

Climate Research Lab Monthly Meteorological Summary-July, 2017

Background

This summary is produced by the UPEI Climate Lab for the month of July, 2017. Data is reported from 32 climate stations in the province as shown on Table 1. The annual summaries of PEI climate data for 2014, 2015 and 2016 and the monthly summaries for 2017 are now posted on the UPEI Climate Lab Website. (<http://projects.upei.ca/climate/research/>).

A new station was added to the network on June 27, 2017 when a Davis Vantage Pro2 plus unit was installed at Savage Harbour. The equipment is owned by the Abegweit Conservation Society which is an arm of the Abegweit First Nation. The equipment is located on a privately owned property and due to some technical difficulties was not able to report for the full month of July.



Figure 1 –July was drier than normal

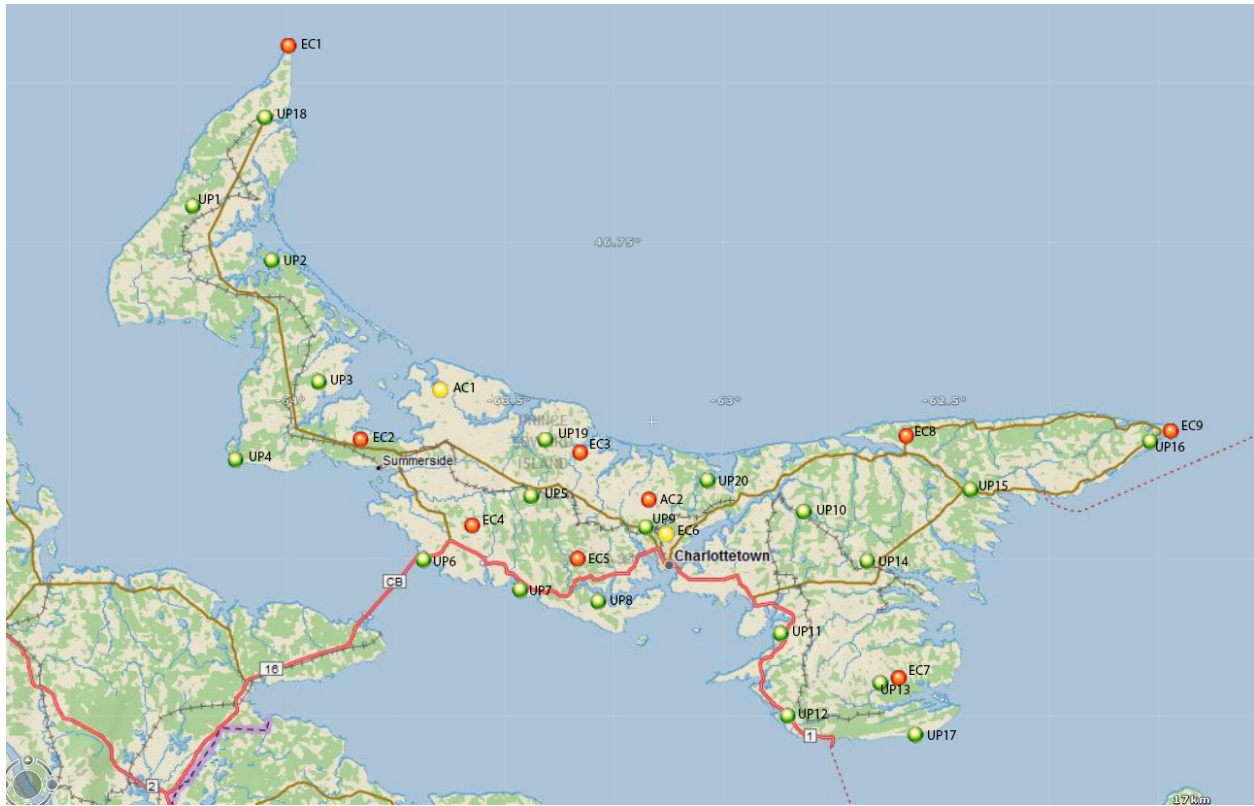


Figure 2 - Map showing climate station locations monitored by the UPEI Climate Research Lab

A listing of stations currently being monitored by UPEI Climate Research Lab is provided in Table 1. This includes Environment Canada, Agriculture Canada, Agriculture PEI, NAV Canada, UPEI and privately operated stations that operate on an annual basis.

Table 1 – PEI Climate Stations Monitored by UPEI

| ID Code | Map ID | Community | Lat. | Long. | Date Installed | Operator |
|------------|--------|----------------------|-----------|------------|----------------|-------------------|
| IPRINCEE22 | UP13 | Alliston | 46.052032 | -62.638389 | 25-Jun-15 | CNP |
| 8300100 | EC7 | Alliston/Peters Road | 46.064393 | -62.581808 | 01-Jan-36 | M. Radvanyi |
| Remote | UP3 | Arlington | 46.52964 | -63.927503 | 30-Jun-15 | Arlington Orchard |
| KNW01 | AC1 | Baltic | 46.517266 | -63.648411 | 14-Aug-14 | Kensington North |
| IPEBORDE2 | UP6 | Borden - | 46.248346 | -63.686935 | 26-Jan-95 | G. Read |

| | | | | | | |
|--------------------|------|-----------------|-----------|-------------|---------------|-------------------------------|
| | | Carleton | | | | |
| IPRINCEE28 | UP1 | Brockton | 46.80649 | -64.21685 | 23-Sep-15 | UPEI |
| 83000562 | EC8 | Cable Head | 46.4503 | -62.5758 | 14-Aug-03 | EC |
| IPRINCEE26 | UP4 | Cape Egmont | 46.4067 | -64.118742 | 10-Sep-15 | UPEI |
| IPRINCEE17 | UP14 | Cardigan Head | 46.2461 | -62.66833 | 01-Oct-14 | R. Angus |
| 8300300 | EC5 | Charlottetown | 46.28917 | -63.119167 | 14-Sep-12 | NAV Canada |
| IPRINCEE16 | UP15 | Dingwells Mills | 46.362154 | -62.432651 | 14-Nov-13 | UPEI |
| IPRINCEE31 | UP16 | East Point | 46.43554 | -62.018632 | 16-Jul-15 | Newman |
| 8300418 | EC9 | East Point | 46.45227 | -61.971635 | 8-Dec-92 | EC |
| IPEIELMW2 | EC5 | Elmwood | 46.2508 | -63.3342 | 01-Sep-93 | B. Jameson |
| IPRINCEE32 | UP10 | Fanning Brook | 46.32419 | -62.8141 | 05-Nov-15 | UPEI |
| IPRINCEE13 | UP12 | Flat River | 45.999949 | -62.852033 | 06-Nov-13 | UPEI |
| IPRINCEE15 | UP2 | Foxley River | 46.7208 | -64.0356 | 20-Nov-13 | UPEI |
| IPRINCEE30 | UP5 | Glen Valley | 46.34884 | -63.439941 | 06-Oct-15 | UPEI |
| IPRINCEE27 | UP7 | Hampton | 46.2003 | -63.4652 | 11-Sep-15 | M. Cassidy |
| 830P001 | AC2 | Harrington | 46.342506 | -63.169736 | 01-Jul-00 | Agric. Canada |
| IPRINCEE 35 | UP19 | Hope River | 46.43816 | -63.40707 | 10-July-16 | A.MacKay |
| 8305500 | EC4 | Maple Plains | 46.3028 | -63.575567 | 21-Jun-01 | BBEMA |
| IPRINCEE 4 | UP20 | Mill Cove | 46.37400 | -63.03508 | 24-Apr-12 | P. Lawlor |
| 8300497 | EC3 | New Glasgow | 46.408911 | -63.350289 | 01-Oct-71 | H. Dingwell |
| 8300516 | EC1 | North Cape | 47.05806 | -63.998611 | 18-Oct-02 | EC |
| IPRINCEE14 | UP11 | Orwell Cove | 46.13153 | -62.869768 | 13-Nov-13 | UPEI |
| IPRINCEE21 | UP8 | St. Catherine's | 46.182023 | -63.286157 | 25-Jun-15 | Matos Winery |
| ISAVAGEH2 | | Savage Harbour | 46.42587 | -62.85565 | June 27, 2017 | Abegweit Conservation Society |
| 8300700 | EC2 | Summerside | 46.44111 | -63.83806 | 19-Jul-99 | EC |
| IPRINCEE36 | UP18 | Tignish | 46.9453 | -64.0516 | 02-July-16 | UPEI |
| IPRINCEE19 | UP17 | White Sands | 45.970 | -62.558 | 25-Oct-14 | M. Harwood |
| IPRINCEE11 | UP9 | Winsloe South | 46.292358 | -63.1727104 | 13-Sep-13 | UPEI |

Data Summary

Table 2 summarizes the climate data recorded during the month of July 2017 for all stations being observed by UPEI Climate Research Lab. July of 2017 had slightly above normal temperatures and was drier than normal. Daily average solar radiation for stations which have solar radiation sensors is included to provide information on the potential for solar energy and for crop production.

Table 2 – UPEI July 2017 Climate Station Summary for 31 Stations across PEI

| Climate Station Name | Map ID | Tmean °C | Tmax °C | Tmin °C | PPT (mm) | Snow (cm) | Avg. Wind Speed km/h | Max. Wind Speed km/h | Days with Frost | Daily Avg. Solar Radiation (kWh/m ² /D) |
|------------------------|--------|----------|---------|---------|----------|-----------|----------------------|----------------------|-----------------|--|
| Alliston / Peters Road | EC7 | 19.8 | 29.5 | 10.5 | 52.1 | | | | 0 | |
| Alliston (CNP) | UP13 | 18.9 | 28.7 | 8.7 | 47.2 | | 4.0 | 38.6 | 0 | |
| Arlington | UP3 | 19.3 | 30.4 | 7.1 | 27.8 | | 1.2 | 30.6 | 0 | |
| Baltic | AC1 | 19.2 | 28.5 | 10.2 | 13.0 | | 11.1 | 41.7 | 0 | |
| Borden | UP6 | 19.3 | 28.3 | 10.3 | 27.4 | | 3.9 | 41.8 | 0 | 6.20 |
| Brockton | UP1 | 19.2 | 29.2 | 8.4 | 20.2 | | 2.9 | 45.1 | 0 | 6.12 |
| Cape Egmont | UP4 | 18.9 | 28.1 | 8.4 | 21.6 | | 9.8 | 48.3 | 0 | 6.32 |
| Cardigan Head | UP14 | 18.6 | 29.3 | 3.7 | 40.6 | | 2.9 | 32.2 | 0 | |
| Ch'town Airport | EC6 | 18.4 | 27.8 | 7.5 | 68.8 | | | 56.0 | | |
| Dingwells | UP15 | 18.2 | 28.7 | 4.7 | 35.8 | | 3.9 | 40.2 | 0 | |
| East Point | EC9 | 17.2 | 25.1 | 8.6 | 44.4 | | NR | NR | 0 | |
| East Point (N) | UP16 | 18.6 | 26.0 | 9.0 | 36.2 | | 6.8 | 48.3 | 0 | |
| Elmwood | EC5 | 18.7 | 28.2 | 7.7 | 23.6 | | 4.9 | 37.0 | 0 | |
| Fanning Brook | UP10 | 18.8 | 28.6 | 7.1 | 40.1 | | 6.1 | 45.1 | 0 | 6.19 |
| Flat River | UP12 | 18.6 | 28.8 | 5.3 | 24.6 | | 5.8 | 43.4 | 0 | |
| Foxley River | UP2 | 19.9 | 30.2 | 9.1 | 15.2 | | 0.2 | 46.7 | 0 | |
| Glen Valley | UP5 | 18.4 | 27.2 | 9.7 | 38.9 | | 12.5 | 72.4 | 0 | 6.07 |
| Hampton | UP7 | 18.1 | 27.9 | 7.6 | 32.8 | | 8.8 | 46.7 | 0 | 5.67 |
| Harrington | AC2 | 18.6 | 27.7 | 9.3 | 42.6 | | 11.7 | 93.0 | 0 | |
| Hope River | UP19 | 19.9 | 27.3 | 11.3 | 18.5 | | 8.9 | 72.4 | 0 | |
| Maple Plains | EC4 | 17.7 | 29.0 | 3.8 | 37.4 | | 8.8 | 27.7 | 0 | |
| Mill Cove | UP20 | 19.3 | 29.3 | 6.7 | 33.0 | | 3.9 | 29.0 | 0 | |
| New Glasgow | EC3 | 18.4 | 27.5 | 7.0 | 72.2 | | | | | |
| North Cape | EC1 | 18.7 | 28.0 | 7.6 | 45.4 | | 19.2 | 113.0 | 0 | |
| Orwell Cove | UP11 | 19.0 | 28.2 | 7.8 | 43.4 | | 3.5 | 35.4 | 0 | |

| | | | | | | | | | | |
|----------------|------|------|------|-----|------|---|------|-------|---|------|
| St. Catherines | UP8 | 19.3 | 27.7 | 8.6 | 33.3 | | 6.6 | 37.0 | 0 | |
| St. Peter's | EC9 | 20.5 | 28.2 | 8.0 | 26.7 | | 12.9 | 102.0 | 0 | |
| Savage Harbour | UP19 | inc | 28.0 | 8.5 | inc | - | inc- | inc | - | |
| Summerside | EC2 | 19.2 | 29.0 | 8.8 | 25.6 | | 16.3 | 67.0 | 0 | |
| Tignish | UP18 | 19.4 | 30.2 | 5.4 | 21.4 | | 4.5 | 49.9 | 0 | 5.80 |
| White Sands | UP17 | 19.2 | 28.3 | 9.5 | 19.0 | | 10.2 | 53.7 | 0 | 5.76 |
| Winsloe South | UP9 | 19.1 | 28.1 | 9.7 | 71.4 | | 1.6 | 24.1 | 0 | |

? July reading maybe inaccurate.

NR- Not recording wind speed

Inc. Incomplete record

The measurements from eleven (11) CoCoRaHS observers located on PEI are recorded in table 3. Some of the CoCoRaHS stations listed on table 3 are also climate stations listed on Table 2. This includes: UP6, EC5, UP14 and UP9.

Table 3 CoCoRaHS Precipitation Amounts from Eleven Locations on PEI, July, 2017

| CoCoRaHS Station | Total Precipitation in mm | Total Snowfall in cm |
|----------------------------|---------------------------|----------------------|
| CAN-PE-1 Stratford | 46.5 | 0.0 |
| CAN-PE-3 Wellington | 42.2 | 0.0 |
| CAN-PE-7 Morell | 25.7 | 0.0 |
| CAN-PE-10 New London | 26.2 | 0.0 |
| CAN-PE-13 Bedeque | 32.5 | 0.0 |
| CAN-PE-19 Winsloe South | 71.4 | 0.0 |
| CAN-PE-20 Bonshaw | 29.5 | 0.0 |
| CAN-PE-23 Borden-Carleton | 27.4 | 0.0 |
| CAN-PE-25 – Caledonia | 53.3 | 0.0 |
| CAN-PE-26 – Grand Tracadie | 37.8 | 0.0 |
| CAN-PE-27 – Cardigan Head | 32.5 | 0.0 |
| CAN-PE-28 – Peakes | 41.1 | 0.0 |

Table 4 provides thirty year climate normal values for seven (7) climate stations in the province for the month of July.

Table 4 July Climate Normal for PEI Stations 1981 to 2010

| Parameter | Ch'town A | New Glasgow | Summerside A | O'Leary | Alberton | Monticello | East Baltic |
|-------------------|--------------|----------------|-----------------|---------|----------|------------|----------------|
| Mean Monthly T | 18.7 | 18.8 | 19.2 | 18.6 | 18.7 | 18.5 | 18.2 |

| in C | | | | | | | |
|--------------------------------|------|------|------|------|------|------|------|
| Mean Monthly Ppt. in mm | 79.9 | 78.6 | 74.1 | 96.0 | 86.3 | 79.3 | 86.6 |
| Mean Monthly Snow cm | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Discussion

The monthly mean temperatures for July as shown on table 5 were close to normal across the province. The range was -1.5°C cooler at Maple Plains to 2.0°C above normal at St. Peter's. The highest monthly mean of 20.5°C was observed at St. Peter's with the lowest monthly mean of 17.2°C recorded at the lighthouse site in East Point, representing a 3.2 degree difference over the month between these locations. The maximum temperature for the month was 30.4°C at Arlington on July 31st. The coldest temperature reported during the month for all stations listed in this summary was 3.7°C which was recorded at Cardigan Head on July 5th. A search on the Government of Canada Almanac Averages and Extremes Website for this date at reporting stations on Prince Edward Island revealed this to be the extreme low for this date using these historical records. The previous low was 4.0°C at Long River on July 5, 1980. The Maple Plains Station reported 3.8°C on July 5th so two stations actually had a lower temperature than any previously reported for this date.

There were no reports of frost during July of 2017.

Table 5 – Variation of July 2017 Monthly Mean Temperature from 1981-2010 Climate Normal

| Climate Station | July 2017 Mean C | 30 Year Normal C 1981-2010 | Variation from Normal C |
|----------------------|------------------|-------------------------------|----------------------------|
| Alliston / Peters Rd | 19.8 | 18.7 | 1.10 |
| Alliston CNP | 18.9 | 18.7 | 0.20 |
| Arlington | 19.3 | 18.6 | 0.70 |
| Baltic | 19.2 | 19.2 | 0.00 |
| Borden - Carleton | 19.3 | 19.2 | 0.10 |
| Brockton | 19.2 | 18.7 | 0.50 |
| Cape Egmont | 18.9 | 18.7 | 0.20 |
| Cardigan Head | 18.6 | 18.5 | 0.10 |
| Charlottetown A | 18.4 | 18.7 | -0.30 |
| Dingwells | 18.2 | 18.5 | -0.30 |
| East Point | 17.2 | 18.2 | -1.00 |
| East Point – UP16 | 18.6 | 18.2 | 0.40 |
| Elmwood | 18.7 | 18.8 | -0.10 |
| Fanning Brook | 18.8 | 18.7 | 0.10 |
| Flat River | 18.6 | 18.7 | -0.10 |

| | | | |
|-----------------|------|------|-------|
| Foxley River | 19.9 | 18.6 | 1.30 |
| Glen Valley | 18.4 | 18.8 | -0.40 |
| Hampton | 18.1 | 19.2 | -1.10 |
| Harrington | 18.6 | 18.7 | -0.10 |
| Hope River | 19.9 | 18.8 | 1.10 |
| Maple Plains | 17.7 | 19.2 | -1.50 |
| Mill Cove | 19.3 | 18.7 | 0.60 |
| New Glasgow | 18.4 | 18.8 | -0.40 |
| North Cape | 18.7 | 18.7 | 0.00 |
| Orwell | 19.0 | 18.7 | 0.30 |
| St. Catherine's | 19.3 | 18.7 | 0.60 |
| St. Peters | 20.5 | 18.5 | 2.00 |
| Summerside A | 19.2 | 19.2 | 0.00 |
| Tignish | 19.4 | 18.7 | 0.70 |
| White Sands | 19.2 | 18.7 | 0.50 |
| Winsloe South | 19.1 | 18.7 | 0.40 |

Table 6 – Variation of July 2017 Total Precipitation Amounts from 1981-2010 Climate Normal

| Climate Station | Total PPT in mm July 2017 | 30 Year Normal mm 1981-2010 | Variation from Normal mm |
|------------------------------------|------------------------------|--------------------------------|--------------------------|
| Alliston / Peters Rd | 52.1 | 79.9 | -27.80 |
| Alliston CNP | 47.2 | 79.9 | -32.70 |
| Arlington | 27.8 | 96.0 | -68.20 |
| Baltic | 13.0 | 74.1 | -61.10 |
| Borden – Carleton (CoCo Can-PE-23) | 27.4 | 74.1 | -46.70 |
| Brockton | 20.2 | 86.3 | -66.10 |
| Cape Egmont | 21.6 | 74.1 | -52.50 |
| Cardigan Head (CoCo Can-PE-27) | 40.6 | 79.3 | -38.70 |
| Charlottetown A | 68.8 | 79.9 | -11.10 |
| Dingwells | 35.8 | 79.3 | -43.50 |
| East Point - EC | 44.4 | 86.6 | -42.20 |
| East Point – UP16 | 36.2 | 86.6 | -50.40 |
| Elmwood (CoCo- Can-PE-20) | 29.5 | 78.6 | -49.10 |
| Fanning Brook | 40.1 | 79.9 | -39.80 |
| Flat River | 24.6 | 79.9 | -55.30 |
| Foxley River | 15.2 | 96.0 | -80.80 |
| Glen Valley | 38.9 | 78.6 | -39.70 |
| Hampton | 32.8 | 74.1 | -41.30 |
| Harrington | 37.4 | 79.9 | -42.50 |
| Hope River | 18.5 | 78.6 | -60.10 |
| Maple Plains | 37.4 | 74.1 | -36.70 |

| | | | |
|---------------------------------------|------|------|--------|
| Mill Cove | 33.0 | 79.9 | -46.90 |
| New Glasgow | 72.2 | 78.6 | -6.40 |
| North Cape | 45.4 | 86.3 | -40.90 |
| Orwell | 43.4 | 79.9 | -36.50 |
| St. Catherine's | 33.3 | 79.9 | -46.60 |
| St. Peters | 26.7 | 79.3 | -52.60 |
| Summerside A | 25.6 | 74.1 | -48.50 |
| Tignish | 21.4 | 86.3 | -64.90 |
| White Sands | 19.0 | 79.9 | -60.90 |
| Winsloe South (CoCo-Can-PE-19) | 71.4 | 79.9 | -8.50 |

In July the precipitation amounts were below normal across the province with Foxley River over 80 mm below normal. The CoCoRaHS stations using volunteer observers reported total precipitation amounts ranging from 25.7 to 71.4 mm which were all below normal values. The maximum precipitation for all reporting locations was at New Glasgow where 72.2 mm was recorded. Some farmers were beginning to express concern about the lack of rainfall particularly in some areas of West Prince County.

Average wind speeds across the province ranged from 1.2 km/h at Arlington to 19.5 km/h at North Cape. The maximum gust for the month was 113.0 km/h reported at North Cape on July 21st.

The solar radiation values ranged from 5.67 kWh/m²/D at Hampton to 6.32 kWh/m²/D at Cape Egmont. These readings were similar to those reported for the same month in 2016.

Closure

- Temperatures were close to normal across the province.
- Precipitation was below normal across the province
- The maximum wind gust recorded was 113.0 km/h at North Cape.

Some phenological and weather events during the month are recorded on Table 7.

Table 7–July Weather or Phenological Events 2017

| Date | Location | Type of Event | Comments |
|-------------|---|---|---|
| July 5 | Cardigan Head, Maple Plains | Extreme low temperatures of 3.7 and 3.8 C respectively | Lowest temperature recorded for this date on PEI |
| July 21 | North Cape | High winds | Gust up to 113 km/h |
| July 22 | Winsloe South, Fortune, Murray Harbour North, Campbellton (West Prince) | Severe thunder and lightning storm. Vivid sheet lightning with 51.6 mm of rain at Winsloe South. Some crop damage to corn and potatoes at Fortune and Murray Harbour North. Some fish killed in the Campbellton | Over 20,000 people lost their power during the storm. |



Figure 3- Kite surfing at Robinson's Island

Sources:

Environment Canada Climate Data Archives and associated websites

WUnderground.com

CoCoRaHS.org/Canada

AgraWeather Atlantic Website

Michael Radvanyi

PEIStormChaser

CBC News

D. Jardine, UPEI Climate Research Lab, Sept. 5, 2017.