | 12.2 | 8.2        | 20.1 | 15.0        | 15.1             | 0.0       | 2.1       | 0.2            | 0.2               |       | 82                | 21             | 1009                         | 1003           |
| 3            | 25.4        | 21.7       | 13.3 | 8.3        | 19.4 | 15.0        | 14.4             | 0.0       | 1.4       | 0.0            | 0.0               |       | 84                | 26             | 1017                         | 1005           |
| 4            | 27.2        | 22.4       | 11.5 | 8.6        | 19.4 | 15.5        | 14.4             | 0.0       | 1.4       | 0.0            | 0.0               |       | 69                | 21             | 1018                         | 1015           |
| 5            | 25.2        | 23.0       | 11.3 | 9.2        | 18.3 | 16.1        | 13.3             | 0.0       | 0.3       | 0.0            | 0.0               |       | 64                | 20             | 1018                         | 1015           |
| 6            | 24.2        | 20.9       | 7.9  | 9.5        | 16.1 | 15.2        | 11.1             | 1.9       | 0.0       | 0.0            | 0.0               |       | 83                | 29             | 1020                         | 1013           |
| 7            | 28.4        | 20.3       | 12.4 | 8.4        | 20.4 | 14.3        | 15.4             | 0.0       | 2.4       | 0.0            | 0.0               |       | 68                | 26             | 1013                         | 1004           |
| 8            | 28.9        | 20.2       | 17.9 | 8.0        | 23.4 | 14.1        | 18.4             | 0.0       | 5.4       | 0.0            | 0.0               |       | 69                | 32             | 1006                         | 1003           |
| 9            | 30.6        | 21.3       | 17.6 | 8.7        | 24.1 | 15.0        | 19.1             | 0.0       | 6.1       | 0.0            | 0.0               |       | 87                | 22             | 1003                         | 1000           |
| 10           | 20.3        | 22.0       | 10.1 | 9.1        | 15.2 | 15.5        | 10.2             | 2.8       | 0.0       | 0.0            | 0.0               |       | 72                | 50             | 1017                         | 1003           |
| 11           | 21.0        | 22.1       | 6.4  | 9.0        | 13.7 | 15.6        | 8.7              | 4.3       | 0.0       | 4.1            | 3.8               |       | 91                | 43             | 1019                         | 1013           |
| 12           | 23.9        | 21.3       | 14.2 | 9.1        | 19.1 | 15.2        | 14.1             | 0.0       | 1.1       | 1.5            | 1.8               |       | 93                | 23             | 1014                         | 1010           |
| 13           | 26.5        | 22.6       | 11.5 | 8.7        | 19.0 | 15.6        | 14.0             | 0.0       | 1.0       | 0.0            | 0.0               |       | 68                | 21             | 1012                         | 1006           |
| 14           | 28.9        | 23.0       | 11.2 | 10.0       | 20.1 | 16.5        | 15.1             | 0.0       | 2.1       | 8.2            | 8.2               |       | 93                | 27             | 1006                         | 1001           |
| 15           | 22.0        | 23.1       | 10.3 | 9.3        | 16.2 | 16.2        | 11.2             | 1.8       | 0.0       | 0.0            | 0.0               |       | 93                | 21             | 1011                         | 1003           |
| 16           | 21.5        | 23.5       | 9.2  | 10.0       | 15.4 | 16.7        | 10.4             | 2.6       | 0.0       | 15.9           | 14.6              |       | 92                | 51             | 1011                         | 1004           |
| 17           | 21.4        | 22.8       | 9.3  | 10.7       | 15.4 | 16.7        | 10.4             | 2.6       | 0.0       | 0.0            | 0.0               |       | 92                | 33             | 1017                         | 1004           |
| 18           | 26.0        | 23.3       | 8.2  | 10.4       | 17.1 | 16.8        | 12.1             | 0.9       | 0.0       | 0.0            | 0.0               |       | 81                | 20             | 1018                         | 1011           |
| 19           | 20.4        | 23.7       | 12.8 | 11.3       | 16.6 | 17.5        | 11.6             | 1.4       | 0.0       | 4.1            | 4.0               |       | 89                | 36             | 1018                         | 1007           |
| 20           | 24.7        | 22.7       | 9.4  | 10.3       | 17.1 | 16.5        | 12.1             | 0.9       | 0.0       | 0.0            | 0.0               |       | 82                | 32             | 1022                         | 1017           |
| 21           | 23.3        | 23.8       | 10.1 | 10.5       | 16.7 | 17.2        | 11.7             | 1.3       | 0.0       | 0.0            | 0.0               |       | 87                | 40             | 1017                         | 1011           |
| 22           | 26.6        | 23.3       | 12.9 | 11.5       | 19.8 | 17.4        | 14.8             | 0.0       | 1.8       | 0.0            | 0.0               |       | 88                | 27             | 1014                         | 1011           |
| 23           | 29.9        | 23.1       | 15.1 | 10.8       | 22.5 | 17.0        | 17.5             | 0.0       | 4.5       | 0.0            | 0.0               |       | 84                | 27             | 1014                         | 1006           |
| 24           | 27.0        | 22.1       | 15.4 | 9.9        | 21.2 | 16.0        | 16.2             | 0.0       | 3.2       | 3.7            | 4.0               |       | 85                | 35             | 1007                         | 1005           |
| 25           | 20.5        | 22.1       | 14.3 | 10.1       | 17.4 | 16.1        | 12.4             | 0.6       | 0.0       | 7.9            | 8.0               |       | 90                | 69             | 1008                         | 1003           |
| 26           | 19.6        | 22.8       | 13.5 | 10.3       | 16.6 | 16.6        | 11.6             | 1.4       | 0.0       | 0.0            | 0.0               |       | 88                | 67             | 1022                         | 1009           |
| 27           | 26.4        | 23.5       | 13.8 | 10.5       | 20.1 | 17.0        | 15.1             | 0.0       | 2.1       | 0.0            | 0.0               |       | 91                | 35             | 1024                         | 1021           |
| 28           | 27.6        | 24.4       | 15.2 | 11.2       | 21.4 | 17.8        | 16.4             | 0.0       | 3.4       | 1.0            | 1.2               |       | 84                | 34             | 1021                         | 1017           |
| 29           | 25.0        | 23.8       | 14.0 | 11.5       | 19.5 | 17.7        | 14.5             | 0.0       | 1.5       | 0.0            | 0.0               |       | 88                | 40             | 1022                         | 1018           |
| 30           | 23.7        | 24.1       | 11.3 | 11.6       | 17.5 | 17.9        | 12.5             | 0.5       | 0.0       | 0.0            | 0.0               |       | 82                | 35             | 1024                         | 1018           |
| Total        |             |            |      |            |      |             | 403.4            | 26.4      | 39.8      | 46.6           | 45.8              |       | Extreme / Date    | Extreme / Date | Extreme / Date               | Extreme / Date |
| Avg          | 24.9        | 22.5       | 12.0 | 9.8        | 18.4 | 16.2        | 1981-2010 Normal |           |           | 66.6           | Normal            |       |                   |                |                              |                |
| Extreme Date | 30.6        |            | 6.4  |            |      |             | 334.8            | 81.4      | 24.8      | 133.7          | Cumulative        |       | 93                | 20             | 1024                         | 1000           |
|              | 9           |            | 11   |            |      |             |                  |           |           | 167.5          | Cumulative Normal |       | 12                | 5              | 27                           | 9              |

Note: Red numbers indicate manual calculation; Red cell indicate data not available

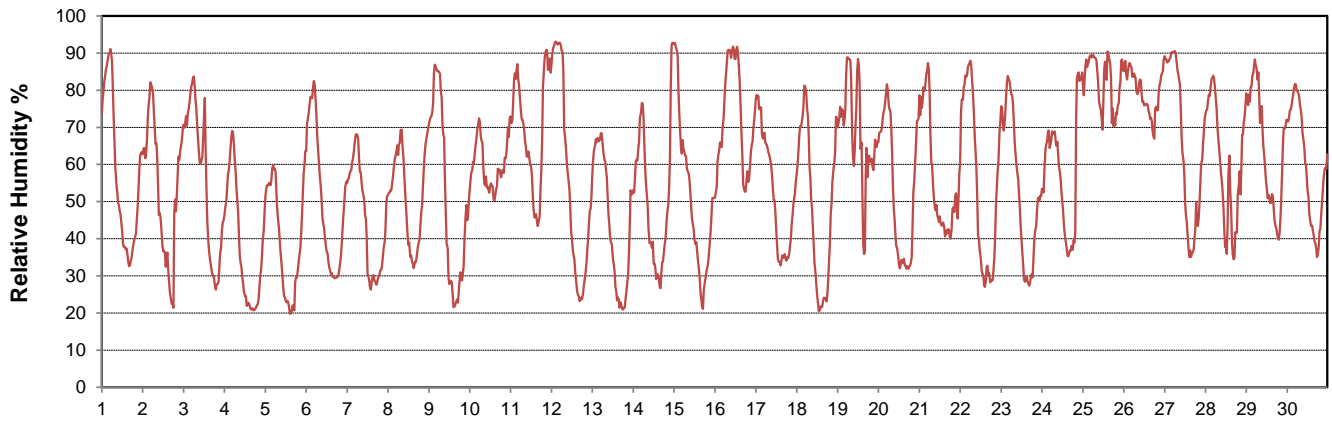
**SRC proudly recognizes the following CRS supporters:**



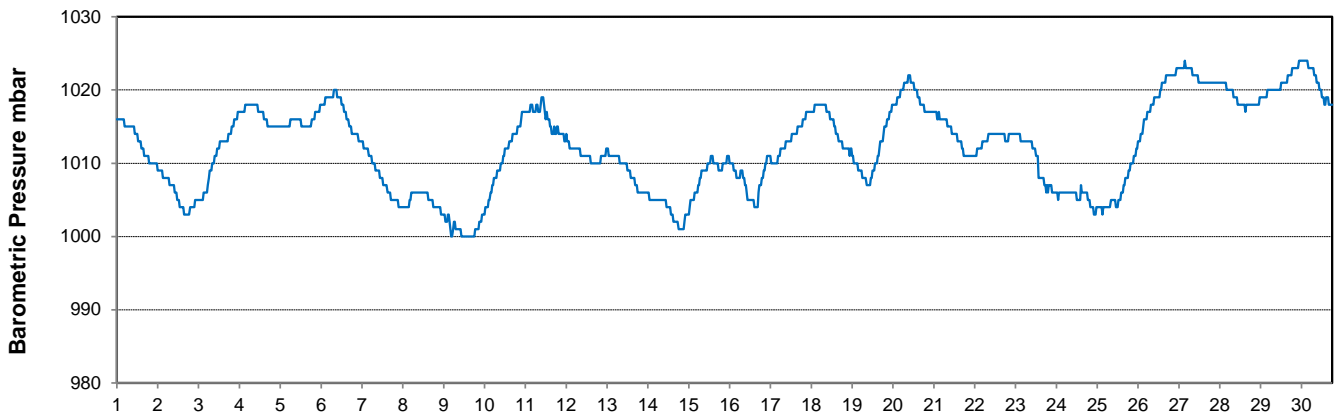
### Temperature and Precipitation for June 2016



### Relative Humidity for June 2016



### Barometric Pressure Corrected to Sea Level for June 2016





# SRC CLIMATE REFERENCE STATION DAILY DATA REPORT

**SASKATOON STATION 4057180**

Saskatchewan 52°09' N 106°36' W 497 m asl Estab. 1963

Preliminary **JUNE 2016**

| Day     | Wind Gust |           |       | Soil Temperatures at 0900hrs            |      |       |       |       |        |        |        | Soil Moisture 30 cm              | Radiation                      |                 |          |                   |                   |
|---------|-----------|-----------|-------|---|------|-------|-------|-------|--------|--------|--------|----------------------------------|--------------------------------|-----------------|----------|-------------------|-------------------|
|         | Max       | Direction | Time  | Surface                                 | 5 cm | 10 cm | 20 cm | 50 cm | 100 cm | 150 cm | 300 cm |                                  | 0900hrs                        | Bright Sunshine | Possible | % Possible        | Global            |
|         | km/h      |           |       | °C                                      | °C   | °C    | °C    | °C    | °C     | °C     | °C     | %                                | hours                          | hours           |          | MJ/m <sup>2</sup> | MJ/m <sup>2</sup> |
| 1       | 29.1      | S         | 15:30 | 16.0                                    | 13.0 | 13.5  | 14.0  | 13.0  | 9.5    | 8.5    | 6.5    | 16.0                             | 10.3                           | 16.5            | 62.6     | 23.6              | 6.5               |
| 2       | 63.7      | WSW       | 18:34 | 18.0                                    | 15.5 | 15.5  | 15.0  | 13.0  | 9.5    | 8.5    | 6.5    | 15.8                             | 11.2                           | 16.5            | 68.0     | 24.6              | 7.8               |
| 3       | 51.1      | NW        | 17:22 | 18.0                                    | 16.0 | 16.5  | 16.0  | 13.5  | 10.0   | 8.5    | 6.5    | 15.6                             | 10.7                           | 16.5            | 64.8     | 22.4              | 6.9               |
| 4       | 57.4      | NW        | 16:21 | 21.5                                    | 15.5 | 15.5  | 15.5  | 13.5  | 10.0   | 8.5    | 6.5    | 15.2                             | 15.8                           | 16.5            | 95.5     | 28.6              | 3.3               |
| 5       | 56.2      | N         | 14:58 | 20.0                                    | 16.0 | 16.5  | 16.0  | 13.5  | 10.0   | 8.5    | 6.5    | 14.9                             | 13.9                           | 16.6            | 83.9     | 25.5              | 4.2               |
| 6       | 30.6      | SE        | 17:51 | 17.0                                    | 15.0 | 15.5  | 16.0  | 14.0  | 10.0   | 9.0    | 6.5    | 14.5                             | 15.6                           | 16.6            | 94.0     | 28.2              | 4.1               |
| 7       | 47.6      | SE        | 14:58 | 17.5                                    | 16.5 | 17.5  | 17.0  | 14.0  | 10.5   | 9.0    | 7.0    | 14.4                             | 7.7                            | 16.6            | 46.4     | 19.3              | 7.7               |
| 8       | 40.4      | ESE       | 2:07  | 21.0                                    | 18.0 | 18.5  | 17.5  | 14.5  | 10.5   | 9.0    | 7.0    | 14.3                             | 11.8                           | 16.6            | 71.0     | 26.6              | 4.1               |
| 9       | 56.4      | WSW       | 15:27 | 21.5                                    | 20.0 | 20.0  | 19.0  | 15.0  | 10.5   | 9.0    | 7.0    | 14.2                             | 11.6                           | 16.7            | 69.7     | 25.5              | 4.4               |
| 10      | 48.4      | W         | 8:48  | 16.5                                    | 18.5 | 19.5  | 19.0  | 15.5  | 11.0   | 9.5    | 7.0    | 13.9                             | 5.7                            | 16.7            | 34.2     | 15.9              | 9.4               |
| 11      | 44.4      | SE        | 14:39 | 12.5                                    | 15.5 | 16.5  | 17.0  | 15.5  | 11.0   | 9.5    | 7.0    | 13.5                             | 4.9                            | 16.7            | 29.4     | 16.4              | 8.0               |
| 12      | 48.7      | W         | 10:55 | 17.0                                    | 16.5 | 17.0  | 16.5  | 15.0  | 11.5   | 9.5    | 7.0    | 13.7                             | 13.9                           | 16.7            | 83.2     | 29.5              | 2.7               |
| 13      | 32.2      | SW        | 18:39 | 18.0                                    | 15.5 | 16.0  | 16.5  | 15.0  | 11.5   | 9.5    | 7.0    | 13.4                             | 16.0                           | 16.7            | 95.8     | 29.3              | 3.2               |
| 14      | 57.5      | WNW       | 21:56 | 21.0                                    | 17.0 | 17.5  | 17.0  | 15.0  | 11.5   | 10.0   | 7.5    | 13.5                             | 12.9                           | 16.7            | 77.2     | 26.9              | 4.7               |
| 15      | 45.1      | SSW       | 13:58 | 13.5                                    | 16.0 | 17.5  | 18.0  | 15.5  | 11.5   | 10.0   | 7.5    | 15.8                             | 14.3                           | 16.7            | 85.5     | 26.9              | 6.6               |
| 16      | 67.4      | WSW       | 17:48 | 9.5                                     | 15.0 | 16.0  | 16.5  | 15.0  | 11.5   | 10.0   | 7.5    | 20.3                             | 5.4                            | 16.7            | 32.3     | 12.6              | 5.2               |
| 17      | 59.4      | WNW       | 15:44 | 15.0                                    | 13.5 | 14.0  | 15.0  | 14.5  | 11.5   | 10.0   | 7.5    | 18.1                             | 15.6                           | 16.8            | 93.1     | 30.1              | 3.5               |
| 18      | 35.9      | WSW       | 13:26 | 17.5                                    | 14.5 | 14.5  | 15.0  | 14.5  | 11.5   | 10.0   | 7.5    | 17.5                             | 11.8                           | 16.8            | 70.4     | 25.0              | 6.6               |
| 19      | 71.7      | NW        | 16:37 | 18.0                                    | 16.5 | 17.0  | 16.5  | 14.5  | 11.5   | 10.0   | 7.5    | 17.7                             | 6.5                            | 16.8            | 38.8     | 17.1              | 6.2               |
| 20      | 36.3      | WNW       | 16:42 | 15.5                                    | 14.5 | 15.0  | 15.5  | 14.5  | 11.5   | 10.5   | 7.5    | 17.6                             | 14.8                           | 16.8            | 88.3     | 27.5              | 3.7               |
| 21      | 29.7      | E         | 11:06 | 19.5                                    | 16.0 | 16.5  | 16.5  | 14.5  | 11.5   | 10.5   | 8.0    | 17.4                             | 8.1                            | 16.8            | 48.3     | 18.0              | 9.0               |
| 22      | 25.2      | SSW       | 16:46 | 18.5                                    | 17.0 | 17.0  | 17.0  | 15.0  | 11.5   | 10.5   | 8.0    | 17.3                             | 13.1                           | 16.8            | 78.2     | 27.9              | 4.3               |
| 23      | 33.9      | S         | 22:23 | 21.0                                    | 19.0 | 19.0  | 18.5  | 15.5  | 11.5   | 10.5   | 8.0    | 17.3                             | 12.0                           | 16.8            | 71.6     | 26.6              | 3.8               |
| 24      | 60.1      | WNW       | 20:04 | 21.5                                    | 20.0 | 20.5  | 19.5  | 16.0  | 12.0   | 10.5   | 8.0    | 17.3                             | 10.2                           | 16.7            | 60.9     | 25.2              | 5.0               |
| 25      | 38.1      | NW        | 19:01 | 17.0                                    | 19.5 | 20.0  | 19.5  | 16.5  | 12.0   | 10.5   | 8.0    | 17.4                             | 3.0                            | 16.7            | 17.9     | 11.5              | 6.1               |
| 26      | 37.2      | NNW       | 0:08  | 14.5                                    | 17.5 | 18.0  | 18.0  | 16.0  | 12.5   | 11.0   | 8.0    | 19.4                             | 1.4                            | 16.7            | 8.4      | 12.5              | 9.2               |
| 27      | 28.1      | WSW       | 16:31 | 17.0                                    | 17.5 | 18.0  | 17.5  | 16.0  | 12.5   | 11.0   | 8.0    | 18.8                             | 10.4                           | 16.7            | 62.2     | 24.8              | 4.6               |
| 28      | 56.3      | WSW       | 13:11 | 22.0                                    | 19.0 | 19.0  | 19.0  | 16.0  | 12.5   | 11.0   | 8.5    | 18.4                             | 11.2                           | 16.7            | 67.1     | 21.5              | 4.6               |
| 29      | 29.3      | NE        | 14:18 | 18.5                                    | 18.5 | 19.0  | 19.0  | 16.5  | 12.5   | 11.0   | 8.5    | 18.2                             | 12.7                           | 16.7            | 76.1     | 25.2              | 5.3               |
| 30      | 56.3      | SSE       | 16:59 | 17.5                                    | 18.0 | 19.0  | 19.0  | 16.5  | 12.5   | 11.0   | 8.5    | 17.7                             | 14.4                           | 16.7            | 86.4     | 28.1              | 4.0               |
| Total   |           |           |       |   |      |       |       |       |        |        |        |                                  | 326.9                          | 500.3           | 65.3     | 702.8             | 164.7             |
| Mean    |           |           |       | 17.7                                    | 16.7 | 17.2  | 17.1  | 14.9  | 11.2   | 9.8    | 7.4    | 16.3                             | 1981-2010 Normal for Radiation |                 |          |                   |                   |
| Extreme | 71.7      | NW        | 16:37 | 1971- 2000 Normal for Soil Temperatures |      |       |       |       |        |        |        | 258.2                            | 500.1                          | 51.6            | 625.7    | 227.9             |                   |
| Date    | 19        |           |       | 15.3                                    | 15.7 | 16.3  | 14.0  | 10.4  | 8.3    | 5.4    |        | No. of Bright Sunshine days = 30 |                                |                 |          |                   |                   |

Note: Red numbers indicate manual calculation

NOTE: thick smoke from forest fires in northern Saskatchewan June 29-30

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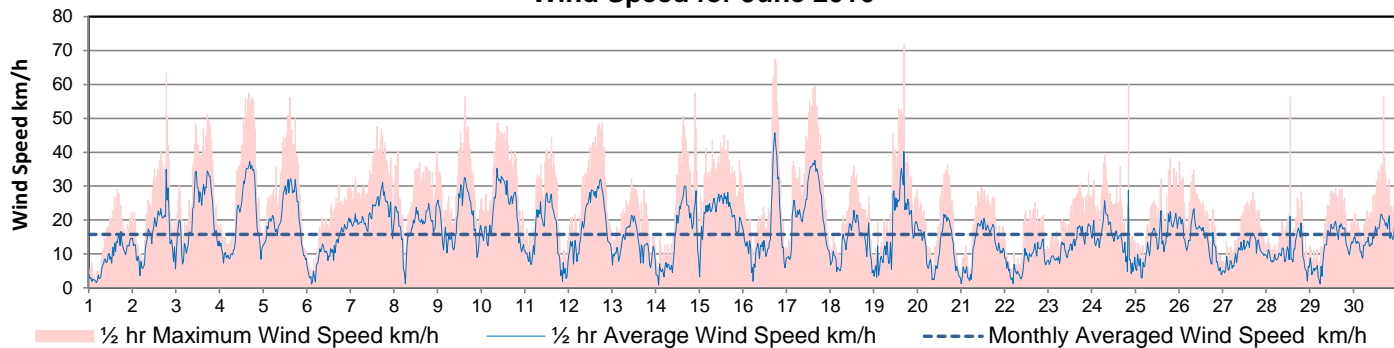


UNIVERSITY OF SASKATCHEWAN

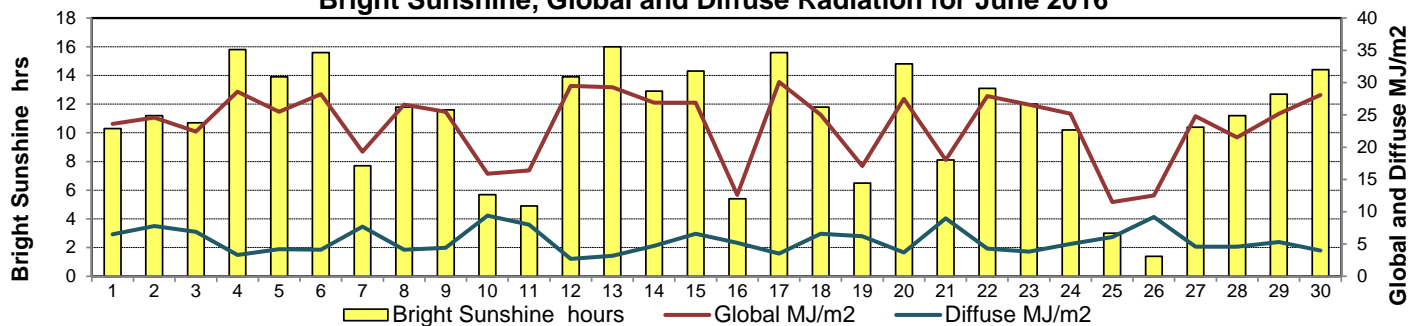


CAMPBELL SCIENTIFIC WHEN MEASUREMENTS MATTER

### Wind Speed for June 2016

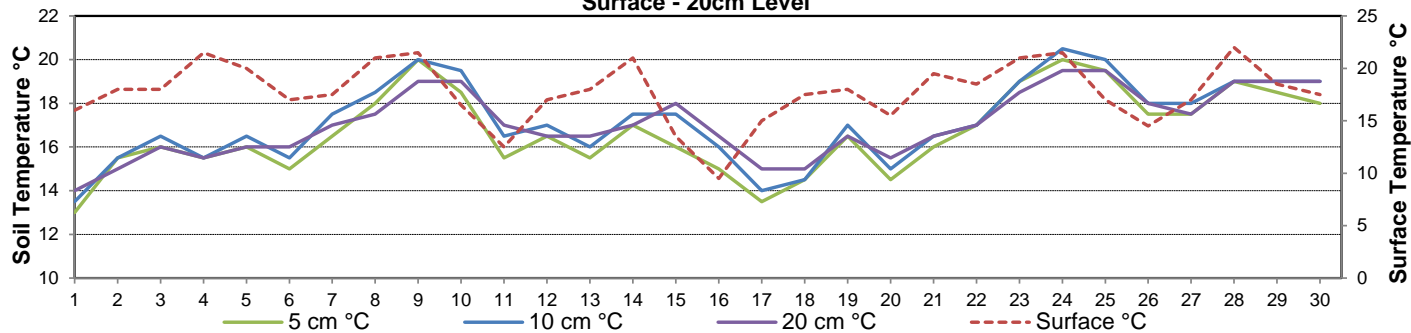


### Bright Sunshine, Global and Diffuse Radiation for June 2016



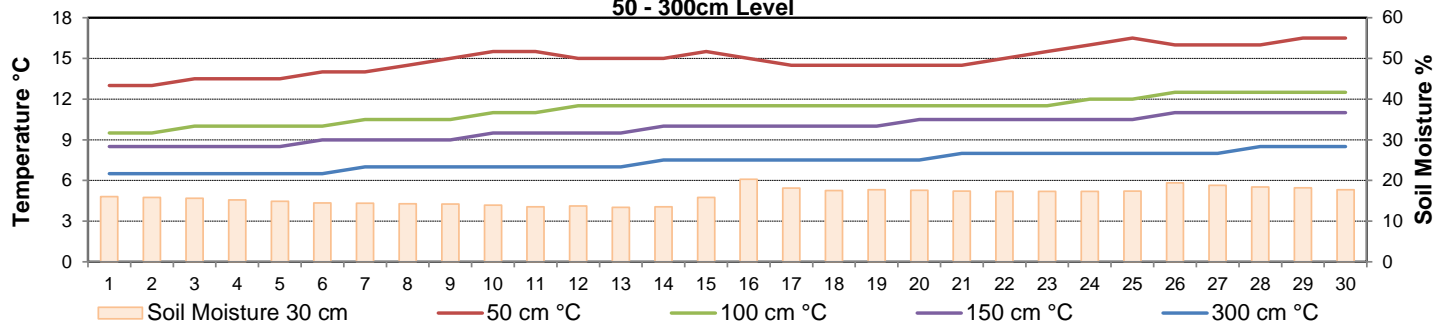
### Soil Temperatures for June 2016

Surface - 20cm Level



### Soil Temperatures for June 2016

50 - 300cm Level





SRC CLIMATE REFERENCE STATION DAILY DATA REPORT



**SASKATOON STATION** 4057180

52°09' N 106°36' W 497 m asl Estab. 1963

Preliminary **JUNE** 2016

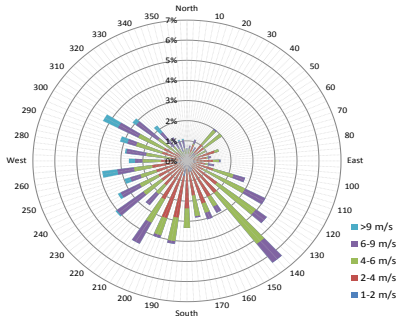
**Extreme Records for June**

| Max/Min Temperature °C |         |      |                 | Precipitation - Monthly mm |      |      |                 | Wind Monthly km/h |                      |                     |         | CRS Bright Sunshine - Monthly |      |             |          |
|------------------------|---------|------|-----------------|----------------------------|------|------|-----------------|-------------------|----------------------|---------------------|---------|-------------------------------|------|-------------|----------|
| S'toon Area            | Date    | Site | S'toon CRS Date | S'toon Area                | Date | Site | S'toon CRS Date | S'toon Airport    | Date                 | S'toon CRS**        | Date    | Hours                         | Year | No. of Days | Year     |
| 41.5                   | 06/1988 | S2   | 41.0 05/1988    | 186.8                      | 1942 | S    | 171.0 2005      | 117               | 01 <sup>S</sup> 1986 | 109.7 <sup>SW</sup> | 22/2005 | 370.6                         | 1978 | 30          | 1969*    |
| -3.9                   | 02/1917 | US   | -3.3 06/1967    | 5.0                        | 2003 | KCS  | 13.0 1985       |                   |                      |                     |         | 175.3                         | 2005 | 25          | 2002, 05 |

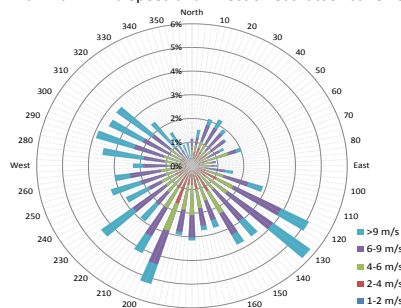
\*\*1975 forward \* more than one year

| Notable Events for CRS Saskatoon - June |                       |     |            |            |                     | Saskatoon Area Stations |                              |              | Glossary           |   |
|---|-----------------------|-----|------------|------------|---------------------|-------------------------|------------------------------|--------------|--------------------|---|
| Element                                 | Type                  | Day | New Record | Old Record | Year                | Station                 | Location                     | Period       | Term               | Definition                                |
| Temperature                             | Highest Minimum Daily | 8   | 17.9       | 17.2       | 1972                | SM                      | NWMP                         | c. 1892-1901 | T                  | Trace of precipitation                    |
|   | Highest Mean Daily    | 9   | 24.1       | 23.9       | 1996                | SE                      | Eby                          | 1901-1941    | Normal             | 30 year average beginning with the decade |
|   |                       | 9   | 17.6       | 15.6       | 1976                | US                      | Univ. of Sask.               | 1915-1964    | SOG                | Depth of snow-on-the-ground in cm         |
| Precipitation                           | Daily Maximum         | 16  | 15.9       | 13.2       | 2004                | S                       | Saskatoon                    | 1941-1942    | na                 | not available                             |
|   |                       |     |            |            |                     | SA                      | Saskatoon A                  | 1942 -       | <b>Degree-days</b> |   |
|   |                       |     |            |            |                     | NRC                     | Nat. Res. Council            | 1952-1966    | Tm                 | Mean Temperature                          |
|   |                       |     |            |            |                     | SRC                     | Sask. Res. Council           | 1963-        | Growing            | (Tm-5°C); if Tm ≤ 5°C then GDD = 0        |
|   |                       |     |            |            |                     | SWT                     | S'toon Water Treatment Plant | 1974 -       | Heating            | (18°C-Tm); if Tm ≤ 18°C then HDD = 0      |
|   |                       |     |            |            |                     | SC                      | S'toon Central Ave           | 1974-1989    | Cooling            | (Tm-18°C); if Tm ≥ 18°C then CDD = 0      |
|   |                       |     |            |            |                     | S1                      | Saskatoon 1                  | 1976-1978    | Extreme Cooling    | (Tm-24°C); if Tm ≥ 24°C then CDD = 0      |
|   |                       |     |            |            |                     | S2                      | Saskatoon 2                  | 1977-1990    |                    |   |
|   |                       |     |            |            |                     | K                       | S'toon Kernen Farm           | 1993-2004    |                    |   |
|   |                       |     |            |            |                     | KCS                     | S'toon Kernen Farm CS        | 1996-        |                    |   |
|   |                       |     |            | RCS        | Environment Canada  | 2008-                   |                              |              |                    |   |
|   |                       |     |            | SF         | Sutherland Forestry | 1943-1970               |                              |              |                    |   |

10 minute Average Wind Speed and Direction Saskatoon June 2016



1/2 hr Maximum Wind Speed and Direction Saskatoon June 2016



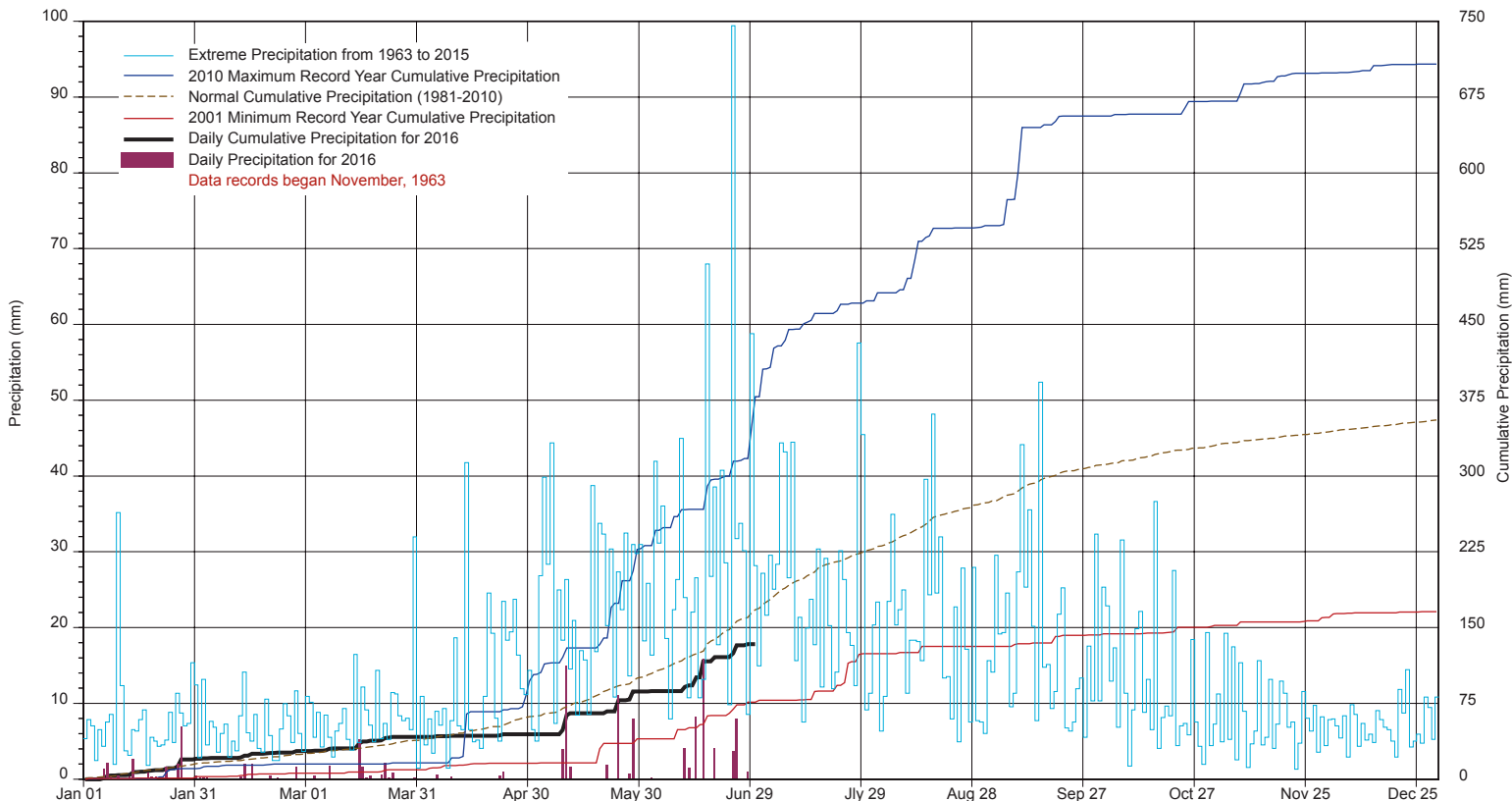
**SRC proudly recognizes the following CRS supporters:**



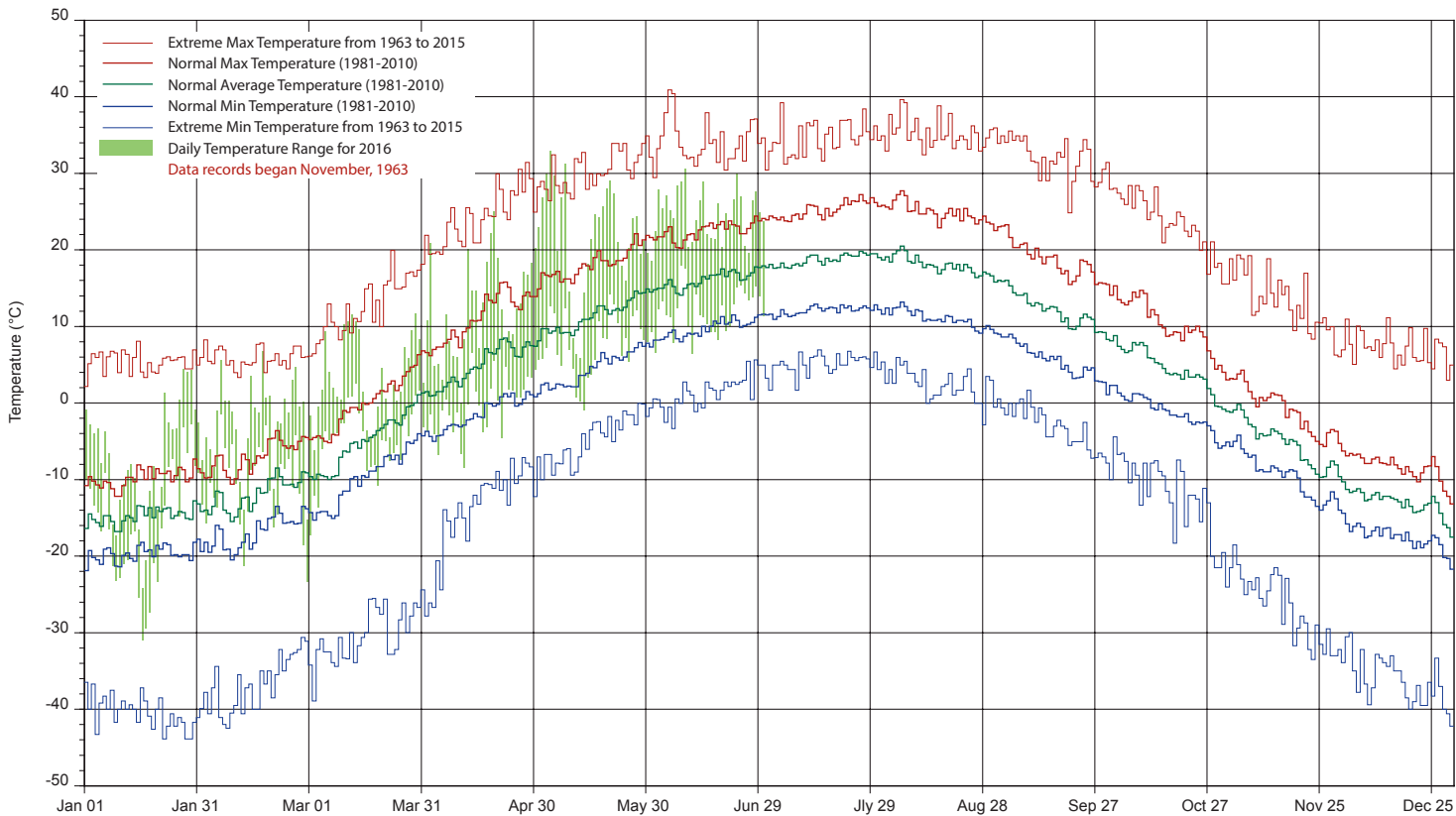
Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada



# SASKATCHEWAN RESEARCH COUNCIL SASKATOON CLIMATE REFERENCE STATION 2016 PRECIPITATION AND NORMALS



## 2016 TEMPERATURES AND NORMALS



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