

Climate Research Lab Monthly Meteorological Summary-January, 2017

Background

The UPEI Climate Research Lab is beginning its fourth year of collecting, monitoring and compiling climate data from stations on Prince Edward Island. This data enables the Lab to observe changes in climate and to determine geographic regions of the province where micro-climates may exist and to track isolated extreme weather events which can result in damage to crops and infrastructure. The Lab has been producing monthly summaries since September of 2014. This report provides a summary of climate data across the entire province for January, 2017.



Figure 1 – Freezing Rain on Trees, Kildare, January 31, 2017

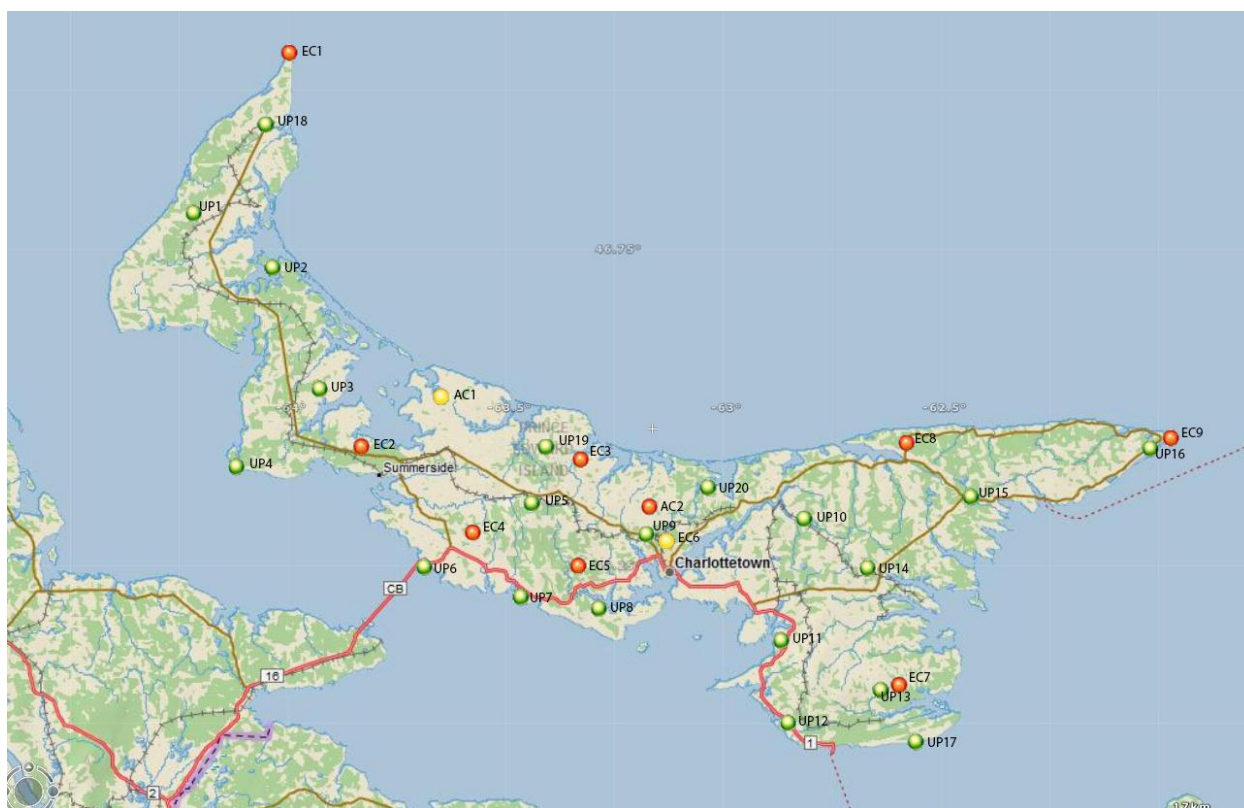


Figure 2 - Map showing climate station locations monitored by the UPEI Climate Research Lab

A listing of stations currently being monitored by UPEI 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-May-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
8300700	EC2	Summerside	46.44111	-63.83806	19-Jul-99	EC
IPRINCEE36	UP18	Tignish	46.9453	-64.0516	02-May-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 January 2017 for 31 stations being observed by UPEI Climate Research Lab. Some of the stations are not equipped to measure precipitation during the winter season and as a consequence have inaccurate precipitation data from December to March. Snowfall amounts are measured at a few locations and this data is included where available. 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 January 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		Daily Avg. Solar Radiation (kWh/m ² /D)
Alliston / Peters Road	EC7	-3.5	8.5	-19.0	116.9	37.0				
Alliston (CNP)	UP13	-4.0	7.1	-19.2	36.3		6.6	66.0		
Arlington	UP3	-4.6	7.8	-20.9	25.6		3.7	48.3		
Baltic	AC1	-4.2	7.8	-18.8			17.2	50.5		
Borden	UP6	-3.0	7.2	-16.3	62.2	26.9	16.1	72.4		1.24
Brockton	UP1	-5.0	7.7	-17.0	56.4		7.0	57.9		0.68
Cape Egmont	UP4	-4.6	6.7	-17.5	68.8		12.7	64.4		1.28
Cardigan Head	UP14	-4.6	9.3	-28.2	97.2					
Ch'town Airport	EC6	-5.0	7.3	-20.6	110.3	61.2		87.0		
Dingwells	UP15	-3.8	8.9	-26.7	100.8		7.7	66.0		
East Point	EC9	-2.4	7.2	-17.7	81.4		25.2	93.0		
East Point (N)	UP16	-3.1	6.9	-17.4	74.4		11.6	88.5		
Elmwood	EC5	-4.5	7.4	-18.0	26.2	50.3	9.1	49.9		
Fanning Brook	UP10	-3.9	9.1	-24.8	94.5		10.2	75.6		1.24
Flat River	UP12	-3.3	8.0	-20.8	61.7		10.2	80.4		
Foxley River	UP2	-3.8	8.0	-16.4	99.8		8.0	78.9		
Glen Valley	UP5	-4.7	7.9	-18.5	60.2		16.1	78.8		1.25
Hampton	UP7	-4.7	4.7	-17.2	21.8		14.6	74.0		1.32
Harrington	AC2	-4.7	7.4	-21.1	107.6		16.5	76.0		
Hope River	UP19	-3.3	11.5?	-17.7	51.8		12.2	80.3		
Maple	EC4	-4.9	6.7	-26.2			13.4	45.5		

Plains										
Mill Cove	UP20	-4.3	7.6	-24.1	53.1		5.4	57.9		
New Glasgow	EC3	-4.5	8.5	-25.0	147.0	48.0				
North Cape	EC1	-4.0	7.8	-14.1	79.2		30.2	98.0		
Orwell Cove	UP11	-3.1	9.4	-18.1	80.8		12.0	75.6		
St. Catherines	UP8	-4.2	7.2	-18.0	50.0		7.7	54.7		
St. Peter's	EC9	-4.0	9.4	-19.6	124.1		17.6	78.0		
Summer side	EC2	-4.9	7.2	-19.2	80.3		20.0	78.0		
Tignish	UP18	-4.4	7.9	-19.4	66.2		6.4	54.7		0.98
White Sands	UP17	-3.0	7.3	-16.8	53.3		17.4	75.9		1.20
Winsloe South	UP9	-3.8	7.4	-18.4	88.9	52.3	4.6	54.7		

? Temperature reading may be inaccurate.

Precipitation is also recorded at a number of Community Collaborative Rain, Hail & Snow Network (CoCoRaHS) sites on PEI. The observers at these sites use manual type B rain gauges for precipitation measurement. The measurements from eight (8) 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 and UP9.

Table 3 CoCoRaHS Precipitation Amounts from Eight Locations on PEI, January, 2017

CoCoRaHS Station	Total Precipitation in mm	Total Snowfall in cm
CAN-PE-1 Stratford	82.6	58.7
CAN-PE-3 Welling0ton	99.6	26.2
CAN-PE-7 Morell	122.9	4.3
CAN-PE-10 New London	114.0	28.4
CAN-PE-13 Bedeque	75.9	22.9
CAN-PE-19 Winsloe South	98.6	52.3
CAN-PE-20 Bonshaw	111.0	50.3
CAN-PE-23 Borden-Carleton	90.7	26.9

Table 4 provides thirty year climate normal values for several climate stations in the province for the month of January.

Table 4 January 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 in C	-7.7	-7.7	-7.7	-8.6	-8.2	-6.9	-6.8
Mean Monthly Ppt. in mm	101	120	96.2	99	96.4	100.9	116.1
Mean Monthly Snow cm	73.3	79.5	78.5	73.2	73.6	68.3	76.1

Discussion

The monthly mean temperatures for January as shown on table 5 were all above normal across the entire province and ranged from 4.7⁰C warmer at the Borden-Carleton and White Sands sites to 1.4⁰C below normal at Cardigan Head. The highest monthly mean of -2.4⁰C was observed at East Point (EC) with the lowest monthly mean of -5.5⁰C recorded at Maple Plains, representing a 3.1degree difference between these locations. The maximum temperature for the month was 9.4⁰ C at Orwell Cove and at St. Peter's on January 12th. The coldest temperature reported during the month for all stations listed in this summary was -28.2⁰C which was recorded at Cardigan Head on January 10th.

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

Climate Station	January 2017 Mean C	30 Year Normal C 1981-2010	Variation from Normal C
Alliston / Peters Rd	-3.5	-7.7	4.20
Alliston CNP	-4.0	-7.7	3.70
Arlington	-4.6	-8.6	4.00
Baltic	-4.2	-7.7	3.50
Borden - Carleton	-3.0	-7.7	4.70
Brockton	-5.0	-8.2	3.20
Cape Egmont	-4.6	-7.7	3.10
Cardigan Head	-4.6	-6.9	2.30
Charlottetown A	-5.0	-7.7	2.70
Dingwells	-3.8	-6.9	3.10
East Point	-2.4	-6.8	4.40
East Point – UP16	-3.1	-6.8	3.70
Elmwood	-4.5	-7.7	3.20
Fanning Brook	-3.9	-7.7	3.80
Flat River	-3.3	-7.7	4.40

Foxley River	-3.8	-8.6	4.80
Glen Valley	-4.7	-7.7	3.00
Hampton	-4.7	-7.7	3.00
Harrington	-4.7	-7.7	3.00
Hope River	-3.3	-7.7	4.40
Maple Plains	-4.9	-7.7	2.80
Mill Cove	-4.3	-7.7	3.40
New Glasgow	-4.5	-7.7	3.20
North Cape	-4.0	-8.2	4.20
Orwell	-3.1	-7.7	4.60
St. Catherine's	-4.2	-7.7	3.50
St. Peters	-4.0	-6.9	2.90
Summerside A	-4.9	-7.7	2.80
Tignish	-4.4	-8.2	3.80
White Sands	-3.0	-7.7	4.70
Winsloe South	-3.8	-7.7	3.90

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

Climate Station	Total PPT in mm January 2017	30 Year Normal C 1981-2010	Variation from Normal mm
Alliston / Peters Rd	116.9	101	15.90
Alliston CNP	36.3	101	-64.70*
Arlington	25.6	99	-73.40*
Baltic	na	96.2	---*
Borden – Carleton (CoCo)	90.7	96.2	-5.50
Brockton	56.4	96.4	-40.00
Cape Egmont	68.8	96.2	-27.40
Cardigan Head	97.2	100.9	-3.70
Charlottetown A	110.3	101	9.30
Dingwells	100.8	100.9	-0.10
East Point - EC	81.4	116.1	-34.70
East Point – UP16	74.4	116.1	-41.70
Elmwood (CoCo- Can-PE-20)	111.0	120	-9.00
Fanning Brook	94.5	101	-6.50
Flat River	61.7	101	-39.30
Foxley River	99.8	99	0.80
Glen Valley	60.2	120	-59.80
Hampton	21.8	96.2	-74.40*
Harrington	107.6	101	6.60
Hope River	51.8	101	-49.20*
Maple Plains	na	96.2	---*
Mill Cove	53.1	101	-47.90*

New Glasgow	147.0	120	27.00
North Cape	79.2	96.4	-17.20
Orwell	80.8	101	-20.20
St. Catherine's	50.0	101	-51.00*
St. Peters	124.1	100.9	23.20
Summerside A	80.3	96.2	-15.90
Tignish	66.2	96.4	-30.20
White Sands	53.3	101	-47.70
Winsloe South (CoCo-Can-PE-19)	98.6	101	-2.40

* No rain collector heater on unit. Values are not accurate.

Table 6 shows the precipitation in January was below normal across most of the province with just 6 stations reporting above normal amounts. The maximum rainfall for the month was at New Glasgow where 147 mm was recorded. The Brockton Drop-Off Centre recorded 56.4 mm which is 40 mm below normal rainfall for the month. Snowfall during January was below normal across the province.

Average wind speeds across the province ranged from 3.7 km/h at Arlington to 30.2 km/h at North Cape. The maximum gust for the month was 98.0 km/h reported at North Cape on January 13th.

As expected the solar radiation values for the month of January increased from December values ranging from 0.68 kWh/m²/D at Brockton to 1.32 kWh/m²/D at Hampton.

Closure

- Temperatures were over 2 degrees above normal across most of the province.
- Precipitation was below normal at most reporting stations.
- Snowfall amounts were well below normal
- The maximum wind speed recorded was 98 km/h at North Cape.

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

Table 7—January Weather or Phenological Events 2017

Date	Location	Type of Event	Comments
January 7 th	Across PEI	Snowstorm with up to 40 cms by the next morning.	The storm had winds up to 70 km/h which caused drifting snow.
January 11 th	West Cape / West Point area	A thunder and lightning storm rocked the area.	Some heavy thunder claps and lightning flashes.
January 12 th	West Royalty and Winsloe area	Heavy fog with temperature reaching a high of 8 degrees	Drivers had to slow down.
January 25 th	The entire province	Freezing rain in West Prince and rain in the rest of the province. Up to 40 mm of rain reported.	Some power outages in the Tignish and Alberton areas. Freezing rain coated trees and bushes.



Figure 3- Snirt (snow + dirt) Bothwell, PEI

Sources:

Environment Canada Climate Data Archives

WUnderground.com

CoCoRaHS.org/Canada

AgraWeather Atlantic Website

Michael Radvanyi

PEIStormChaser

CBC News

D. Jardine, UPEI Climate Research Lab, February 28, 2017.