

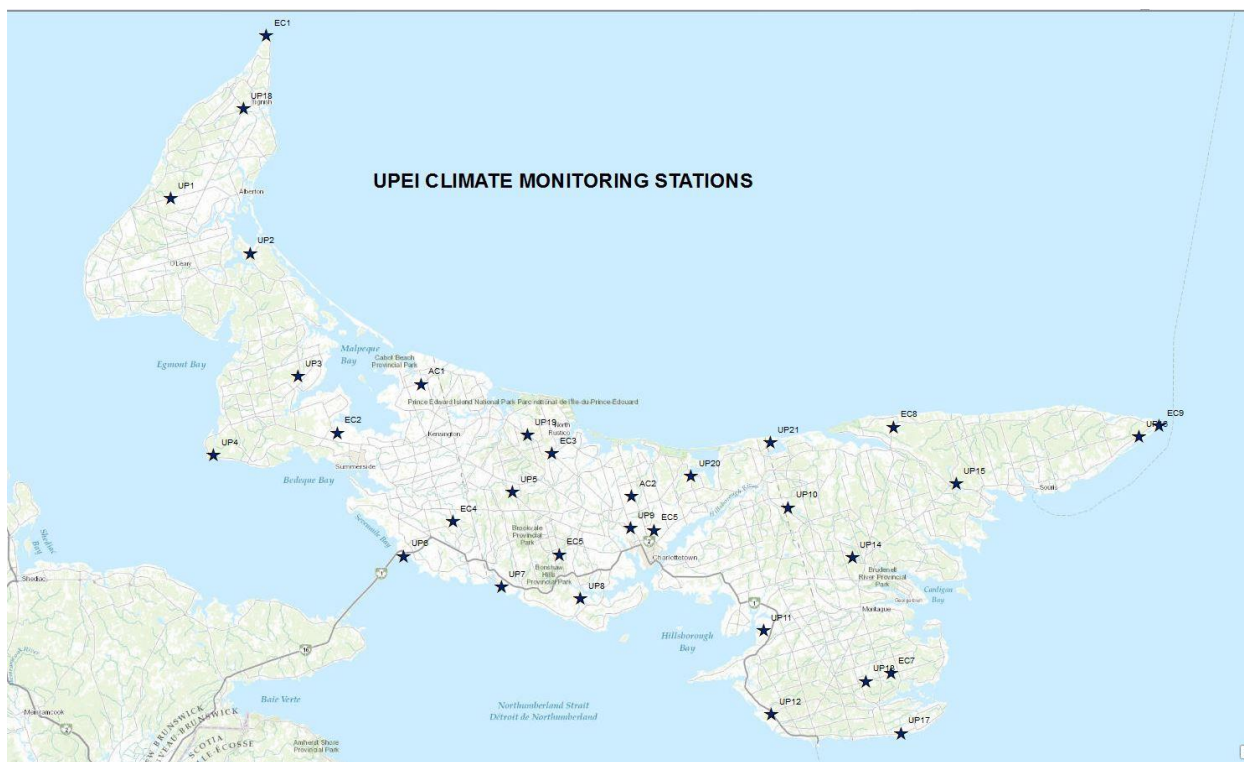
## Climate Research Lab Monthly Meteorological Summary-September, 2017

### Background

This summary is produced by the UPEI Climate Lab for the month of September, 2017. Data is reported for 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/>).



Figure 1 –Climate Station at Savage Harbour, Abegweit Conservation Society



**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          |
|-------------------|--------|----------------------|-----------|------------|----------------|-------------------|
| <b>IPRINCEE22</b> | UP13   | Alliston             | 46.052032 | -62.638389 | 25-Jun-15      | CNP               |
| <b>8300100</b>    | EC7    | Alliston/Peters Road | 46.064393 | -62.581808 | 01-Jan-36      | M. Radvanyi       |
| <b>Remote</b>     | UP3    | Arlington            | 46.52964  | -63.927503 | 30-Jun-15      | Arlington Orchard |
| <b>KNW01</b>      | AC1    | Baltic               | 46.517266 | -63.648411 | 14-Aug-14      | Kensington North  |
| <b>IPEBORDE2</b>  | UP6    | Borden - Carleton    | 46.248346 | -63.686935 | 26-Jan-95      | G. Read           |

|                    |      |                 |           |             |                 |                               |
|--------------------|------|-----------------|-----------|-------------|-----------------|-------------------------------|
| <b>IPRINCEE28</b>  | UP1  | Brockton        | 46.80649  | -64.21685   | 23-Sep-15       | UPEI                          |
| <b>83000562</b>    | EC8  | Cable Head      | 46.4503   | -62.5758    | 14-Aug-03       | EC                            |
| <b>IPRINCEE26</b>  | UP4  | Cape Egmont     | 46.4067   | -64.118742  | 10-Sep-15       | UPEI                          |
| <b>IPRINCEE17</b>  | UP14 | Cardigan Head   | 46.2461   | -62.66833   | 01-Oct-14       | R. Angus                      |
| <b>8300300</b>     | EC5  | Charlottetown   | 46.28917  | -63.119167  | 14-Sep-12       | NAV Canada                    |
| <b>IPRINCEE16</b>  | UP15 | Dingwells Mills | 46.362154 | -62.432651  | 14-Nov-13       | UPEI                          |
| <b>IPRINCEE31</b>  | UP16 | East Point      | 46.43554  | -62.018632  | 16-Jul-15       | Newman                        |
| <b>8300418</b>     | EC9  | East Point      | 46.45227  | -61.971635  | 8-Dec-92        | EC                            |
| <b>IPEIELMW2</b>   | EC5  | Elmwood         | 46.2508   | -63.3342    | 01-Sep-93       | B. Jameson                    |
| <b>IPRINCEE32</b>  | UP10 | Fanning Brook   | 46.32419  | -62.8141    | 05-Nov-15       | UPEI                          |
| <b>IPRINCEE13</b>  | UP12 | Flat River      | 45.999949 | -62.852033  | 06-Nov-13       | UPEI                          |
| <b>IPRINCEE15</b>  | UP2  | Foxley River    | 46.7208   | -64.0356    | 20-Nov-13       | UPEI                          |
| <b>IPRINCEE30</b>  | UP5  | Glen Valley     | 46.34884  | -63.439941  | 06-Oct-15       | UPEI                          |
| <b>IPRINCEE27</b>  | UP7  | Hampton         | 46.2003   | -63.4652    | 11-Sep-15       | M. Cassidy                    |
| <b>830P001</b>     | AC2  | Harrington      | 46.342506 | -63.169736  | 01-Jul-00       | Agric. Canada                 |
| <b>IPRINCEE 35</b> | UP19 | Hope River      | 46.43816  | -63.40707   | 10-September-16 | A.MacKay                      |
| <b>8305500</b>     | EC4  | Maple Plains    | 46.3028   | -63.575567  | 21-Jun-01       | BBEMA                         |
| <b>IPRINCEE 4</b>  | UP20 | Mill Cove       | 46.37400  | -63.03508   | 24-Apr-12       | P. Lawlor                     |
| <b>8300497</b>     | EC3  | New Glasgow     | 46.408911 | -63.350289  | 01-Oct-71       | H. Dingwell                   |
| <b>8300516</b>     | EC1  | North Cape      | 47.05806  | -63.998611  | 18-Oct-02       | EC                            |
| <b>IPRINCEE14</b>  | UP11 | Orwell Cove     | 46.13153  | -62.869768  | 13-Nov-13       | UPEI                          |
| <b>IPRINCEE21</b>  | UP8  | St. Catherine's | 46.182023 | -63.286157  | 25-Jun-15       | Matos Winery                  |
| <b>ISAVAGEH2</b>   | UP21 | Savage Harbour  | 46.42587  | -62.85565   | June 27, 2017   | Abegweit Conservation Society |
| <b>8300700</b>     | EC2  | Summerside      | 46.44111  | -63.83806   | 19-Jul-99       | EC                            |
| <b>IPRINCEE36</b>  | UP18 | Tignish         | 46.9453   | -64.0516    | 02-September-16 | UPEI                          |
| <b>IPRINCEE19</b>  | UP17 | White Sands     | 45.970    | -62.558     | 25-Oct-14       | M. Harwood                    |
| <b>IPRINCEE11</b>  | UP9  | Winsloe South   | 46.292358 | -63.1727104 | 13-Sep-13       | UPEI                          |

## Data Summary

Table 2 summarizes the climate data recorded during the month of September 2017 for all observation stations monitored by UPEI Climate Research Lab. September of 2017 had temperatures which reached 2.6 degrees above normal and all except one station at Peter's Road had below normal rainfall. 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 September 2017 Climate Station Summary for 32 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 <sup>2</sup> /D) |
|------------------------|--------|----------|---------|---------|----------|-----------|----------------------|----------------------|-----------------|--|
| Alliston / Peters Road | EC7    | 16.7     | 27.0    | 5.0     | 100.0    |           |                      |                      | 0               |  |
| Alliston (CNP)         | UP13   | 15.7     | 27.4    | 2.8     | 71.9     |           | 4.6                  | 43.4                 | 0               |  |
| Arlington              | UP3    | 15.7     | 29.7    | 0       | 77.7     |           | 1.6                  | 29.0                 | 1               |  |
| Baltic                 | AC1    | 16.1     | 29.3    | 2.0     | 39.3     |           | 10.0                 | 30.1                 | 0               |  |
| Borden                 | UP6    | 16.5     | 26.3    | 4.1     | 58.4     |           | 10.9                 | 54.7                 | 0               | 3.72   |
| Brockton               | UP1    | 15.6     | 28.0    | 1.7     | 54.1     |           | 4.1                  | 40.2                 | 0               | 3.14   |
| Cape Egmont            | UP4    | 16.1     | 28.2    | 2.4     | 69.6     |           | 10.5                 | 62.8                 | 0               |  |
| Cardigan Head          | UP14   | 14.7     | 29.8    | -1.5    | 71.8     |           | 2.4                  | 35.4                 | 2               |  |
| Ch'town Airport        | EC6    | 15.4     | 28.6    | 2.0     | 73.9     |           |                      | 63.0                 | 0               |  |
| Dingwells              | UP15   | 15.6     | 28.5    | 1.7     | 68.1     |           | 4.6                  | 48.3                 | 0               |  |
| East Point             | EC9    | 16.4     | 26.9    | 5.2     | 71.2     |           | 20.7                 | 67.0                 | 0               |  |
| East Point (N)         | UP16   | 15.9     | 27.6    | 5.2     | 67.4     |           | 7.2                  | 57.9                 | 0               |  |
| Elmwood                | EC5    | 15.5     | 28.6    | 1.1     | 67.8     |           | 5.3                  | 40.2                 | 0               |  |
| Fanning Brook          | UP10   | 15.4     | 28.7    | 3.2     | 53.3     |           | 6.4                  | 61.1                 | 0               |  |
| Flat River             | UP12   | 16.0     | 26.8    | 1.4     | 46.7     |           | 5.7                  | 48.3                 | 0               |  |
| Foxley River           | UP2    | 16.3     | 29.8    | 2.3     | 50.0     |           | 8.1                  | 56.3                 | 0               |  |
| Glen Valley            | UP5    | 15.7     | 28.2    | 3.7     | 63.2     |           | 12.8                 | 59.5                 | 0               |  |
| Hampton                | UP7    | 15.6     | 24.9    | 2.3     | 73.7     |           | 10.6                 | 56.3                 | 0               |  |
| Harrington             | AC2    | 15.6     | 28.5    | 1.9     | 56.5     |           | 12.8                 | 61.0                 | 0               |  |
| Hope River             | UP19   | 17.3     | 28.2    | 3.6     | 40.9     |           | 9.0                  | 72.4                 | 0               |  |
| Maple Plains           | EC4    | 14.6     | 28.2    | -2.5    | 60.0     |           | 9.6                  | 30.6                 | 2               |  |
| Mill Cove              | UP20   | 15.9     | 30.2    | 3.0     | 43.9     |           | 3.5                  | 33.8                 | 0               |  |
| New                    | EC3    | 15.8     | 29.0    | 2.5     | 72.8     |           |                      |                      | 0               |  |

|                |      |      |      |      |      |  |      |      |   |      |
|----------------|------|------|------|------|------|--|------|------|---|------|
| Glasgow        |      |      |      |      |      |  |      |      |   |      |
| North Cape     | EC1  | 15.3 | 24.4 | 3.6  | 53.1 |  | 22.0 | 93.0 | 0 |      |
| Orwell Cove    | UP11 | 16.0 | 29.3 | 7.8  | 79.0 |  | 4.0  | 40.2 | 0 |      |
| St. Catherines | UP8  | 15.8 | 26.6 | 2.4  | 54.9 |  | 6.3  | 49.9 | 0 |      |
| St. Peter's    | EC9  | 15.8 | 28.1 | 3.1  | 47.2 |  | 14.1 | 69.0 | 0 |      |
| Savage Harbour | UP21 | 16.4 | 28.6 | 4.5  | 40.0 |  | 10.6 | 59.5 | 0 | 3.07 |
| Summerside     | EC2  | 15.8 | 29.4 | 1.7  | 79.5 |  | 16.7 | 61.0 | 0 |      |
| Tignish        | UP18 | 15.6 | 26.1 | -0.6 | 40.4 |  | 3.6  | 41.8 | 1 | 3.80 |
| White Sands    | UP17 | 16.6 | 27.7 | 4.5  | 90.9 |  | 12.0 | 64.8 | 0 |      |
| Winsloe South  | UP9  | 15.8 | 29.4 | 3.8  | 64.3 |  | 2.0  | 32.3 | 0 |      |

? September reading maybe inaccurate.

NR- Not recording wind speed

Inc. Incomplete record

The measurements from twelve (12) 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, September, 2017**

| CoCoRaHS Station           | Total Precipitation in mm | Total Snowfall in cm |
|----------------------------|---------------------------|----------------------|
| CAN-PE-1 Stratford         | 60.5                      | 0                    |
| CAN-PE-3 Wellington        | 187.2                     |                      |
| CAN-PE-7 Morell            | 61.0                      |                      |
| CAN-PE-10 New London       | 40.6                      |                      |
| CAN-PE-13 Bedeque          | 59.7                      |                      |
| CAN-PE-19 Winsloe South    | 68.3                      |                      |
| CAN-PE-20 Bonshaw          | 78.0                      |                      |
| CAN-PE-23 Borden-Carleton  | 46.6                      |                      |
| CAN-PE-25 – Caledonia      | 90.4                      |                      |
| CAN-PE-26 – Grand Tracadie | 38.1                      |                      |
| CAN-PE-27 – Cardigan Head  | 81.0                      |                      |
| CAN-PE-28 – Peakes         | 76.7                      |                      |

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

**Table 4 September Climate Normal for PEI Stations 1981 to 2010**

| Parameter                     | Ch'town<br>A | New<br>Glasgow | Summerside<br>A | O'Leary | Alberton | Monticello | East<br>Baltic |
|-------------------------------|--------------|----------------|-----------------|---------|----------|------------|----------------|
| Mean<br>Monthly T<br>in C     | 14.1         | 14.4           | 14.1            | 14.3    | 14.4     | 14.3       | 14.1           |
| Mean<br>Monthly<br>Ppt. in mm | 95.9         | 107.4          | 96.7            | 101.8   | 91.6     | 107.9      | 114.7          |
| Mean<br>Monthly<br>Snow cm    | 0            | 0              | 0               | 0       | 0        | 0          | 0              |

## Discussion

The monthly mean temperatures for September ranged from 0.5<sup>o</sup>C warmer at Maple Plains to 2.6<sup>o</sup> C above normal at Peters Road. The highest monthly mean of 16.7<sup>o</sup>C was observed at Peters Road with the lowest monthly mean of 14.6<sup>o</sup>C recorded at Maple Plains representing a range of 2.1 degrees across the province. The maximum temperature for the month was 30.2<sup>o</sup>C at Mill Cove on September 26<sup>th</sup> which set a new extreme daily high for this date. The coldest temperature reported during the month for all stations listed in this summary was -2.5<sup>o</sup>C which was recorded at Maple Plains on September 30<sup>th</sup>.

A search on the Government of Canada Almanac Averages and Extremes Website for the extreme highs on the dates of September 14<sup>th</sup> and September 26<sup>th</sup> revealed a previous high of 27.1<sup>o</sup>C in 2003 at Alliston for the 14<sup>th</sup> and an extreme high of 28.0<sup>o</sup>C at Peter's Road in 2007 for the 26<sup>th</sup>. These highs were exceeded in 2017:

- **September 14<sup>th</sup>**: Arlington 27.9<sup>o</sup>C
- **September 26<sup>th</sup>**: Mill Cove 30.2<sup>o</sup>C (several other stations were also above the previous provincial daily high of 27.1<sup>o</sup>C).

Four stations reported frost during September of 2017.

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

| Climate Station      | September 2017 Mean<br>C | 30 Year Normal C<br>1981-2010 | Variation from Normal<br>C |
|----------------------|--------------------------|-------------------------------|----------------------------|
| Alliston / Peters Rd | 16.7                     | 14.1                          | 2.60                       |
| Alliston CNP         | 15.7                     | 14.1                          | 1.60                       |
| Arlington            | 15.7                     | 14.3                          | 1.40                       |
| Baltic               | 16.1                     | 14.1                          | 2.00                       |
| Borden - Carleton    | 16.5                     | 14.1                          | 2.40                       |
| Brockton             | 15.6                     | 14.4                          | 1.20                       |

|                   |      |      |      |
|-------------------|------|------|------|
| Cape Egmont       | 16.1 | 14.1 | 2.00 |
| Cardigan Head     | 14.7 | 14.3 | 0.40 |
| Charlottetown A   | 15.4 | 14.1 | 1.30 |
| Dingwells         | 15.6 | 14.3 | 1.30 |
| East Point        | 16.4 | 14.1 | 2.30 |
| East Point – UP16 | 15.9 | 14.1 | 1.80 |
| Elmwood           | 15.5 | 14.4 | 1.10 |
| Fanning Brook     | 15.4 | 14.1 | 1.30 |
| Flat River        | 16.0 | 14.1 | 1.90 |
| Foxley River      | 16.3 | 14.3 | 2.00 |
| Glen Valley       | 15.7 | 14.4 | 1.30 |
| Hampton           | 15.6 | 14.1 | 1.50 |
| Harrington        | 15.6 | 14.1 | 1.50 |
| Hope River        | 17.3 | 14.4 | 2.90 |
| Maple Plains      | 14.6 | 14.1 | 0.50 |
| Mill Cove         | 15.9 | 14.1 | 1.80 |
| New Glasgow       | 15.8 | 14.4 | 1.40 |
| North Cape        | 15.3 | 14.4 | 0.90 |
| Orwell            | 16.0 | 14.1 | 1.90 |
| St. Catherine's   | 15.8 | 14.1 | 1.70 |
| St. Peters        | 15.8 | 14.3 | 1.50 |
| Savage Harbour    | 16.4 | 14.1 | 2.30 |
| Summerside A      | 15.8 | 14.1 | 1.70 |
| Tignish           | 15.6 | 14.4 | 1.20 |
| White Sands       | 16.6 | 14.1 | 2.50 |
| Winsloe South     | 15.8 | 14.1 | 1.70 |

Readings in red may not be accurate.

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

| Climate Station                    | Total PPT in mm<br>September<br>2017 | 30 Year Normal mm<br>1981-2010 | Variation from<br>Normal mm |
|------------------------------------|--------------------------------------|--------------------------------|-----------------------------|
| Alliston / Peters Rd               | 100.0                                | 95.9                           | 4.10                        |
| Alliston CNP                       | 71.9                                 | 95.9                           | -24.00                      |
| Arlington                          | 77.7                                 | 101.8                          | -24.10                      |
| Baltic                             | 39.3                                 | 96.7                           | -57.40                      |
| Borden – Carleton (CoCo Can-PE-23) | 58.4                                 | 96.7                           | -38.30                      |
| Brockton                           | 54.1                                 | 91.6                           | -37.50                      |
| Cape Egmont                        | 69.6                                 | 96.7                           | -27.10                      |
| Cardigan Head (CoCo Can-PE-27)     | 81.0                                 | 107.9                          | -26.90                      |
| Charlottetown A                    | 73.9                                 | 95.9                           | -22.00                      |
| Dingwells                          | 68.1                                 | 107.9                          | -39.80                      |

|                                       |      |       |        |
|---------------------------------------|------|-------|--------|
| <b>East Point - EC</b>                | 71.2 | 114.7 | -43.50 |
| <b>East Point – UP16</b>              | 67.4 | 114.7 | -47.30 |
| <b>Elmwood (CoCo- Can-PE-20)</b>      | 78.0 | 107.4 | -29.40 |
| <b>Fanning Brook</b>                  | 53.3 | 95.9  | -42.60 |
| <b>Flat River</b>                     | 46.7 | 95.9  | -49.20 |
| <b>Foxley River</b>                   | 50.0 | 101.8 | -51.80 |
| <b>Glen Valley</b>                    | 63.2 | 107.4 | -44.20 |
| <b>Hampton</b>                        | 73.7 | 96.7  | -23.00 |
| <b>Harrington</b>                     | 56.5 | 95.9  | -39.40 |
| <b>Hope River</b>                     | 40.9 | 107.4 | -66.50 |
| <b>Maple Plains</b>                   | 60.0 | 96.7  | -36.70 |
| <b>Mill Cove</b>                      | 43.9 | 95.9  | -52.00 |
| <b>New Glasgow</b>                    | 72.8 | 107.4 | -34.60 |
| <b>North Cape</b>                     | 53.1 | 91.6  | -38.50 |
| <b>Orwell</b>                         | 73.7 | 95.9  | -22.20 |
| <b>St. Catherine's</b>                | 54.9 | 95.9  | -41.00 |
| <b>St. Peters</b>                     | 47.2 | 107.9 | -60.70 |
| <b>Savage Harbour</b>                 | 40.0 | 95.9  | -55.90 |
| <b>Summerside A</b>                   | 79.5 | 96.7  | -17.20 |
| <b>Tignish</b>                        | 40.4 | 91.6  | -51.20 |
| <b>White Sands</b>                    | 90.9 | 95.9  | -5.00  |
| <b>Winsloe South (CoCo-Can-PE-19)</b> | 68.3 | 95.9  | -27.60 |

With the exception of one station at Peters Road, all reporting stations had below normal precipitation during the month. The highest rainfall total was 100.0 mm at Peters Road and the lowest total was 39.3 mm at Baltic. This continued the dry trend for the year.

Average wind speeds across the province ranged from 1.6 km/h at Arlington to 22.0 km/h at North Cape. The maximum gust for the month was 93.0km/h reported at North Cape on September 27th.

The solar radiation values ranged from 3.14 kWh/m<sup>2</sup>/D at Brockton to 3.80 kWh/m<sup>2</sup>/D at Tignish. These readings were similar to those reported for the same month in the previous year. Some solar radiation values could not be obtained due to technical difficulties downloading these from the Weather Underground website. Daily average solar radiation values for 9 locations monitored by the UPEI Climate Research lab are displayed on figure 3. There is interest in PEI becoming Canada's first carbon neutral province and UPEI held a forum on the subject on October 26, 2017. The information provided on figure 3 can help in the assessing the potential for expansion of the use of solar panels and solar heating in the province.

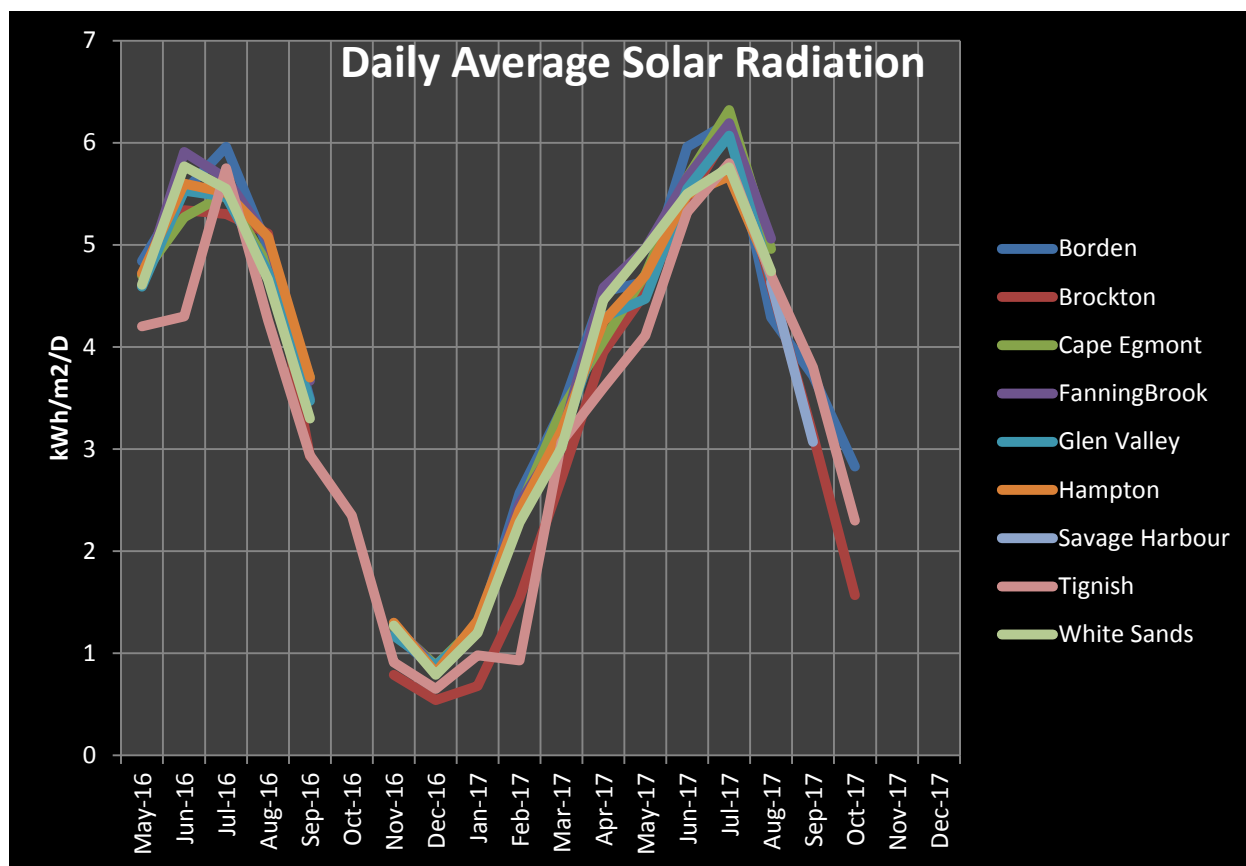


Figure 3: Daily Average Solar Radiation - PEI Climate Stations, May 2016 - October 2017

## Closure

- Temperatures were above normal across the province with extreme daily highs set on Sept 14<sup>th</sup> and 26<sup>th</sup>.
- Precipitation was below normal for all stations except Peters Road which was 4.1 mm above normal.
- There were no major storm events during the month.
- The maximum wind gust recorded was 93.0 km/h at North Cape.

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

Table 7–September Weather or Phenological Events 2017

| Date                       | Location     | Type of Event                     | Comments                                     |
|----------------------------|--------------|-----------------------------------|--|
| September 14 <sup>th</sup> | Arlington    | Daily high temperature set.       | It reached 27.9 <sup>0</sup> C at Arlington  |
| September 26 <sup>th</sup> | Mill Cove    | Daily high temperature set.       | It reached 30.2 <sup>0</sup> C at Mill Cove. |
| September 30 <sup>th</sup> | Maple Plains | Coldest temperature for the month | At Maple Plains site.                        |



Figure 4- Point Prim Lighthouse Shoreline Protection System

#### 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, November 20, 2017.