Appendix V4-1A

2009 Meteorology Baseline Report,
Hope Bay Belt Project

MAC RESOURCES

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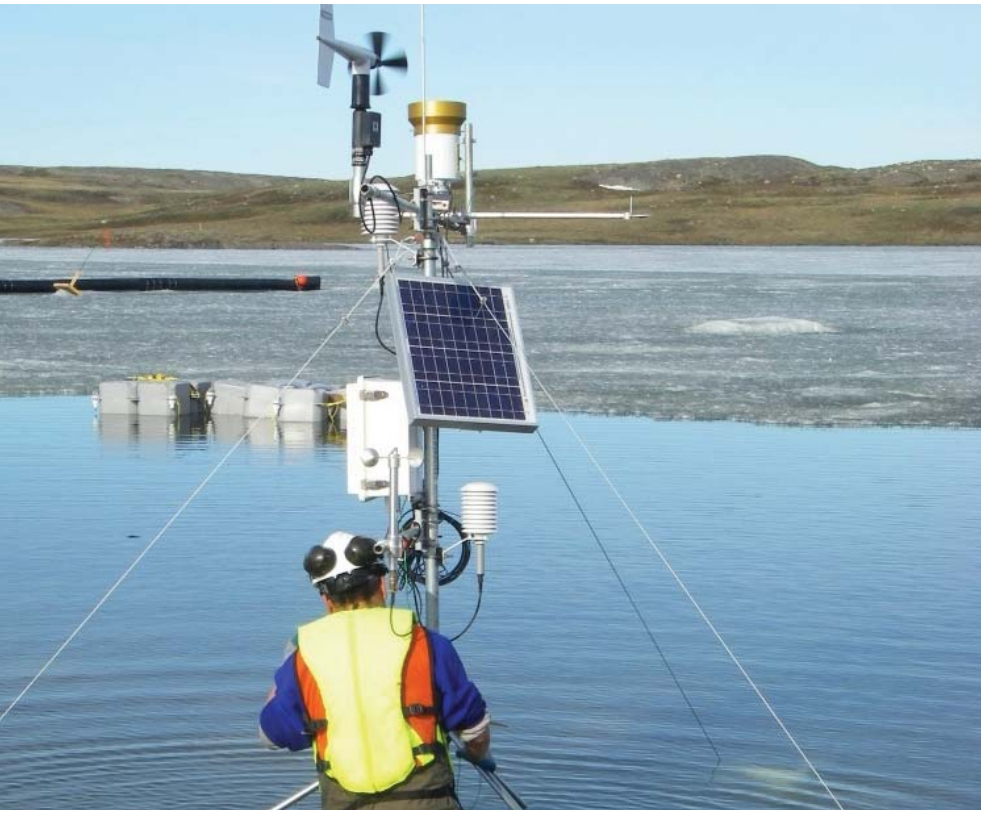
2009 Meteorology Baseline Report, Hope Bay Belt Project



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December 2009

2009 METEOROLOGY BASELINE REPORT, HOPE BAY BELT PROJECT

Cover Photos:
Left: Doris Lake Micro-meteorology (Evaporation) Station. Installed July 2009.
Right: New 10 m tower for the Doris Meteorology Station. Installed August 2009.

December 2009
Project #1009-002-02 (Rev C.1)

Prepared for:

NEWMONT™
The Gold Company

Hope Bay Mining Limited

Prepared by:

Rescan™
Engineers and Scientists

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Vancouver, British Columbia

Executive Summary

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Engineers and Scientists

Executive Summary

The Hope Bay Belt Property is located approximately 125 km southwest of Cambridge Bay, Nunavut, on the south shore of Melville Sound. The property consists of a greenstone belt running in a north/south direction, approximately 80 km long, with 3 main gold deposit areas. The Doris and Madrid deposits are located in the northern portion of the belt, and the Boston deposit is located in the southern end.

The objective of this meteorology baseline report is to provide preliminary estimates of annual averages and the seasonal range of temperature, precipitation, evaporation, wind speed and direction and solar radiation based on available data near the end of 2009. Data collected in the Hope Bay Belt Project area are compared to regional data.

Meteorological baseline studies were conducted from 1993 to 2009 in the Hope Bay Belt Project area.

Historical meteorological data were collected using a variety of automated and manual methods. Snow course surveys were conducted in 2004, 2005, 2006, 2007, and 2008. For 2009, two complete automated meteorological stations and one micro-meteorology (evaporation) station were installed and commissioned. This report summarizes data collected from June 2004 to September 2009 and compares it to historical and regional data. The meteorological monitoring program is scheduled to continue in 2010.

The annual average temperatures for 2002 to 2009 (using only complete years of available data) were -11.7°C and -11.1°C at Boston and Doris stations, respectively. Comparisons to Environment Canada – Meteorological Services of Canada (EC-MSC) regional data from the nearest stations show that temperatures recorded in the Hope Bay Project area followed regional trends. The 1971 to 2000 climate normal average annual air temperatures for the four regional stations ranged from -12.1°C to -6.5°C at the Lady Franklin and Kugluktuk stations, respectively.

Total annual rainfall from 2002 to 2009 (based on available complete years) averaged 30 mm and 85 mm at Boston and Doris stations, respectively. The 1971 to 2000 climate normal annual precipitation at Cambridge Bay regional station is 139 mm, comprised of 70 mm of rainfall and 69 mm of snow water equivalent (SWE).

Solar radiation in the Arctic is high during the summer and almost zero during the winter. The annual average number of bright sunshine hours, where average global solar radiation is greater than 120 W/m^2, was 2,476 at Boston station and 2,457 at Doris station. For comparison, the average number of hours of bright sunshine in Cambridge Bay for 1971 to 2000 was 1,720.

In general, wind in the Hope Bay Belt region typically blows from the northwest quadrant year round. The average annual wind speed was 18.3 km/h at the 3 m Doris tower and 18.4 km/h at the 10 m Boston tower.

A mean of the snow water equivalent (SWE) values for various terrain types based on 2004 to 2008 sampling, equal to 71.3 mm, may be useful for site-specific water balance calculations. Results collected during 2008 which separated Boston and Doris Project areas suggest that mean SWE values

should be slightly higher for the Boston Project area than for the Doris Project area. Overall, snow water equivalents were higher in 2008 than previous years suggesting that snowpacks were larger during that year.

Total evaporation values in the Hope Bay Project area from July to September 2009 were 167 and 170 mm based on total monthly evaporation values calculated using the Penman Combination and Priestly-Taylor methods, respectively. These estimates utilized data from a micro-meteorological station that was deployed in shallow water at Doris Lake during the 2009 open-water season.

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2009 METEOROLOGY BASELINE REPORT, HOPE BAY BELT PROJECT

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1. Introduction

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1. Introduction

The Hope Bay Belt Property is located approximately 125 km southwest of Cambridge Bay, Nunavut, on the south shore of Melville Sound (Figure 1-1). The nearest communities are Omingmaktok (75 km to the southwest of the property), Cambridge Bay (125 km northeast of the property), and Kingaok (Bathurst Inlet; 160 km to the southwest of the property).

The property consists of a greenstone belt running in a north/south direction, approximately 80 km long, with 3 main gold deposit areas. The Doris and Madrid deposits are located in the northern portion of the belt, and the Boston deposit is located in the southern end. The northern portion of the property consists of several watershed systems that drain into Roberts Bay, and a large river (Koignuk River) that drains into Hope Bay. Watersheds in the southern portion of the belt ultimately drain into the upper Koignuk, which drains into Hope Bay.

Newmont Mining Corporation (Newmont) acquired the property in 2008, and initially decided to consider the property as a whole to evaluate various options for responsible, long-term development of the belt. However, as of the fall of 2009, Newmont has decided to proceed with developing the already-permitted Doris North Project, which consists of a 2 year underground gold mine in the north end of the belt.

The environmental baseline program conducted in 2009 was based on the plan to develop multiple deposits in the belt, as indicated in Figure 1-2. The 2009 program was also based on Newmont's priorities as of early 2009, which included regulatory compliance with the existing Doris North Project permits and licences. Baseline programs for ecosystem mapping, vegetation, soils, and socio-community were deferred to 2010. Baseline work was primarily focused on the north end of the belt in 2009.

Results from the 2009 environmental baseline program are being reported in a series of reports, as follows:

- 2009 Hydrology Baseline Report;
- 2009 Meteorology Baseline Report;
- 2009 Freshwater Baseline Report;
- 2009 Freshwater Fish and Fish Habitat Baseline Report;
- 2009 Marine Baseline Report; and
- 2009 Marine Fish and Fish Habitat Baseline Report.

In addition, baseline information obtained during 2009 was used to generate various compliance reports as specified in the Doris North Project Certificate (e.g., the Wildlife Monitoring and Mitigation Program Report), the Doris North Type A Water Licence, and the Doris North Roberts Bay Jetty Fisheries Authorization. Archaeology work was also conducted in 2009 and is being reported separately.

This report presents the results from the meteorology portion of the 2009 environmental baseline program. The meteorological monitoring will continue in 2010. The objective of this report is to provide preliminary estimates of annual averages and seasonal variation of temperature, rainfall, evaporation, wind speed and direction and solar radiation based on data available near the end of 2009. Data collected in the Hope Bay Belt Project area are also compared to regional data.

Figure 1-1

Hope Bay Belt Project Location

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PROJECT # 1009-002-01 GIS # HB-15-009 May 26 2009

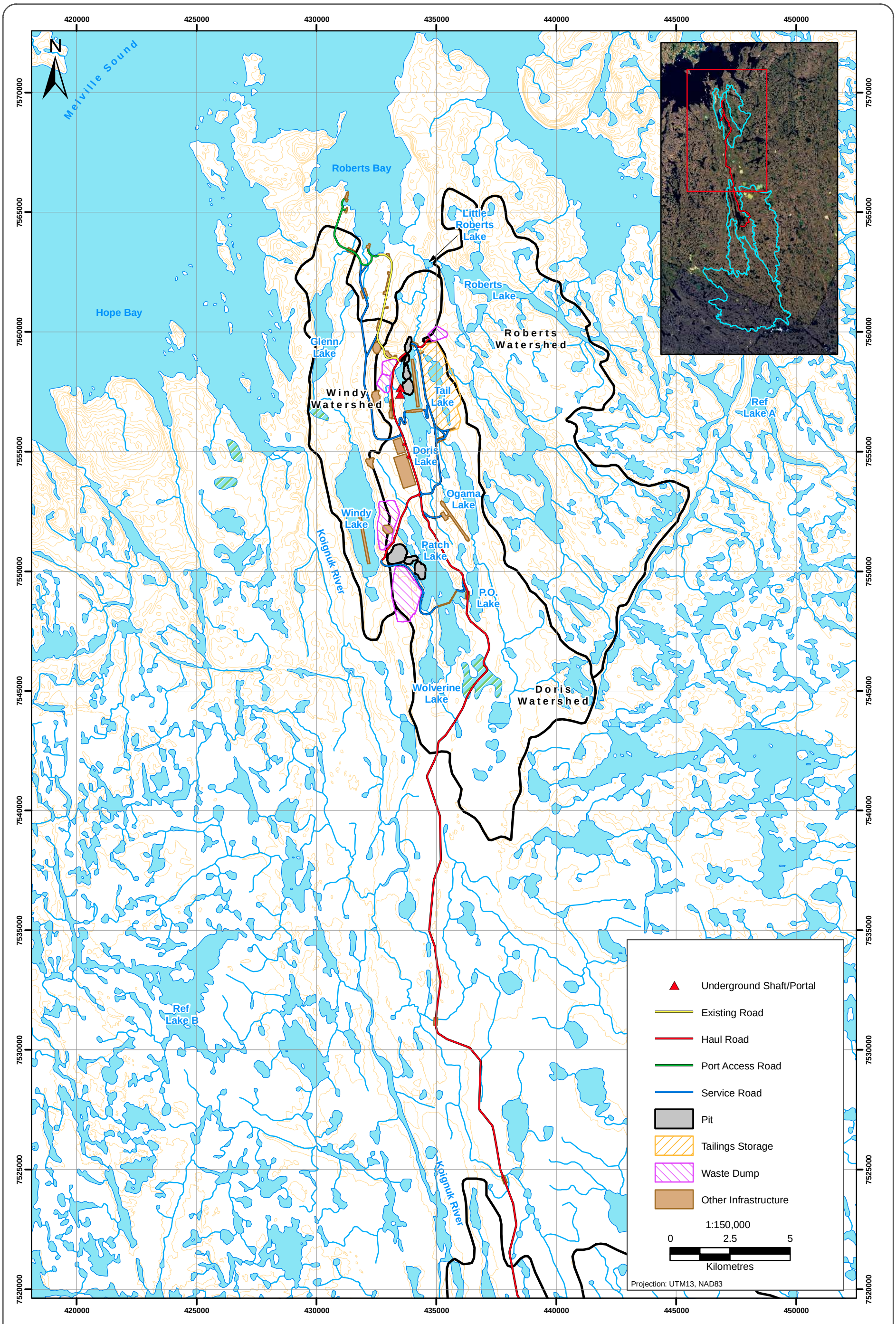

Figure 1-2

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Site Layout Options Considered for 2009 Baseline Program

Figure 1-2

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2. Methods

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2. Methods

Meteorological baseline studies have been conducted in the Hope Bay Belt Project area since 1993. Meteorological data have been collected using a variety of automated and manual methods. The bulk of the meteorology data have been collected from automated stations which allow for a more comprehensive data set.

The 2009 meteorology baseline program included the following components:

- Installation of a 10 m meteorological tower near Doris Camp and decommissioning of the 3 m tower originally at that site;
- Operation of the meteorological stations at Doris Camp and Boston Camp; and
- Installation and operation of a micro-meteorology (evaporation) station in Doris Lake.

2.1 AUTOMATED METEOROLOGY STATIONS

Two complete automated meteorological stations and one micro-meteorology (evaporation) station were installed and commissioned for the Hope Bay Belt Project as part of the baseline program. The locations of the Doris and Boston stations are shown in Figures 2.1-1 and 2.1-2.

2.1.1 Doris

An automated meteorological station was installed on February 27, 2004 near Doris camp (Plate 2.1-1; Figure 2.1-1). This meteorological station records wind speed and direction, air temperature and relative humidity, rainfall and solar radiation.

The two-tripod station at Doris ran on battery power from a deep cycle marine battery, but was converted to include solar power when the permanent 10 m tower was installed in mid August 2009. Temperature, relative humidity, wind speed and direction and solar radiation sensors were initially mounted on one of the 3 m tall tripod structures and a tipping bucket rain gauge (TBRG) was mounted on the other. The various sensors were remounted on the 10 m aluminium tower anchored with bed-rock anchors and guy wires on August 13, 2009 (Plate 2.1-2). The wind sensor was mounted at the top of the tower at a height of 10 m above ground. This configuration is consistent with the Environment Canada - Meteorological Services of Canada standard sensor height for data to be used for air dispersion modelling. Wind speed is measured in m/s and wind direction in degrees from true north.

The temperature and relative humidity sensors are combined into one unit. Temperature is measured in degrees Celsius and relative humidity in percent. The TBRG monitors rainfall in millimetres. Solar radiation is monitored at the station with a pyranometer which gives readings in watts per square metre.

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PROJECT # 1009-002-02 GIS # HB-12-005a November 23, 2009

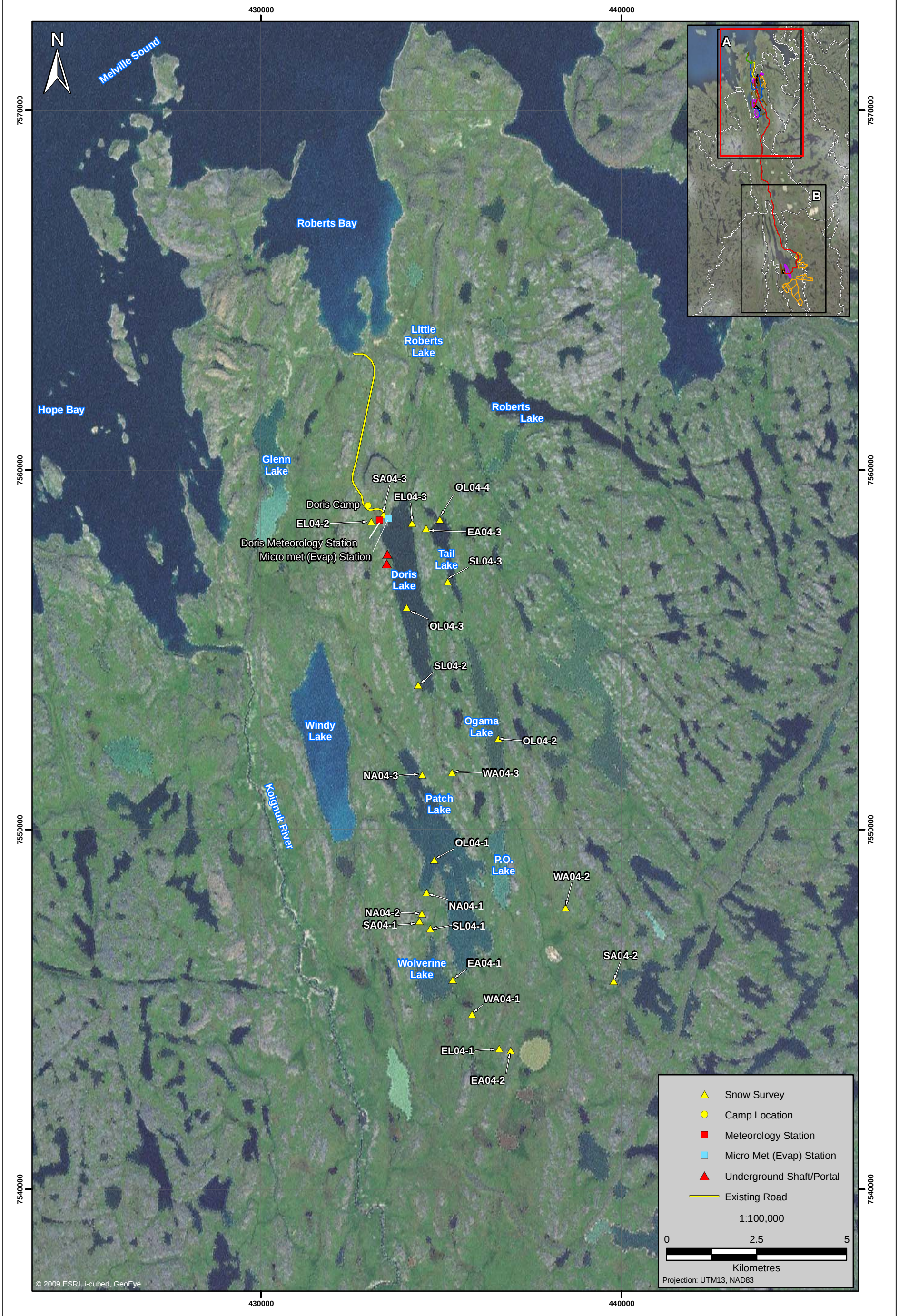

Figure 2.1-1

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Hope Bay Belt Project Meteorological Stations and Snow Surveys, Doris Madrid Area

Figure 2.1-1

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PROJECT # 1009-002-02 GIS # HB-12-005b November 23, 2009

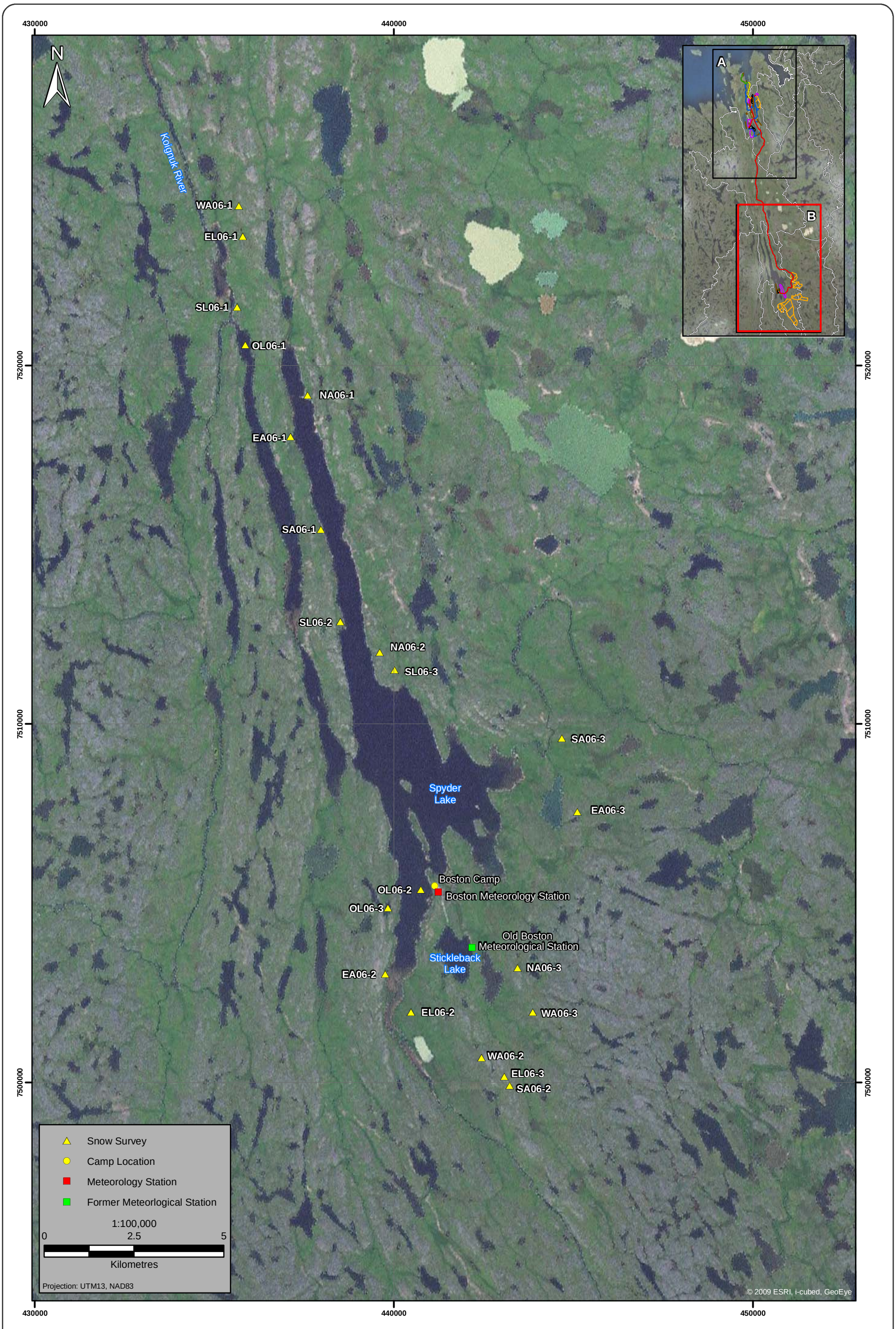

Figure 2.1-2

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Hope Bay Belt Project Meteorological Stations and Snow Surveys, Boston Area

Figure 2.1-2

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Plate 2.1-1. Doris meteorology station was comprised of two tripods (late May 2009) before being upgraded in mid August 2009.

Plate 2.1-2. Doris meteorology station after being upgraded to a 10 m tower.

The sensors for the Doris station are connected to a Campbell Scientific CR10X datalogger which controls the operation of the station. The datalogger's program dictates how often the sensors will be monitored (set at every 5 seconds). It also generates and stores both hourly and daily averages. The station is powered with a sealed rechargeable battery that is recharged with a 30 watt solar panel. An external deep cycle marine 105 Amp-hour battery is used to supplement the solar power during winter. The station is grounded to prevent lightning damage.

2.1.2 Boston

A second automated meteorological station was installed on the Boston Property (south of the Doris Property) during August 1993 and relocated in July 2006 (Plate 2.1-3; Figure 2.1-2). The previous location was 2 km southeast of Boston camp near Stickleback Lake. The new location is 100 m south of Boston Camp. Like the Doris meteorology station, it has the capability to record wind speed and direction, air temperature and relative humidity, solar radiation, and rain. In addition, an ultrasonic snow depth sensor which measures snow depth in millimetres was installed on the tower on August 13, 2009. All sensors (except for the ultrasonic snow depth sensor) and operation of the meteorology station followed the methodologies listed above for the Doris 10 m meteorology station. Sensors and operation of the station was consistent before and after relocation.

Plate 2.1-3. Boston automated meteorology station after relocation in 2006.

2.1.3 Doris Lake Micro-Meteorology (Evaporation) Station

In 2009 the meteorological program was expanded to include measurements of open-water evaporation at Doris Lake. A micro-meteorological station was installed in a shallow area of this lake

on July 2, 2009 (Plate 2.1-4; Figure 2.1-1). The station is operated for the open-water season and was removed before winter. Data collected at this station was used to calculate daily evaporation rates using both the Penman Combination and Preistley-Taylor methods.

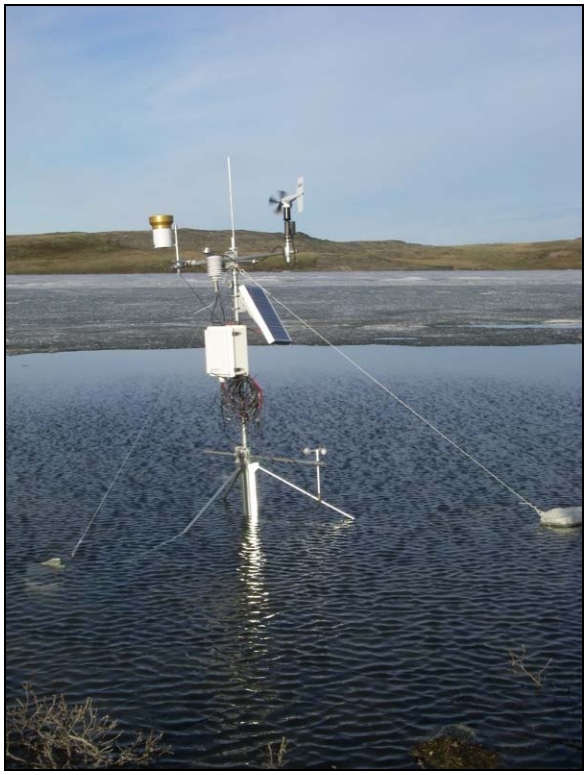

Plate 2.1-4. The Doris Lake micro-meteorology (evaporation) station in July 2009.

The station is powered with a sealed rechargeable 8.5 Amp-hour battery that is recharged with a 50 watt solar panel. Operation of the station is controlled by a CR1000-55 datalogger whose program dictates how often the sensors will be monitored (every 5 seconds) and generates and stores hourly and daily averages. Sensors for this station are mounted on a tripod which is partially submerged in the lake. Sensors include:

- A silicon pyranometer (solar radiation; W/m^2)
- A net radiometer (net radiation; W/m^2)
- Two air temperature (°C) and relative humidity (%) probes
- Two wind speed (m/s) and direction (degrees from true north) sensors
- Two water temperature thermistors (°C)
- A tipping bucket rain gauge (rain precipitation; mm)

Lake evaporation rates are calculated from mean daily weather data using the Penman Combination Method from Chow *et al*. (1988). The Penman model is a combined energy-balance/aerodynamic mathematical model defined by the general equation:

$$[1]\ E(PC) = \frac{\Delta}{\Delta+\gamma}E_R + + \frac{\gamma}{\Delta+\gamma}E_A \text{ with } \Delta = \frac{4098e_{as}}{(237.3+T)^2} \text{ and } \gamma = \frac{C_P P_A}{0.622 l_v}$$

where Δ is the slope of the temperature-saturated vapour pressure curve in Pa °C; e_{as} is the saturated vapour pressure at air temperature T in °C; C_P = 1006 J kg^{-1} °C is the specified heat of air; P_A = 101.3 * 10^3 Pa is air pressure at 20°C; and l_v = 2.501 * 10^6 – 2370T J kg^{-1} is the latent heat of vapourization.

The energy-balance component E_R in mm/day is determined by the equation:

$$[2]\ E_R = \frac{R_n - H - G}{l_v \rho_w} * 8.64 * 10^7, \text{ with } H) = -k_a\left(\frac{T_2 - T_1}{z_2}\right) \text{ and } G = -k_w\left(\frac{T_{w2} - T_{w1}}{z_w}\right)$$

where R_n is the net solar radiation measured over water in W m^{-2}; H and G are the sensible heat flux and water heat flux; ρ_w = 999.7 kg m^{-3} is the water density at 10°C; $T_2 - T_1$ and $T_{w2} - T_{w1}$ are the change in mean daily air and water temperatures from the previous day, as measured at height z_2 and depth z_w in metres from the water surface. Yarwood & Castle (1970) give the thermal conductivities of air k_a and water k_w at 10°C as 0.0241 and 0.615 W/m/°C, respectively. The energy-balance equation can be simplified to a constant if it is assumed that the sensible heat flux H and water heat flux G are negligible, such that Chow *et al*. (1988) calculate the energy-balance component by E_R – 0.0353 * R_n.

The aerodynamic component E_A in mm/day is calculated as:

$$[3]\ E_A = \frac{0.162u2}{[\ln(z_2 / z_0]^2} * (e_{as} - e_a) \text{ with } e_a = -RH * e_{as} \text{ and } e_{as} = 611\exp\left(\frac{17.27 * T}{237.3 + T}\right)$$

Where u_2 is wind speed in m s^{-1} measured at a height of z_2 in cm; Brutseart (1982) gives the surface water roughness height z_0 as 0.01 cm; the term e_{as}-e_a is the difference between saturated vapour pressure e_{as} and actual vapour pressure e_a in Pa; and 0≤RH≤1.

The Priestly-Taylor method is similar to the Penman Combination method and defined by the general equation:

$$[4]\ E(PT) = \alpha\frac{\Delta}{\Delta+\gamma}E_R$$

where the weighted aerodynamic component E_A is replaced by a constant α, and where the sensible heat flux term H is omitted from the energy flux term, E_R, after Shuttleworth (1993). Stewart & Rouse (1977) substantiate the constant α = 1.26 for subarctic regions.

This report uses both of the described methods for calculating evaporation.

Table 2.1-1 summarizes the sensors at the three automated meteorological stations.

Table 2.1-1. List of Hope Bay Belt Meteorological Stations and Parameters

Station Name	Date Established	Temperature & Relative Humidity	Wind Speed & Direction	Snow Depth via Ultrasonic Gauge	Rainfall via Tipping Bucket Rain Gauge	Solar Radiation	Water Temperature via Thermistors	Net Radiation	Wind Speed via Met One anemometer
Doris[a]	Mar-04	√	√	n/a	√	√	n/a	n/a	n/a
Boston	Aug-93[b]	√	√	√	√	√	n/a	n/a	n/a
Doris Lake (micro met)	Jul-09	√	√	n/a	√	√	√	√	√

Notes:
n/a = this type of sensor was not installed at this particular meteorological station.
[a] = The Doris meteorology station consisted of two tripods from February 27, 2004 to August 13, 2009 when its sensors were reinstalled on a MSC recommended 10 m tower.
[b] = The Boston meteorology station was relocated in July 2006 but remained within the Boston Property (Figure 2.1-2).

The Doris and Boston meteorological stations and their sensors are installed in areas that are free of obstructions that could bias the data being collected. Placement of both stations and sensors follow standards established by Environment Canada – Meteorological Services of Canada (EC-MSC 2004).

Site visits to these meteorological stations have taken place every two to three months during summer and winter when camps have been occupied to collect data and conduct routine maintenance.

Table 2.1-2 lists the regional meteorological stations operated by Environment Canada Meteorology Services of Canada (EC-MSC). Figure 2.1-3 shows the location of the regional meteorological stations with respect to the Hope Bay Belt Project. Regional stations allow for comparison of data collected at the Project and provide a historical context.

Table 2.1-2. Summary of Regional Meteorological Stations in the Hope Bay Belt (HBB) Region

Station	Environment Canada Station Number	Station Location (with respect to HBB) (km)	Elevation (m)	Data Record Start	Data Record End
Cambridge Bay	2400600	125	27.4	1953	Current
Lupin Airport	23026HN	335	490.1	1986	2006
Lupin CS	230N002	335	488.0	1997	Current
Kugluktuk	2300902	360	22.6	1978	Current
Lady Franklin	2302680	275	15.9	1973	2000

2.2 MANUAL SNOW SURVEYS

Snow course surveys were undertaken on May 5 and 6, 2004, May 9 and 12, 2005, April 30, 2006, April 28 and May 4, 2007, and May 16 to 21, 2008. The snow survey locations within the Doris watershed were selected on the basis of terrain type and are shown in Figure 2.1-1. These included:

- Open Lake (flat areas on lakes);
- Exposed Lowland (flat areas at the top of slopes);
- Sheltered Lowland (flat areas at the toe of slopes); and
- North, East, South and West Aspects (slopes facing these directions).

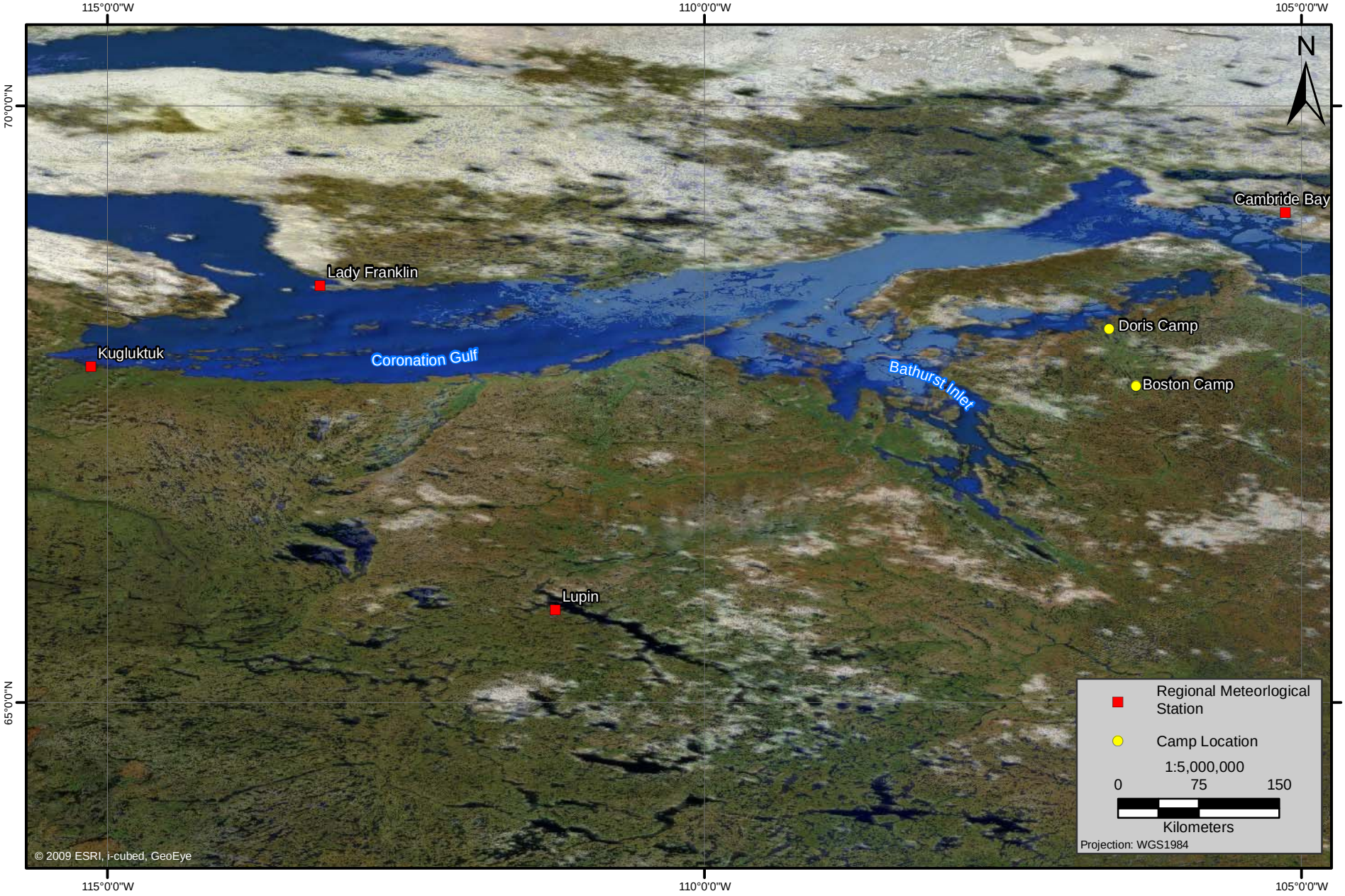

Figure 2.1-3

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Regional Meteorology Stations in Hope Bay Belt Project Region

Figure 2.1-3

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The purpose of sampling multiple locations was to determine if significant differences existed between terrain types.

At each survey station, 30 depth measurements were made at randomly selected locations in a large circle with approximately 10 m between measurements. These depth measurements were taken by inserting a metal metre stick into the snowpack and reading the snow depth.

Three density measurements were recorded at each survey station, using an Atmospheric Environment Services (AES) snow density sampler. The AES sampler was inserted carefully into the snowpack to avoid compaction of the snowpack. When the corer reached the soil surface the snow depth was read on the tube. The corer was then twisted/inserted more deeply into the ground to ensure that a plug of soil was extracted with the sampler to prevent granular snow from falling out. After extracting the sampler and carefully removing the soil plug, the sampler weight was measured with and without the snow core, to measure the weight of the snow and allow a snow water equivalent to be calculated.

Snow-water-equivalent (SWE) is defined as the depth of water (in mm) in the snowpack on a horizontal surface area if that snowpack is completely melted. SWE is related to snow depth and snow density by:

$$\text{SWE (mm)} = \text{depth (m)} \times \text{density (kg/m}^3\text{)}$$

The conversion of SWE (mm) from a mass of snow per unit area to depth of water is based on the fact that 1 mm of water spread over an area of 1 m^2 weights 1 kg. The most commonly used approach for determining SWE is the gravimetric method, which involves taking a vertical core through the snowpack and weighing or melting the core to obtain SWE (NRC 2005).

3. Results

3. Results

The following is a summary of data that have been collected at meteorological stations within the Project area from June 2002 to September 2009. Tables 3-1 and 3-2 summarize monthly meteorological data collected at the Boston and Doris meteorology stations, respectively. It should be noted that a data gap exists from June 2002 to March 2004 for Boston station because data have not been retrievable from former Project owner, Miramar Hope Bay Ltd. The Doris meteorology station was installed on February 27, 2004. Historical data from each Hope Bay Belt meteorology station to May 2002 is included in Appendix A and discussed in the *1993 to 2002 Data Compilation Report for Meteorology and Hydrology* (Rescan 2002). Tables 3-3 to 3-5 and Appendix B summarize monthly meteorological data collected at Environment Canada – Meteorological Services of Canada (EC-MSC) regional stations at Cambridge Bay, Lupin Airport, and Lupin CS (combined station), respectively. Appendix C summarizes 1971 to 2000 climate normal data for the same stations as well as the Lady Franklin station.

In addition, a summary of snow course survey results from May of 2004, 2005, 2006, 2007, and 2008 and evaporation values calculated from data collected during 2009 at the micro-meteorology station are provided below.

Table 3-1. Monthly Meteorological Data from Boston Meteorological Station, 2004 to 2009

Date	Mean Air Temperature (°C)	Mean Maximum Temperature (C°)	Mean Minimum Temperature (C°)	Average Wind Speed (km/h)	Average Maximum Relative Humidity (%)	Average Global Solar Radiation (W/m²)	Total Rainfall (mm)	Number of Bright Sunshine Hours (>120 W/m²)
Jan-05	n/a	n/a	n/a	n/a	93.2	8.7	n/a	0
Feb-05	n/a	n/a	n/a	n/a	94.4	26.7	n/a	12
Mar-05	n/a	n/a	n/a	n/a	85.8	89.6	n/a	36
Apr-05	n/a	n/a	n/a	n/a	74.7	191.1	n/a	168
May-05	n/a	n/a	n/a	n/a	72.7	n/a	n/a	n/a
Jun-05	n/a	n/a	n/a	n/a	85.8	n/a	n/a	n/a
Jul-05	n/a	n/a	n/a	n/a	79.6	n/a	n/a	n/a
Aug-05	n/a	n/a	n/a	n/a	70.3	n/a	n/a	n/a
Sep-05	n/a	n/a	n/a	n/a	90.8	100.0	n/a	176
Oct-05	n/a	n/a	n/a	n/a	97.1	45.0	n/a	54
Nov-05	n/a	n/a	n/a	n/a	98.7	15.9	n/a	0
Dec-05	n/a	n/a	n/a	n/a				
Jan-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Feb-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mar-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Apr-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
May-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jun-06	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Jul-06	10.7	11.1	10.3	19.9	73.7	222.2	20.1	383
Aug-06	11.6	12.1	11.2	16.7	75.0	183.1	19.1	333
Sep-06	3.6	4.0	3.2	16.9	83.2	95.5	2.3	220

(continued)

Table 3-1. Monthly Meteorological Data from Boston Meteorological Station, 2004 to 2009 (completed)

Date	Mean Air Temperature (°C)	Mean Maximum Temperature (C°)	Mean Minimum Temperature (C°)	Average Wind Speed (km/h)	Average Maximum Relative Humidity (%)	Average Global Solar Radiation (W/m²)	Total Rainfall (mm)	Number of Bright Sunshine Hours (>120 W/m²)
Oct-06	-5.3	-5.1	-5.6	18.7	91.3	28.3	0.8	54
Nov-06	-19.5	-19.2	-19.8	18.5	84.3	5.8	0.0	0
Dec-06	-20.7	-20.3	-21.1	19.6	82.5	0.6	0.0	0
Jan-07	-27.6	-27.2	-28.0	14.0	77.8	2.9	0.0	0
Feb-07	-28.8	-28.3	-29.2	16.8	74.1	29.9	0.0	67
Mar-07	-28.5	-28.0	-29.0	18.2	73.9	103.5	0.0	249
Apr-07	-13.5	-13.0	-14.1	15.8	79.8	202.7	0.3	348
May-07	-7.7	-7.3	-8.1	20.3	86.3	277.1	0.3	429
Jun-07	5.0	5.5	4.6	18.1	78.9	257.9	0.0	425
Jul-07	13.6	14.2	13.1	15.5	68.3	270.6	0.0	427
Aug-07	6.6	6.9	6.3	21.6	87.1	118.2	0.5	254
Sep-07	-0.3	-0.1	-0.6	17.8	86.6	77.6	0.3	184
Oct-07	-6.8	-6.5	-7.0	19.9	91.8	31.6	0.8	55
Nov-07	-24.3	-23.9	-24.7	17.7	80.0	7.9	0.0	3
Dec-07	-27.1	-26.8	-27.5	18.8	77.3	0.7	0.0	0
Jan-08	-29.0	-28.7	-29.4	20.4	74.8	3.1	0.0	0
Feb-08	-32.5	-32.1	-32.9	16.7	71.0	32.8	0.0	84
Mar-08	-30.9	-30.3	-31.4	19.1	70.0	111.9	0.0	257
Apr-08	-17.7	-17.2	-18.3	19.1	80.2	208.4	0.0	355
May-08	-5.3	-4.9	-5.7	20.1	86.3	282.6	0.3	437
Jun-08	4.3	4.7	3.8	18.1	82.3	262.9	n/a	413
Jul-08	12.5	13.0	11.9	17.4	73.4	231.1	n/a	378
Aug-08	8.0	8.3	7.7	20.9	84.6	127.1	n/a	271
Sep-08	n/a	n/a	n/a	21.4	n/a	48.3	57.1	110
Oct-08	n/a	n/a	n/a	21.2	n/a	24.4	1.3	37
Nov-08	-19.6	-19.2	-19.9	11.1	84.8	4.2	0.0	0
Dec-08	-27.7	-27.3	-28.1	20.5	76.8	0.6	0.0	0
Jan-09	-26.6	-26.2	-27.0	24.2	76.3	3.4	0.0	0
Feb-09	-28.1	-27.7	-28.5	17.2	75.5	26.4	0.0	52
Mar-09	-30.0	-29.4	-30.5	13.0	72.6	92.7	0.0	236
Apr-09	-16.4	-15.9	-16.8	18.9	83.0	171.8	0.0	333
May-09	-9.6	-9.2	-10.1	20.0	84.3	247.6	0.0	418
Jun-09	3.1	3.6	2.2	17.5	82.9	236.0	0.0	412
Jul-09	10.0	10.5	9.5	20.9	74.8	215.6	25.1	386
Aug-09	9.5	9.9	9.1	17.0	81.1	174.5	50.5	336
Sep-09	5.1	5.5	4.8	21.9	86.8	89.9	0.0	140

Notes:
- n/a = not available
- Station was moved to the new location on July 2, 2006.
- Station was not in operation between December 2005 and June 2007
- Temperature sensor was malfunctioning in 2005.
- Average Solar Radiation readings were removed for May - August 2005 because of they were not representative of the site conditions based on historical data.
- Tipping bucket rain gauge was malfunctioning for June - August 2008.
- RH/Temp sensor was malfunctioning for September - October 2008.

Table 3-2. Monthly Meteorological Data from Doris Meteorological Station, 2004 to 2009

Date	Mean Air Temperature (°C)	Mean Maximum Temperature (C°)	Mean Minimum Temperature (C°)	Average Wind Speed (km/h)	Average Relative Humidity (%)	Average Global Solar Radiation (W/m²)	Rainfall (mm)
Mar-04	n/a	n/a	n/a	20.4	69.2	83.1	0.0
Apr-04	n/a	n/a	n/a	19.6	77.7	178.4	0.0
May-04	n/a	n/a	n/a	18.6	82.5	246.3	1.0
Jun-04	n/a	n/a	n/a	21.1	78.7	225.3	6.4
Jul-04	n/a	n/a	n/a	16.6	72.8	212.4	11.9
Aug-04	n/a	n/a	n/a	17.9	76.8	112.0	15.5
Sep-04	n/a	n/a	n/a	20.9	82.6	56.9	15.5
Oct-04	n/a	n/a	n/a	20.5	87.0	26.6	0.0
Nov-04	-23.6	-23.2	-21.9	19.1	80.6	5.1	0.0
Dec-04	-29.8	-25.3	-29.8	22.3	73.9	0.3	0.0
Jan-05	-28.3	-27.8	-28.7	21.6	74.3	2.7	0.0
Feb-05	-32.6	-32.2	-33.0	17.2	70.3	22.6	0.0
Mar-05	-27.9	-27.4	-28.4	17.3	73.2	81.8	0.0
Apr-05	-14.4	-13.8	-14.9	15.9	81.3	161.2	0.0
May-05	-8.3	-7.7	-8.8	18.1	80.1	258.9	0.0
Jun-05	4.3	4.8	3.8	16.3	75.7	244.1	18.0
Jul-05	8.2	8.7	7.7	18.4	80.1	168.0	27.2
Aug-05	9.1	9.5	8.7	18.2	78.3	138.8	31.2
Sep-05	0.7	1.0	0.4	15.1	81.5	69.6	3.0
Oct-05	-8.3	-8.0	-8.5	19.0	87.9	29.0	0.0
Nov-05	-20.0	-19.6	-20.4	18.0	82.7	4.8	0.0
Dec-05	-25.9	-25.5	-26.3	13.3	77.7	0.3	0.0
Jan-06	-26.8	-26.4	-27.2	18.2	76.4	2.3	0.0
Feb-06	-23.6	-23.2	-24.0	22.4	77.2	23.6	0.0
Mar-06	-21.5	-21.0	-22.0	10.3	77.5	83.6	0.0
Apr-06	-16.3	-15.8	-16.8	16.6	79.6	185.7	0.0
May-06	-1.3	-0.9	-1.7	17.2	84.0	238.0	2.0
Jun-06	7.9	8.5	7.2	17.8	70.5	263.8	10.9
Jul-06	10.5	11.0	10.1	17.9	71.3	221.8	22.1
Aug-06	11.7	12.2	11.2	15.8	70.5	184.6	9.4
Sep-06	3.3	3.7	2.9	15.3	82.6	87.1	3.6
Oct-06	-5.3	-5.0	-5.6	18.8	89.1	28.2	2.0
Nov-06	-19.1	-18.7	-19.4	18.3	83.3	5.2	0.0
Dec-06	-21.4	-21.0	-21.8	19.4	81.4	0.4	0.0
Jan-07	-28.6	-28.1	-29.0	15.6	75.5	2.5	0.0
Feb-07	-29.5	-29.1	-29.9	19.9	72.3	26.0	0.0
Mar-07	-29.0	-28.6	-29.5	20.6	71.8	98.1	0.0
Apr-07	-14.8	-14.2	-15.4	15.9	79.2	196.3	0.0
May-07	-8.2	-7.8	-8.5	21.7	84.4	274.1	0.0
Jun-07	4.6	5.1	4.1	16.8	77.4	256.0	2.3
Jul-07	13.2	13.9	12.6	15.6	65.8	274.0	8.9
Aug-07	6.5	6.9	6.3	20.0	83.8	123.8	59.4
Sep-07	-0.2	0.1	-0.4	17.2	82.3	72.0	5.6
Oct-07	-6.5	-6.3	-6.7	20.9	89.6	29.3	1.5
Nov-07	-24.3	-23.9	-24.7	19.9	78.1	5.9	0.0
Dec-07	-27.4	-27.1	-27.8	20.6	76.4	0.4	0.0

(continued)

Table 3-2. Monthly Meteorological Data from Doris Meteorological Station, 2004 to 2009 (completed)

Date	Mean Air Temperature (ºC)	Mean Maximum Temperature (Cº)	Mean Minimum Temperature (Cº)	Average Wind Speed (km/h)	Average Relative Humidity (%)	Average Global Solar Radiation (W/m²)	Rainfall (mm)
Jan-08	-29.2	-28.9	-29.5	22.4	73.8	2.2	0.0
Feb-08	-33.2	-32.7	-33.6	19.3	69.4	28.4	0.0
Mar-08	-31.9	-31.4	-32.3	22.5	69.1	106.8	0.0
Apr-08	-18.3	-17.8	-18.7	21.4	79.2	200.8	0.0
May-08	-5.0	-4.5	-5.4	18.9	83.0	261.3	0.3
Jun-08	3.9	4.4	3.5	17.7	80.1	245.8	25.1
Jul-08	11.1	11.8	10.5	16.5	73.5	216.0	38.6
Aug-08	7.9	8.3	7.6	20.4	80.9	130.6	39.4
Sep-08	0.3	0.5	0.0	20.8	84.9	60.4	26.9
Oct-08	-4.2	-3.9	-4.5	19.9	83.0	28.4	3.3
Nov-08	-19.6	-19.2	-19.9	12.0	82.6	4.5	0.0
Dec-08	-27.3	-26.9	-27.6	23.7	75.1	0.4	0.0
Jan-09	-26.1	-25.7	-26.4	25.2	74.7	2.7	0.0
Feb-09	-28.4	-28.0	-28.8	16.9	72.4	26.6	0.0
Mar-09	-29.9	-29.4	-30.3	13.4	69.8	95.4	0.0
Apr-09	-17.0	-16.5	-17.5	19.4	79.7	177.8	0.0
May-09	-9.2	-8.8	-9.5	20.3	81.7	246.6	0.0
Jun-09	2.9	3.3	2.6	17.8	80.4	233.0	4.8
Jul-09	8.8	9.4	8.2	18.6	75.4	220.4	22.4
Aug-09	9.4	9.8	8.9	16.1	78.0	145.2	28.7
Sep-09	3.4	3.7	3.1	22.9	85.2	60.5	19.3
Oct-09	-7.7	-7.4	-7.9	19.0	86.7	28.2	2.5

Notes:
- n/a = not available
- Doris meteorological station was upgraded from 3 m. to 10 m. On August 13, 2009 at the same location.
- Temperature sensor was malfunctioning until November 2004.
- Rainfall data at April 2007 was eliminated since the temperature was below zero.

Table 3-3. Monthly Meteorological Data from Cambridge Bay EC-MSC Meteorological Station, 2004 to 2009

Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Mar-04	-29.7	-25.7	-33.7	n/a
Apr-04	-21.4	-16.7	-26	n/a
May-04	-9.2	-5.3	-13	n/a
Jun-04	2.4	5.6	-0.8	9.8
Jul-04	8.4	12.3	4.6	21.7
Aug-04	6.4	9.4	3.4	24.5
Sep-04	-0.3	1.9	-2.5	11.4
Oct-04	-11.5	-8.1	-14.9	0.4
Nov-04	-23	-19.3	-26.5	n/a
Dec-04	-29.6	-26.1	-33	n/a

(continued)

Table 3-3. Monthly Meteorological Data from Cambridge Bay EC-MSC Meteorological Station, 2004 to 2009 (continued)

Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Jan-05	-30.3	-26.9	-33.6	n/a
Feb-05	-34.9	-31.9	-37.8	n/a
Mar-05	-30.6	-26.8	-34.2	n/a
Apr-05	-19.1	-14.2	-24	n/a
May-05	-10.1	-6.1	-14.1	n/a
Jun-05	2.8	5.5	0	17
Jul-05	7	10.3	3.7	32
Aug-05	7.7	10.9	4.5	17.8
Sep-05	-0.7	1.5	-2.9	4.8
Oct-05	-10.5	-7.6	-13.3	n/a
Nov-05	-22.9	-19.1	-26.6	n/a
Dec-05	-28.8	-25.1	-32.4	n/a
Jan-06	-29.5	-25.4	-33.6	n/a
Feb-06	-25.8	-22.1	-29.5	n/a
Mar-06	-25	-21.2	-28.8	n/a
Apr-06	-19.7	-15.1	-24.3	n/a
May-06	-4.1	-1	-7.1	1.6
Jun-06	5.4	9.3	1.5	6.2
Jul-06	9.3	12.9	5.6	7
Aug-06	9.8	13.6	6	20
Sep-06	1.8	4.4	-0.8	14
Oct-06	-6.8	-3.9	-9.7	n/a
Nov-06	-21.2	-17.4	-25.1	n/a
Dec-06	-24.7	-20.3	-29.1	n/a
Jan-07	-30.4	-27	-33.7	n/a
Feb-07	-31.3	-27.7	-34.9	n/a
Mar-07	-31.7	-27.7	-35.7	n/a
Apr-07	-18.4	-13.9	-22.9	n/a
May-07	-12.4	-7.8	-16.9	n/a
Jun-07	3.4	6.5	0.3	1.8
Jul-07	11.9	16.2	7.5	22.8
Aug-07	5.9	8.3	3.5	37.2
Sep-07	-1.3	0.8	-3.3	6
Oct-07	-9	-5.7	-12.3	n/a
Nov-07	-26.6	-23.4	-29.8	n/a
Dec-07	-28.4	-25.6	-31.3	n/a
Jan-08	-31.5	-28.5	-34.6	n/a
Feb-08	-35.7	-32.5	-38.9	n/a
Mar-08	-35	-30.6	-39.2	n/a
Apr-08	-21.4	-17	-25.7	n/a
May-08	-7.1	-4.1	-10.1	0.2
Jun-08	2.3	4.8	-0.2	13.2
Jul-08	9.5	13.6	5.4	30.4
Aug-08	7.4	10	4.7	34.8
Sep-08	-0.8	0.8	-2.3	10.4

(continued)

Table 3-3. Monthly Meteorological Data from Cambridge Bay EC-MSC Meteorological Station, 2004 to 2009 (completed)

Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Oct-08	-6.4	-3.1	-9.7	1.2
Nov-08	-21.1	-17	-25.1	n/a
Dec-08	-29	-25.3	-32.7	n/a
Jan-09	-27.9	-24.5	-31.4	n/a
Feb-09	-31.6	-27.8	-35.4	n/a
Mar-09	-32.7	-29.4	-35.9	n/a
Apr-09	-20.1	-15.9	-24.2	n/a
May-09	-10.5	-7.0	-13.8	n/a
Jun-09	1.2	3.7	-1.3	0.6
Jul-09	7.4	11.3	3.5	41.6
Aug-09	8.1	11.5	4.6	25

Notes:
- Data ends at the end of August 2009 on Environment Canada MSC website.
- 69º 6.600' N 105º 8.400' - Elevation 27.40 m.

Table 3-4. Monthly Meteorological Data from Lupin Airport EC-MSC Meteorological Station, 2004 to 2009

Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Mar-04	-25.3	-20.6	-29.8	0.0
Apr-04	-17.0	-12.1	-21.8	0.6
May-04	-5.3	-1.4	-9.2	5.8
Jun-04	5.2	9.5	0.8	12.8
Jul-04	10.7	15.4	6.0	36.3
Aug-04	8.8	13.1	4.5	40.8
Sep-04	2.8	6.0	-0.4	32.1
Oct-04	-7.2	-4.0	-10.3	5.1
Nov-04	-19.6	-15.7	-23.4	0.0
Dec-04	-25.5	-21.4	-29.6	0.0
Jan-05	-26.7	-22.5	-30.9	n/a
Feb-05	-30.8	-27.1	-34.5	n/a
Mar-05	-25.4	-20.7	-30.1	n/a
Apr-05	-12.9	-8.3	-17.4	0.6
May-05	-5.2	-0.4	-10.1	2.4
Jun-05	5.2	9.7	0.6	36.8
Jul-05	8.5	12.6	4.3	67.2
Aug-05	8.7	12.9	4.5	49.4
Sep-05	2.0	4.9	-1.0	2.4
Oct-05	-5.8	-2.6	-8.9	2.8
Nov-05	-16.5	-12.2	-20.8	n/a
Dec-05	-21.5	-17.1	-25.8	n/a
Jan-06	-24.8	-21.1	-28.4	n/a
Feb-06	-20.9	-16.3	-25.4	n/a
Mar-06	-21.7	-17.2	-26.1	n/a

(continued)

Table 3-4. Monthly Meteorological Data from Lupin Airport EC-MSC Meteorological Station, 2004 to 2009 (completed)

Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Apr-06	-16.2	-11.0	-21.3	n/a
May-06	-0.6	2.8	-4.0	4.8
Jun-06	9.9	15.7	4.2	9.0
Jul-06	11.6	16.6	6.7	28.6
Aug-06	12.7	17.6	7.7	47.2
Sep-06	6.3	10.6	2.0	15.6
Oct-06	-4.9	-1.7	-8.0	2.6
Nov-06	-17.6	-14.1	-21.0	n/a
Dec-06	-18.9	-14.0	-23.8	n/a
Jan-07	-23.9	-19.7	-28.0	n/a
Feb-07	-26.9	-22.9	-30.8	n/a
Mar-07	-28.1	-23.6	-32.6	n/a
Apr-07	-13.6	-8.6	-18.6	n/a
May-07	-6.9	-2.7	-11.1	n/a
Jun-07	6.0	10.4	1.5	7.2
Jul-07	11.8	16.2	7.3	188.1
Aug-07	8.6	12.3	4.9	47.8
Sep-07	1.5	4.4	-1.4	7.6
Oct-07	-5.9	-2.8	-9.0	4.0
Nov-07	-20.6	-17.1	-24.1	n/a
Dec-07	-25.0	-20.8	-29.1	n/a
Jan-08	-27.4	-23.3	-31.4	n/a
Feb-08	-29.6	-25.5	-33.7	n/a
Mar-08	-29.5	-25.1	-33.9	n/a
Apr-08	-18.1	-13.3	-22.9	n/a
May-08	-2.5	1.1	-6.2	0.2
Jun-08	4.2	7.9	0.4	19.3
Jul-08	10.5	14.9	6.0	45.2
Aug-08	7.9	10.9	4.8	73.0
Sep-08	2.1	4.7	-0.4	17.6
Oct-08	-4.9	-1.3	-8.4	16.6
Nov-08	-15.7	-11.8	-19.5	n/a
Dec-08	-24.4	-20.6	-28.2	n/a
Jan-09	-23.9	-20.2	-27.6	n/a

Notes:
- September 2005 was estimated by Environment Canada MSC.
- September 2006 was estimated by Environment Canada MSC.
- Data ends at the end of January 2009.
- KUGLUKTUK: 67º 49.200' N 115º 8.400' - Elevation 22.60 m.

Table 3-5. Monthly Meteorological Data from Lupin Combined Station EC-MSC Meteorological Station, 2004 to 2009

Date	Average Air Temperature (°C)	Maximum Air Temperature (°C)	Minimum Air Temperature (°C)	Total Rainfall (mm)
Mar-04	-29.6	-25.1	-34.0	n/a
Apr-04	-19.3	-14.9	-23.7	n/a
May-04	-11.2	-7.4	-15.0	0.2
Jun-04	5.2	9.1	1.2	20.8
Jul-04	11.6	17.0	6.2	12.2
Aug-04	6.5	9.7	3.1	110.6
Sep-04	0.8	3.0	-1.5	33.6
Oct-04	-10.6	-7.8	-13.3	0.2
Nov-04	-22.0	-18.3	-25.6	n/a
Dec-04	-29.7	-26.0	-33.1	n/a
Jan-05	n/a	n/a	n/a	n/a
Feb-05	n/a	n/a	n/a	n/a
Mar-05	n/a	n/a	n/a	n/a
Apr-05	-12.0	-8.2	-15.8	n/a
May-05	-9.6	-4.9	-14.1	n/a
Jun-05	4.7	8.7	0.6	31.4
Jul-05	9.3	14.3	4.2	14.0
Aug-05	8.6	12.9	4.2	42.0
Sep-05	0.1	3.0	-2.8	n/a
Oct-05	n/a	n/a	n/a	n/a
Nov-05	n/a	n/a	n/a	n/a
Dec-05	n/a	n/a	n/a	n/a
Jan-06	-23.3	n/a	n/a	n/a
Feb-06	-20.1	n/a	n/a	n/a
Mar-06	-16.2	-19.4	-22.6	n/a
Apr-06	-9.6	n/a	n/a	n/a
May-06	2.3	n/a	n/a	0.0
Jun-06	15.6	n/a	n/a	0.0
Jul-06	15.6	10.7	5.7	0.0
Aug-06	15.6	10.7	5.7	0.0
Sep-06	8.3	4.3	0.3	n/a
Oct-06	-3.8	-6.2	-8.6	n/a
Nov-06	-18.4	-20.9	-23.4	n/a
Dec-06				
Jan-07	-25.6	-23.5	-27.7	n/a
Feb-07	-28.3	-25.3	-31.2	n/a
Mar-07	-27.8	-24.3	-31.3	n/a
Apr-07	-14.3	-9.7	-19.0	n/a
May-07	-6.5	-2.3	-10.7	n/a
Jun-07	5.3	9.9	0.7	n/a
Jul-07	12.8	18.6	7.0	44.4
Aug-07	7.0	11.0	3.0	n/a
Sep-07	-0.8	2.0	-3.4	n/a
Oct-07	-7.5	-9.9	-5.1	n/a
Nov-07	-22.1	-18.9	-25.3	n/a
Dec-07	-27.0	-30.0	-24.0	n/a

(continued)

Table 3-5. Monthly Meteorological Data from Lupin Combined Station EC-MSC Meteorological Station, 2004 to 2009 (completed)

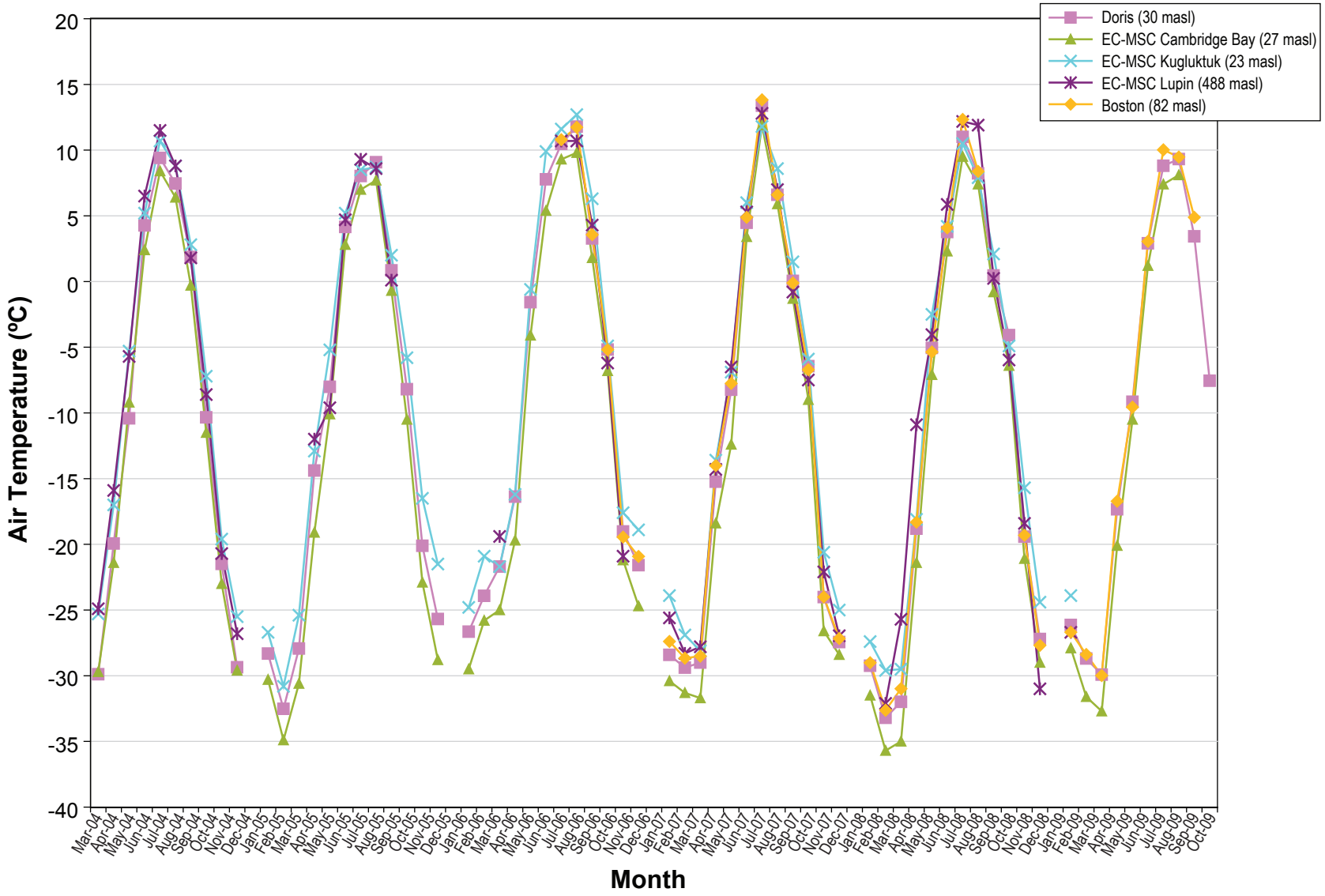
Date	Average Air Temperature (ºC)	Maximum Air Temperature (ºC)	Minimum Air Temperature (ºC)	Total Rainfall (mm)
Jan-08	-28.3	-24.5	-24.5	n/a
Feb-08	-32.1	-26.9	-37.4	n/a
Mar-08	-25.7	-20.2	-31.2	n/a
Apr-08	-10.9	-22.0	-16.4	n/a
May-08	-4.0	-0.2	-7.9	19.2
Jun-08	5.9	10.7	1.0	32.9
Jul-08	12.2	17.5	6.8	18.3
Aug-08	4.6	11.9	8.3	116.6
Sep-08	0.2	2.4	-1.9	n/a
Oct-08	-6.0	-3.3	-8.6	n/a
Nov-08	-18.4	-14.6	-22.2	n/a
Dec-08	-28.2	-31.0	-33.8	n/a
Jan-09	-26.7	-23.3	-30.0	n/a

Notes:
- Missing or incomplete data in 2005 for January, February, March, October, December
- Missing or no data in 2006 for January, February, March, April, May, June and Dec for temperature
- Environment Canada MSC estimated data for all parameters in 2007 except for June, July and November. There is no data available for October and December
- Missing data in 2007 for January, and Environment Canada MSC estimated February, March, April, May, August and September data for all parameters. There is no data available for October and December
- Complete data for February, March and April 2008. Missing data in May, January and December 2008. Estimated data for July, August, September and October.
- Missing data in January 2009 and data stops in February in Environment Canada MSC website.
- n/a= not available
- LUPIN: 65º 45.600' N 111º 15.000' - Elevation 488 masl.

3.1 AIR TEMPERATURE

Figures 3.1-1 to 3.1-3 summarize the mean monthly air temperatures at the Hope Bay Belt and regional MSC meteorological stations for 2005 to 2009. Data were not available at either the Doris or Boston stations for the complete period for various reasons including station installation, station maintenance, and sensor malfunction: Tables 3-1 and 3-2 provide a summary of the available meteorological data at each station. For 37 complete months of data the mean monthly air temperatures for Boston station (82 masl) ranged from a low of -32.9°C in February 2008 to a high of 14.2°C in July 2007. For 68 complete months of data the mean monthly air temperatures for Doris station (30 masl) ranged from -33.2°C in February 2008 to 13.2°C in July 2007. The annual average temperatures for 2002 to 2009 (using only complete years of available data) were -11.7°C and -11.1°C at Boston and Doris stations, respectively.

The mean minimum air temperatures for Boston (37 complete months of data) and Doris (68 months of data) stations ranged from lows of -32.9°C (February 2008) and -33.6°C (February 2008) and mean highs of 14.2°C (July 2007) and 13.9°C (July 2007), respectively. The mean monthly air temperatures for Boston and Doris stations ranged from lows of -32.5°C (February 2008) and -33.2°C (February 2007) and highs of 13.6°C (July 2007) and 13.2°C (July 2007), respectively.



Note: See Tables in Section 3.1 for missing data for the Project stations and Appendix B for regional stations (masl = meters above sea level).

Figure 3.1-1

NEWMONT The Gold Company

Hope Bay Belt Project - Mean Air Temperatures (ºC) (2004 to 2009)

Figure 3.1-1

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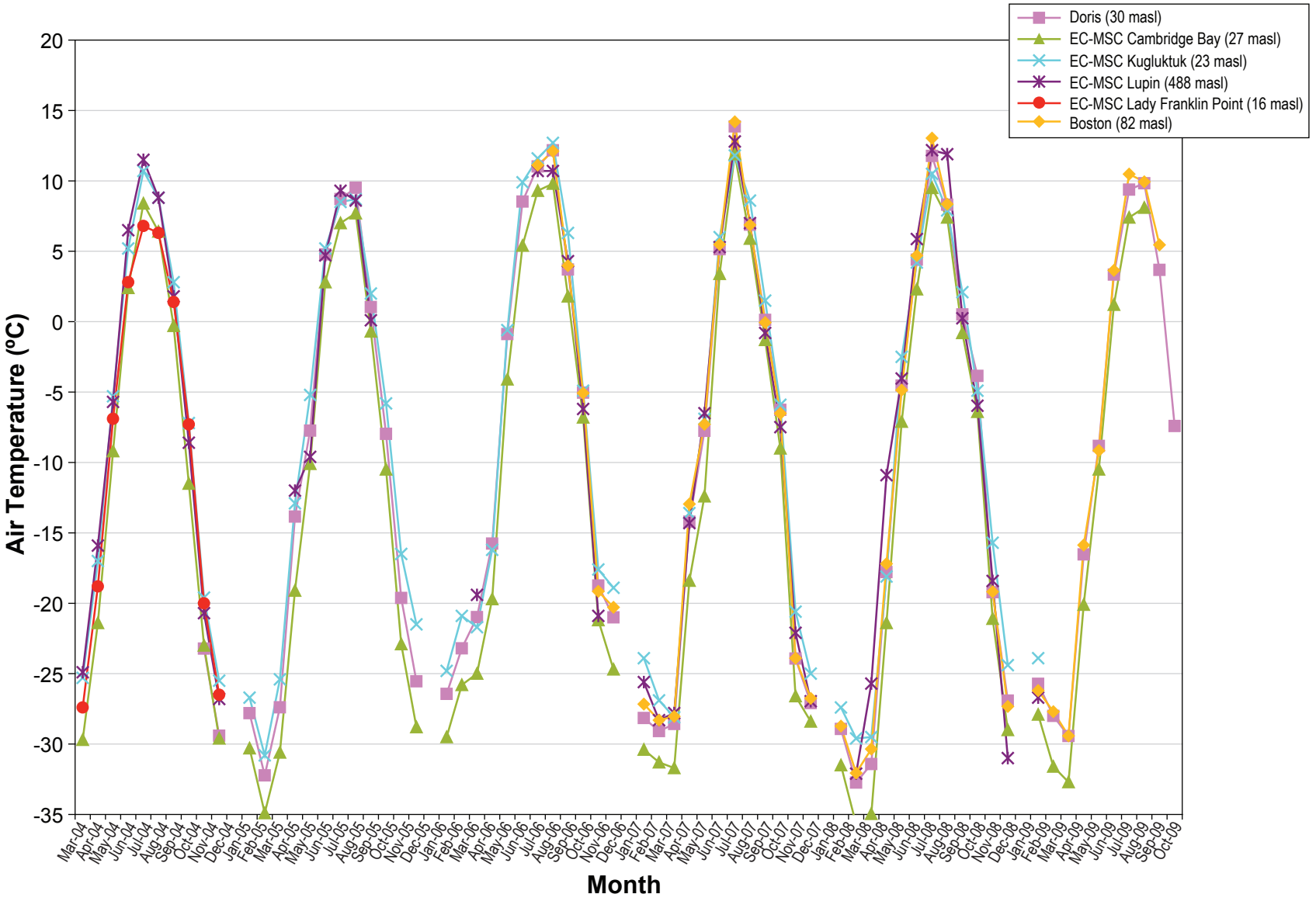


Note: See Tables in Section 3.1 for missing data for the Project stations and Appendix B for regional stations (masl = meters above sea level).

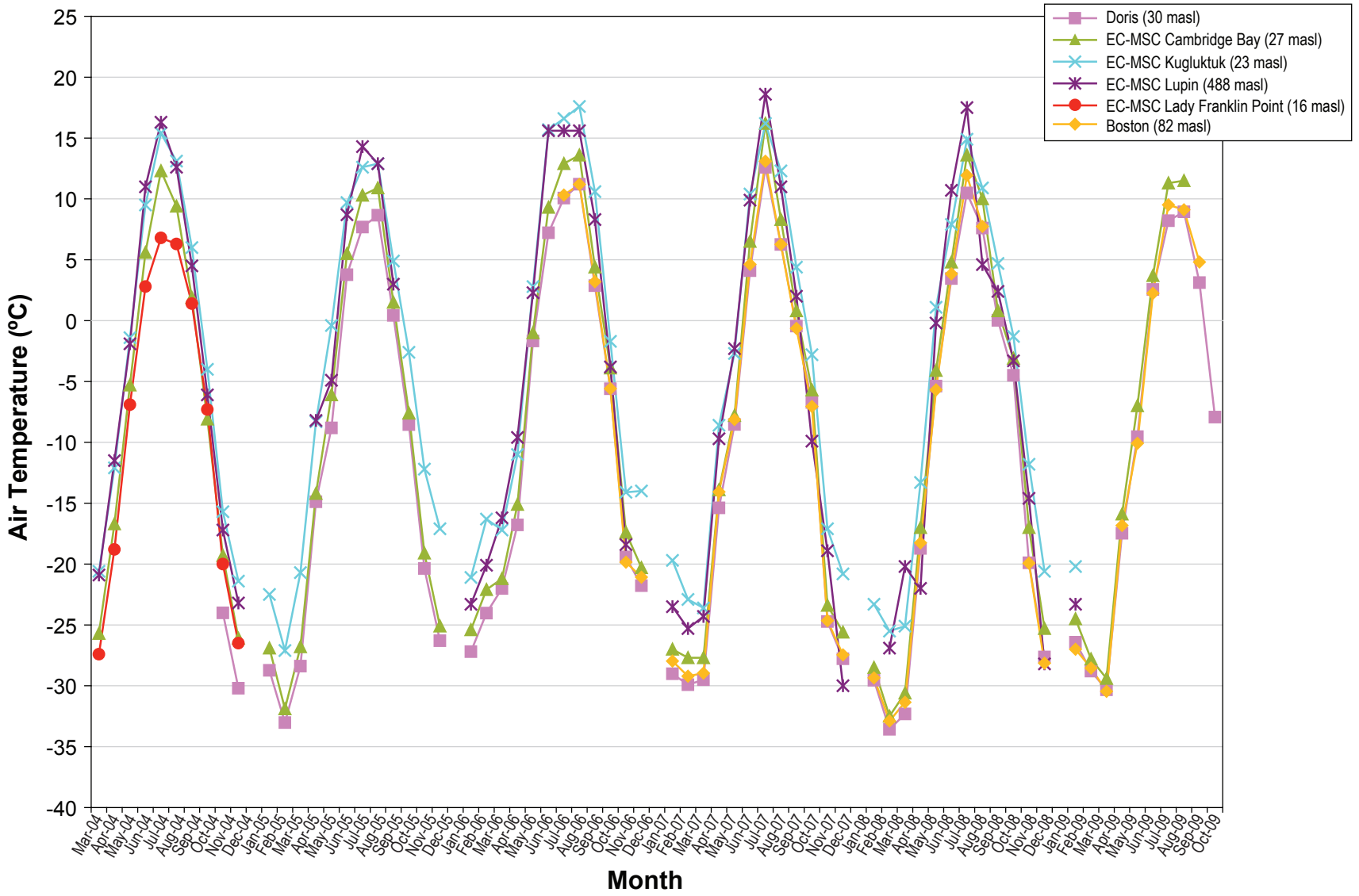
Figure 3.1-2

NEWMONT The Gold Company

Hope Bay Belt Project - Mean Maximum Air Temperatures (ºC) (2004 to 2009)

Figure 3.1-2

Rescan Engineers & Scientists



Note: See Tables in Section 3.1 for missing data for the Project stations and Appendix B for regional stations (masl = meters above sea level).

Figure 3.1-3

NEWMONT The Gold Company

Hope Bay Belt Project - Mean Minimum Air Temperatures (ºC) (2004 to 2009)

Figure 3.1-3

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The extreme maximum temperature at Doris station was 27.9°C on July 20, 2008 at 5:08 PM. The extreme minimum temperature was -43.8°C on March 17, 2008 at 12:33 AM. These temperatures were based on 60 months of data. The 1971 to 2000 climate normal record high extreme maximum temperature at EC-MSC operated Cambridge Bay station was 28.9°C and occurred on July 1, 1930. The record low extreme minimum temperature was -52.8°C and occurred on January 3, 1935. The extreme maximum and minimum temperatures recorded at Boston station are suspect and are not included in this report.

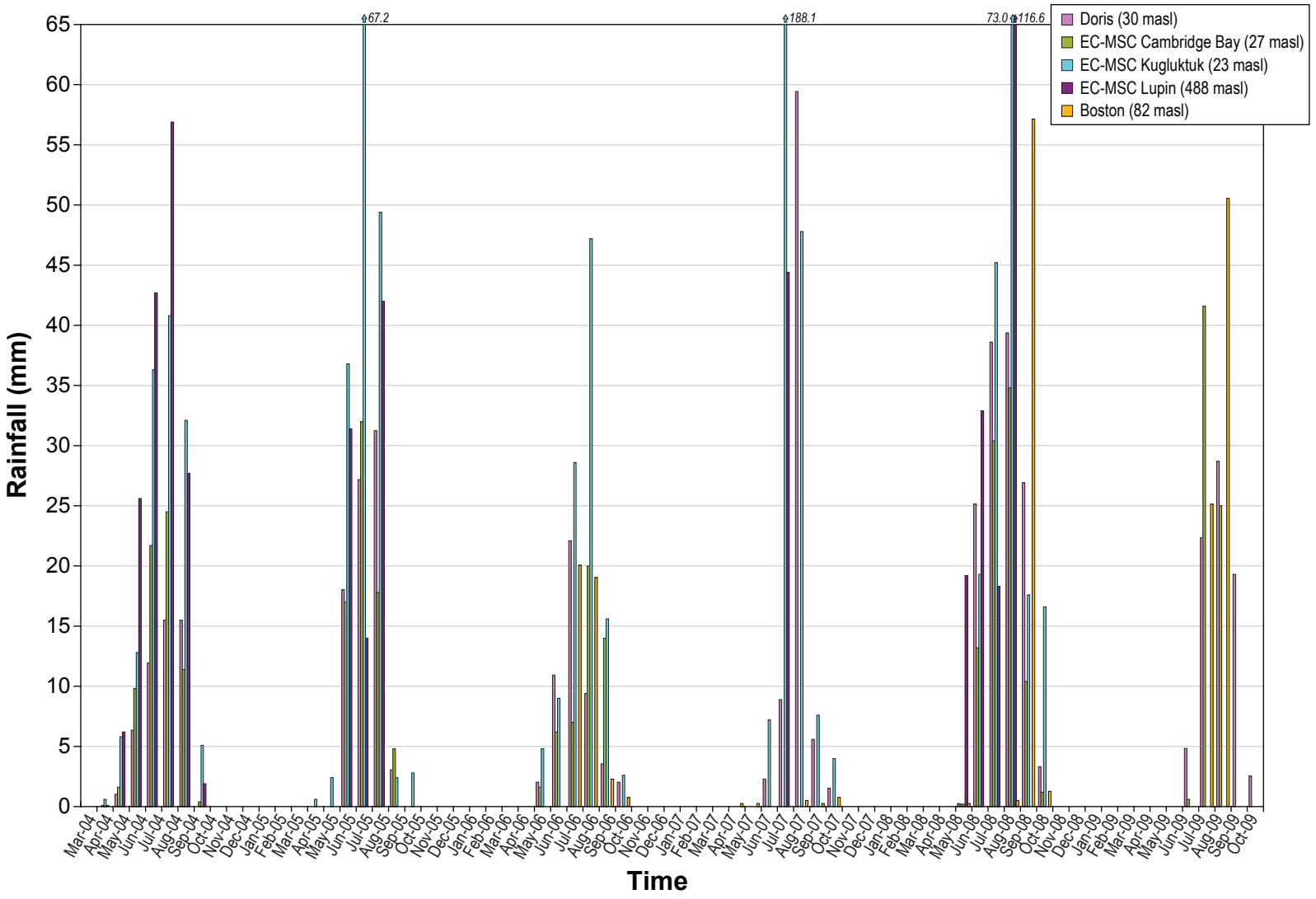
Comparisons to EC-MSC regional data from the nearest stations show that temperatures recorded in the Hope Bay Project area followed regional trends (Figures 3.1-1 to 3.1-3 and Tables 3 -3 to 3-5). On average during March 2004 to October 2009, Cambridge Bay station recorded the lowest temperatures while Kugluktuk station recorded the highest temperatures. The 1971 to 2000 climate normal average annual air temperatures for the four regional stations ranged from -12.1°C to -6.5°C at the Lady Franklin and Kugluktuk stations, respectively.

3.2 PRECIPITATION

Rainfall data were collected from December 2004 to September 2009 at the Boston station and November 2004 to September 2009 at the Doris station. Total annual rainfall from 2002 to 2009 (based on available complete years) averaged 30 mm and 85 mm at the Boston and Doris stations, respectively. Monthly rainfall values are summarized in Table 3-1 for the Boston station and Table 3-2 for the Doris station. Precipitation adapters were not utilized at either station and therefore on-site snow water equivalent (SWE) data are unavailable. Total rainfall measured at the Boston station and the Doris station was lower and higher, respectively, than the Cambridge Bay climate normal (1971 to 2000) annual rainfall which is 70 mm.

Figure 3.2-1 shows Hope Bay Belt Project and regional monthly precipitation. Total annual rainfall data were not available at any of the four regional stations for 2004, 2005, 2006, 2007, 2008 or 2009. For this reason, it is best to discuss precipitation estimates with respect to climate normal data from the closest EC-MSC regional station which is Cambridge Bay. The 1971 to 2000 climate normal annual precipitation is 139 mm comprised of 70 mm of rainfall and 69 mm of snow water equivalent (SWE) (50% snowfall and 50% rainfall). Snowfall can occur year round in the Cambridge Bay area but is typically highest during October when on average 16.2 cm are measured. Typically, little to no snow falls during July. The rainiest month is usually August when an average of 24.5 mm of rainfall is measured.

In comparison to southern locations of Canada the low Arctic regions are significantly drier. The record for highest daily rainfall at Cambridge Bay is 35.8 mm and occurred on July 24, 1988. The record for extreme daily snowfall was recorded on October 8, 1962 and is 20.8 cm. On average there are 77 days of the year when snowfall is greater than 0.2 cm and 36 days when rainfall is greater than 0.2 mm but only 2 days when snowfall is greater than 5 cm and 3 days when rainfall is greater than 5 mm.



Note: See Tables in Section 3.1 for missing data for the Project stations and Appendix B for regional stations (masl = meters above sea level).

Figure 3.2-1

NEWMONT The Gold Company

Hope Bay Belt Project and Regional Rainfall (mm) 2004 to 2009

Figure 3.2-1

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3.3 SOLAR RADIATION

Solar radiation is electromagnetic energy from the sun. Solar energy accounts for 99% of the Earth's energy budget. The solar radiation incident on top of the terrestrial atmosphere is called extraterrestrial solar radiation. Ninety seven percent of this radiation is confined to the spectral range of 0.29 to 3.0 microns and is referred to as short-wave radiation. A portion of the extraterrestrial solar radiation penetrates through the atmosphere to the earth's surface, while part of it is scattered and/or absorbed in the atmosphere by gases, aerosol particles, cloud droplets and cloud crystals. Global solar radiation is monitored at the Hope Bay Belt meteorological stations using a silicone pyranometer. Global solar radiation is the total incoming direct and diffuse short-wave solar radiation received from the whole dome of the sky on a horizontal surface.

Tables 3-1 and 3-2 provide monthly total bright sunshine hours and mean daily global solar radiation in watts per square metre at Boston and Doris stations, respectively. The highest daily average solar radiations were 283 W/m^2 (May 2008) and 274 W/m^2 (May 2007) at Boston and Doris stations, respectively (Figure 3.3-1). The maximum hourly average solar radiation value at the Boston station occurred on May 5, 2005 and was 1,036 W/m^2 at 1:00 PM. The highest hourly average solar radiation at Doris station was 841 W/m^2 on July 8, 2007 at 2:00 PM. The Hope Bay Project area experiences almost 24 hours of sunlight per day during June and July.

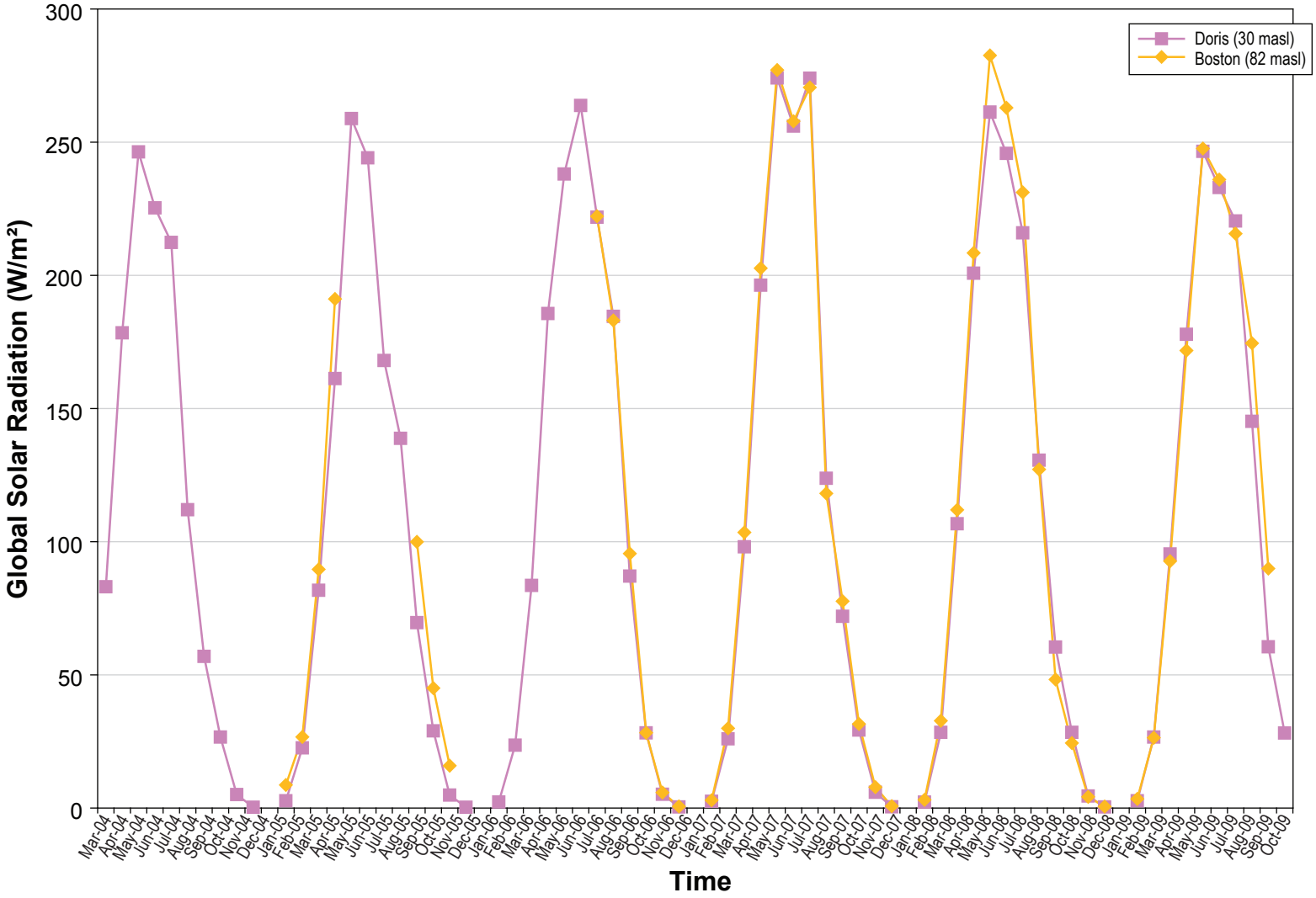
The lowest solar radiation values were recorded during winter months when the sun is at its lowest angle and there is a higher frequency for low cloud cover that scatters and absorbs the solar radiation. The minimum average daily solar radiation 0.22 W/m^2, was recorded at the Boston station on December 18, 2007. The hourly average solar radiation values recorded on that day were all at or below 2 W/m^2. The minimum average daily solar radiation of 0.089 W/m^2 was recorded at the Doris station on December 25, 2004. The hourly average solar radiation values recorded on that day were all below 1 W/m^2. All of the hourly average solar radiation values recorded during the night time hours were 0 W/m^2. The Hope Bay Project area experiences almost 24 hours of darkness per day during late November to early January.

A bright sunshine hour is defined by the World Health Organization (WHO) as an hour when the average global solar radiation is greater than 120 W/m^2. On average there were 2,476 hours and 2,457 hours of bright sunshine per year at Boston and Doris stations, respectively. Summer months have a significantly higher occurrence of bright sunshine hours than winter months. Mean daily global solar radiation during the measurement period was 9.7 MJ/m^2 at both the Boston and Doris stations which is typical for the region. These values provide a guide for sizing potential solar panel systems at this site.

3.4 SNOW

Arctic snow cover is often hard packed and denser than the snow of the subarctic (Williams 1957). The snow stratigraphy generally follows Benson *et al*. (1975) description derived from observations in Greenland, Antarctica and northern Alaska. Four major varieties of snow are recognized, including:

1. Fresh snow at the surface with variable crystal forms and a density between 150 and 200 kg m^{-3};
2. Hard and fine-grained windslab with a density between 305 and 450 kg m^{-3};
3. Medium-grained snow at a density between 230 and 350 kg m^{-3}; and
4. Depth hoar consisting of coarse, loosely-bonded crystals yielding an average density between 200 and 300 kg m^{-3}.



Note: See Tables in Section 3.1 for missing data (masl = meters above sea level).

Figure 3.3-1

NEWMONT The Gold Company

Hope Bay Belt Project Monthly Average Global Solar Radiation (W/m²)(2004 to 2009)

Figure 3.3-1

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Table 3.4-1 summarizes snow depth, SWE and, snow density at the various Hope Bay Belt snow courses. Twenty-two sites over seven terrain types were examined during the 2004, 2005, and 2006 snow course surveys. Twenty-one sites were monitored in 2007 and fourteen in each of the Boston and Doris/Madrid Project areas in 2008.

Table 3.4-1. Data Summary for Hope Bay Belt Snow Surveys, 2004 to 2008

Station #	Sample Dates	Snow Depth (cm)	SWE (mm)	Snow Density (kg/m^3)
Open Lake				
OL-04-1	May 5 to 6, 2004	9.6	15.4	160
OL-04-2		17.2	66.7	388
OL-04-3		2.5	17.2	697
OL-04-4		6.7	24.0	360
Mean		**9.0**	**30.8**	**401**
OL-05-1	May 9 to 12, 2005	15.3	42.0	275
OL-05-2		21.3	59.6	280
OL-05-3		31.7	99.5	312
Mean		**22.7**	**67.0**	**290**
OL-06-1	April 30, 2006	23.8	83.7	352
OL-06-2		15.9	39.0	246
OL-06-3		17.5	48.5	278
OL-06-4		24.4	57.8	237
Mean		**20.4**	**57.2**	**278**
OL-07-1	April 28 to May 4, 2007	22.0	74.4	216
OL-07-2		26.7	98.9	370
OL-07-3		17.9	20.0	112
Mean		**22.2**	**55.4**	**233**
OL-08-1 Boston	May 16 to 17, 2008	11.5	43.6	379
OL-08-2 Boston		25.9	102.0	394
Mean		**18.7**	**72.8**	**386**
OL-08-2 Doris		5.8	24.2	420
OL-08-4 Doris		10.9	57.1	522
Mean		**8.4**	**40.7**	**471**
Exposed Lowland				
EL-04-1	May 5 to 6, 2004	34.2	77.2	226
EL-04-2		21.4	42.9	201
EL-04-3		8.0	16.8	209
Mean		**21.2**	**45.6**	**212**
EL-05-1	May 9 to 12, 2005	54.0	129.7	240
EL-05-2		24.6	53.2	217
EL-05-3		9.7	20.3	209
Mean		**29.4**	**67.8**	**222**
EL-06-1	April 30, 2006	47.3	103.1	218
EL-06-2		28.9	74.4	258
EL-06-3		7.2	14.0	195
Mean		**32.8**	**38.1**	**106**

(continued)

Table 3.4-1. Data Summary for Hope Bay Belt Snow Surveys, 2004 to 2008 (continued)

Station #	Sample Dates	Snow Depth (cm)	SWE (mm)	Snow Density (kg/m^3)
EL-07-1	April 28 to May 4, 2007	40.1	68.4	171
EL-07-2		36.8	33.3	90
EL-07-3		21.5	12.5	58
Mean		**27.8**	**63.8**	**223**
EL-08-1 Boston	May 9 to 12, 2008	30.9	118.6	384
EL-08-2 Boston		23.3	86.3	370
Mean		**27.1**	**102.5**	**377**
EL-08-1 Doris		49.1	149.1	304
EL-08-2 Doris		11.3	24.4	216
Mean		**30.2**	**86.8**	**260**
Sheltered Lowland				
SL-04-1	May 5 to 6, 2004	28.5	55.0	193
SL-04-2		48.8	115.3	236
SL-04-3		27.1	52.5	194
Mean		**34.8**	**74.3**	**208**
SL-05-1	May 9 to 12, 2005	45.6	112.2	246
SL-05-2		32.9	76.9	234
SL-05-3		23.3	63.7	274
Mean		**34.0**	**84.3**	**251**
SL-06-1	April 30, 2006	54.5	107.4	197
SL-06-2		40.9	83.7	205
SL-06-3		41.9	114.6	273
Mean		**38.6**	**101.9**	**225**
SL-07-1	April 28 to May 4, 2007	44.1	67.5	153
SL-07-2		41.2	52.1	126
SL-07-3		30.5	24.0	079
Mean		**38.6**	**47.9**	**119**
SL-08-1 Boston	May 9 to 12, 2008	34.2	112.9	330
SL-08-3 Boston		23.7	108.3	457
Mean		**28.9**	**110.6**	**394**
SL-08-2 Doris		38.2	109.9	288
SL-08-3 Doris		37.9	111.5	294
Mean		**38.1**	**110.7**	**291**
North Aspect				
NA-04-1	May 5 to 6, 2004	18.7	34.1	183
NA-04-2		14.5	33.3	230
NA-04-3		14.3	39.6	277
Mean		**15.8**	**35.7**	**230**
NA-05-1	May 9 to 12, 2005	27.0	34.1	126
NA-05-2		13.0	7.6	53
NA-05-3		28.4	66.5	234
Mean		**22.8**	**36.1**	**138**

(continued)

Table 3.4-1. Data Summary for Hope Bay Belt Snow Surveys, 2004 to 2008 (continued)

Station #	Sample Dates	Snow Depth (cm)	SWE (mm)	Snow Density (kg/m^3)
NA-06-1	April 30, 2006	54.5	107.4	197
NA-06-2		40.9	83.7	205
NA-06-3		41.9	114.6	273
Mean		**31.7**	**67.0**	**203**
NA-07-1	April 28 to May 4, 2007	25.4	48.6	191
NA-07-2		29.3	44.6	152
NA-07-3		40.4	107.9	267
Mean		**18.5**	**42.3**	**227**
NA-08-1	May 9 to 12, 2008	31.5	72.2	229
NA-08-2		14.5	50.2	347
Mean		**23.0**	**61.2**	**288**
NA-08-1		30.6	122.9	402
NA-08-2		25.7	76.9	300
Mean		**28.1**	**99.9**	**351**
East Aspect				
EA-04-1	May 5 to 6, 2004	30.7	63.0	205
EA-04-2		28.1	60.3	214
EA-04-3		20.1	39.6	197
Mean		**26.3**	**54.3**	**205**
EA-05-1	May 9 to 12, 2005	38.0	77.8	205
EA-05-2		28.4	44.3	156
EA-05-3		16.3	39.5	242
Mean		**27.6**	**53.8**	**201**
EA-06-1	April 30, 2006	38.5	95.3	248
EA-06-2		34.5	99.3	288
EA-06-3		23.0	59.2	257
Mean		**38.3**	**50.1**	**124**
EA-07-1	April 28 to May 4, 2007	26.3	24.9	95
EA-07-2		57.0	83.5	146
EA-07-3		31.7	41.9	132
Mean		**32.0**	**84.6**	**264**
EA-08-2 Boston	May 9 to 12, 2008	50.5	140.6	279
EA-08-3 Boston		34.4	143.6	414
Mean		**42.6**	**142.1**	**346**
EA-08-2 Doris		46.9	160.0	353
EA-08-3 Doris		14.3	47.5	331
Mean		**30.6**	**103.7**	**342**
South Aspect				
SA-04-1	May 5 to 6, 2004	36.4	80.9	223
SA-04-2		36.9	110.5	300
SA-04-3		20.4	46.4	227
Mean		**31.2**	**79.3**	**250**

(continued)

Table 3.4-1. Data Summary for Hope Bay Belt Snow Surveys, 2004 to 2008 (completed)

Station #	Sample Dates	Snow Depth (cm)	SWE (mm)	Snow Density (kg/m^3)
SA-05-1	May 9 to 12, 2005	35.3	72.4	205
SA-05-2		25.8	63.6	247
SA-05-3		28.8	63.9	222
SA-05-4		41.8	127.2	304
Mean		**30.0**	**66.6**	**225**
SA-06-1	April 30, 2006	49.2	114.3	232
SA-06-2		43.1	121.3	281
SA-06-3		36.4	103.2	283
Mean		**29.1**	**41.4**	**144**
SA-07-1	April 28 to May 4, 2007	41.7	35.0	119
SA-07-2		31.0	24.1	129
SA-07-3		51.6	28.2	183
Mean		**42.9**	**113.0**	**266**
SA-08-2 Boston	May 9 to 12, 2008	28.0	88.5	316
SA-08-3 Boston		57.3	218.7	381
Mean		**42.7**	**153.6**	**349**
SA-08-2 Doris		53.2	163.2	307
SA-08-3 Doris		21.0	69.5	331
Mean		**37.1**	**116.3**	**319**
West Aspect				
WA-04-1	May 5 to 6, 2004	45.0	107.5	239
WA-04-2		18.4	40.0	218
WA-04-3		28.7	71.4	248
Mean		**30.7**	**73.0**	**235**
WA-05-1	May 9 to 12, 2005	29.1	53.2	183
WA-05-2		35.0	95.6	273
WA-05-3		27.5	54.8	199
Mean		**30.5**	**67.9**	**218**
WA-06-1	April 30, 2006	30.8	86.5	280
WA-06-2		28.9	72.2	250
WA-06-3		46.1	112.6	244
Mean		**35.3**	**90.4**	**258**
WA-07-1	April 28 to May 4, 2007	40.4	29.7	136
WA-07-2		78.3	45.0	174
WA-07-3		150.1	80.7	186
Mean		**51.8**	**89.6**	**165**
WA-08-2 Boston	May 9 to 12, 2008	18.6	58.5	315
WA-08-3 Boston		72.7	250.5	345
Mean		**45.6**	**154.5**	**330**
WA-08-1 Doris		29.9	124.7	418
WA-08-2 Doris		14.8	62.2	420
Mean		**22.3**	**93.4**	**419**

SWE = snow water equivalent

In 2004 measured snow densities were similar across all sites except for the open lake terrain type, whereas snow depths ranged from a mean of 9.0 cm for open lake terrain to a mean of 34.8 cm for sheltered lowland terrain. SWE ranged from 30.8 mm for open lake terrain to 79.3 mm for south aspect terrain (Figure 3.4-1).

In 2005 measured snow densities were similar across all but the north aspect terrain type, whereas snow depths ranged from a mean of 22.7 cm for open lake terrain to a mean of 34.0 cm for sheltered lowland terrain. Snow water equivalents ranged from 36.1 mm of water for north aspect terrain to 84.3 mm for sheltered lowland terrain (Figure 3.4-1).

In 2006 measured snow densities were similar across all terrain types, whereas snow depths ranged from a mean of 18.5 cm for north aspect slope terrain to a mean of 45.7 cm for sheltered lowland terrain. Snow water equivalents ranged from 42.3 mm of water for north aspect terrain to 101.9 mm for sheltered lowland terrain (Figure 3.4-1).

In 2007 measured snow densities were similar across all terrain types, whereas snow depths ranged from a mean of 22.2 cm for open lake areas to a mean of 51.8 cm for west aspect terrain. Snow water equivalents ranged from 38.1 mm of water for exposed lowland terrain to 89.6 mm for west aspect terrain (Figure 3.4-1).

In 2008 in the Boston Project area snow densities were similar across all terrain types with the exception of the north aspect terrain types, where the values were lower. The mean snow depth ranged from 18.7 cm for open lake terrain to 45.6 cm for west aspect slope terrain. Snow water equivalents measured in the field ranged from 61.2 mm of water for north aspect terrain to 154.4 mm for west aspect terrain (Figure 3.4-2).

In 2008 in the Doris and Madrid Project areas snow densities were similar across terrain types with the exception of the open lake and west aspect terrain types, where values were higher. The mean snow depth ranged from 8.4 cm for open lake terrain to 38.1 cm for sheltered lowland terrain. In 2008, mean snow water equivalents ranged from 40.7 mm of water for open lake terrain to 116.3 mm for south aspect terrain (Figure 3.4-2).

Wind redistributes snowfall over the course of a winter, and in general, exposed terrain, such as open lakes, collects less snow than sheltered lowland areas. Similarly, prevailing winds redistribute snow unequally across slopes of differing aspect. These effects may result in substantial differences between terrain types in some cases. However, this study involved a limited number of sampling sites in an area with little vegetation, and broad ranges of measured values were observed within each terrain type. As such, detailed calculation of the mean snow water equivalent, based on the relative proportion of each terrain type, is not recommended. An un-weighted mean of the SWE values for various terrain types based on 2004 to 2008 sampling, equal to 71.3 mm, may be used for site-specific water balance calculations. Results collected during 2008 which separated Boston and Doris and Madrid Project areas suggest that un-weighted mean SWE values should be slightly higher for Boston Project area than for Doris Project area. Overall, SWE were higher in 2008 than previous years suggesting that snowpacks were larger during that year.

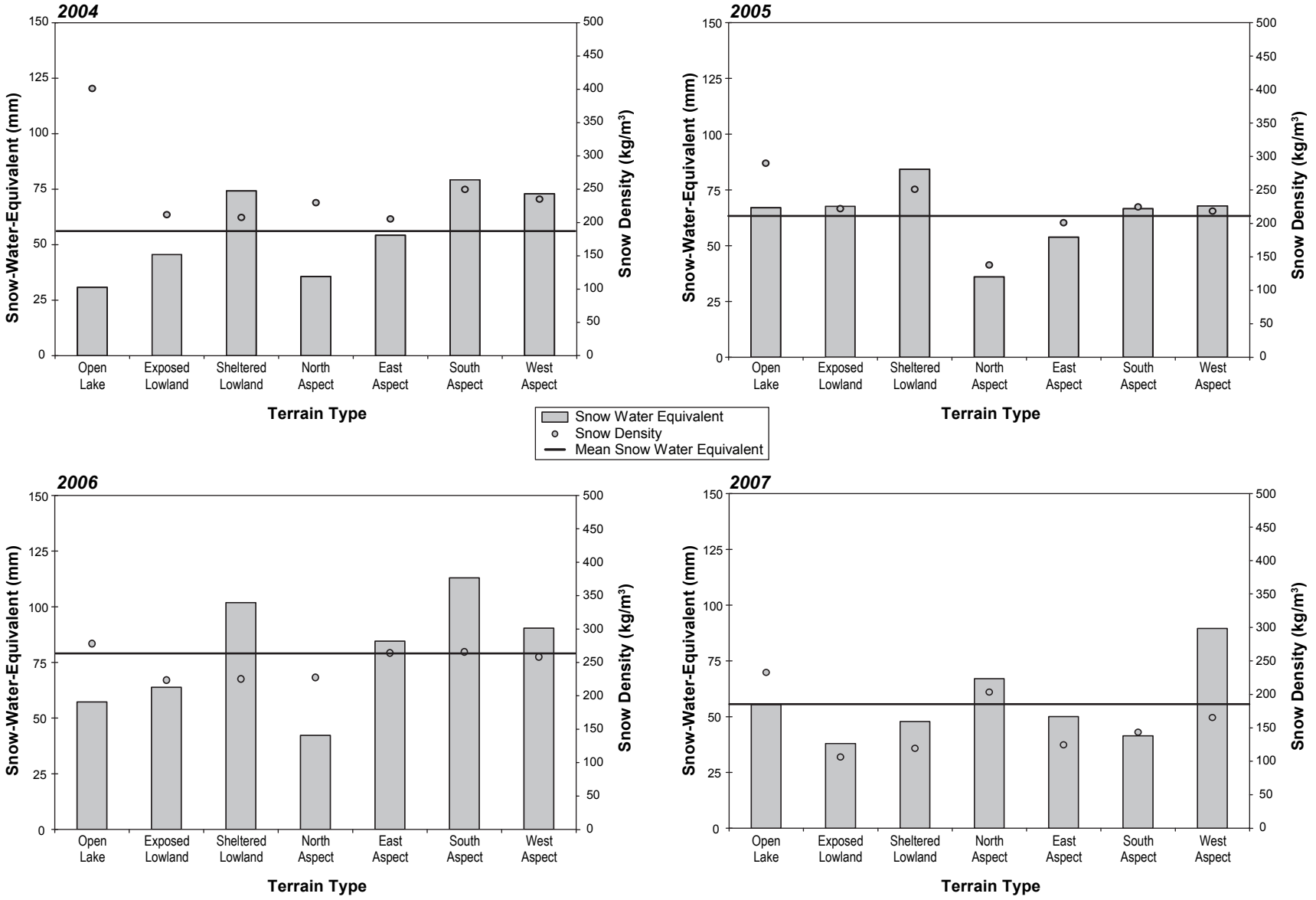

Figure 3.4-1

NEWMONT™ The Gold Company

Snow Survey Data for Hope Bay Belt Project (2004 to 2007)

Figure 3.4-1

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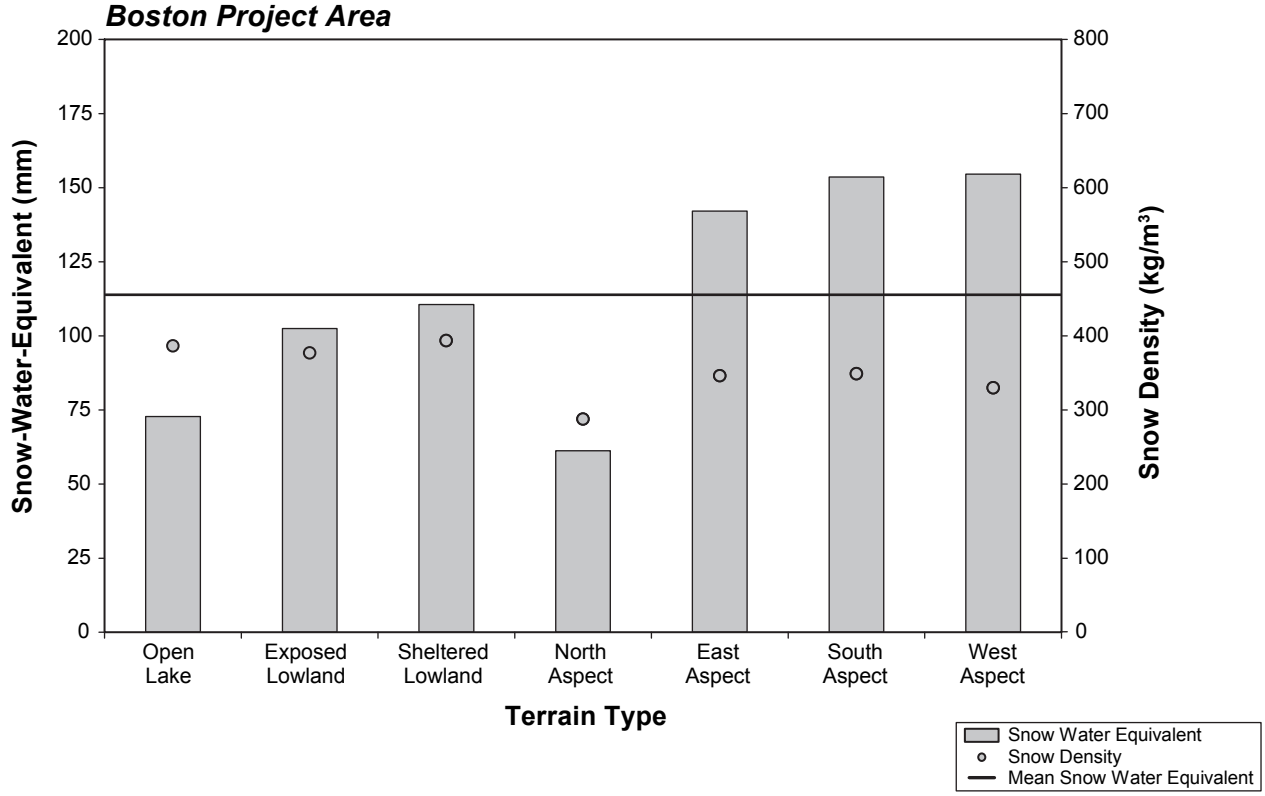

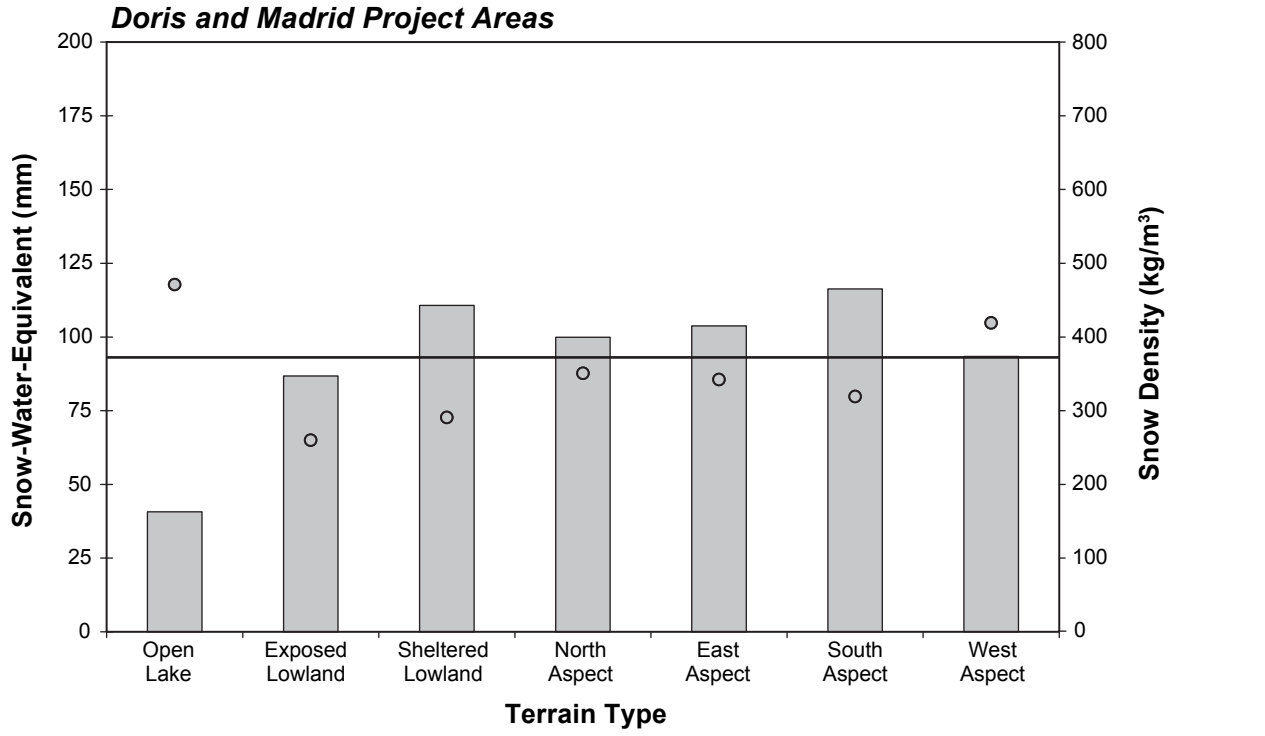

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Snow Survey Data for Hope Bay Belt Project (2008)

Figure 3.4-2

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An ultrasonic snow depth sensor was installed at Boston station on August 13, 2009 and results from this sensor will be included in future meteorology baseline reports.

The extreme snow depth measured at Cambridge Bay EC-MSC station was 59 cm and was recorded on May 9, 1993. The highest monthly average climate normal (1971 to 2000) snow depth at that station is 31 cm for April. Annually, on average, there are 263 days at Cambridge Bay station when there is greater than 1 cm of snow on the ground and 132 days where snow is 20 cm or deeper.

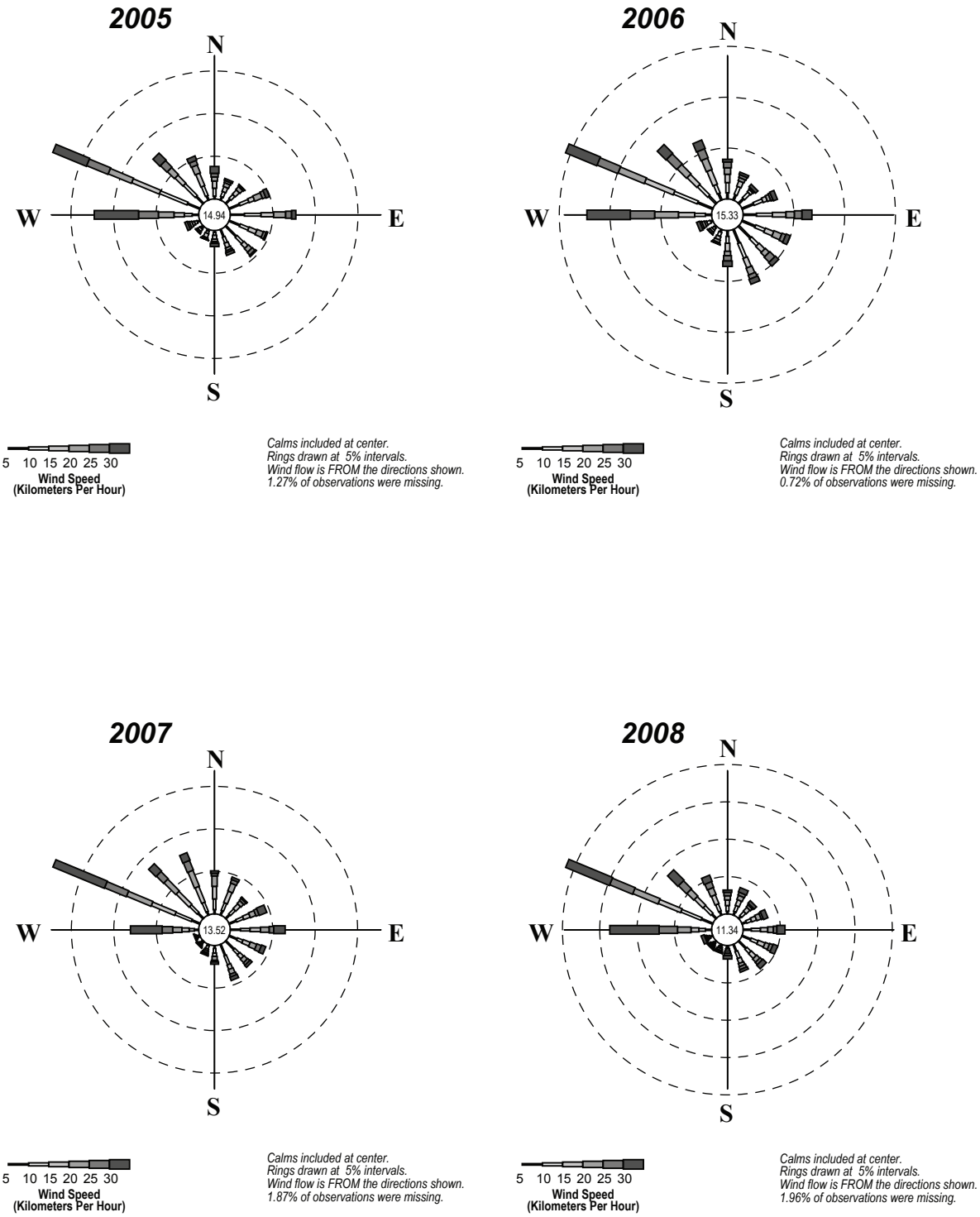
3.5 WIND SPEED AND DIRECTION

When the Doris meteorology station was upgraded from 3 m tall tripods to a 10 m tall tower the wind sensor was raised from 3 m to 10 m. This 7 m increase in height could monitor significantly different wind patterns; therefore, wind speeds measured before and after August 13, 2009 should be utilized independently. Figures 3.5-1 to 3.5-3 show wind distribution and speed patterns at the Doris station. The predominant wind directions at the Doris meteorological station were from the northwest quadrant and west. Based on 2005 to 2008 data, these wind directions were recorded on average 55% of the time. This station experienced calm conditions (*i.e.* hourly average wind speeds less than 3.6 km/hr or 1 m/s) on average 14% of the time. Doris station experienced winds from the northwest quadrant 57% of the time during the winter and 53% of the time during the summer. Calms were experienced 16% of the time during the winter and 8% of the time during the summer. This suggests that, in general, wind speeds are less calm and wind directions are more distributed in the summer compared to the winter. Average annual wind speeds at Doris station were 17.4, 17.3, 18.7, and 19.6 km/h for 2005, 2006, 2007, and 2008, respectively.

Figures 3.5-4 to 3.5-6 show wind distribution and wind speed patterns at the Boston station. According to data collected during 2007 and 2008 (the only complete years of wind data), the predominant wind direction for the Boston meteorological station (10 m) was from the northwest and west. The wind was from this direction 53% of the time. Calm conditions (*i.e.* hourly average wind speeds less than 3.6 km/he or 1.0 m/s) prevailed 13% of the time. Boston station experienced winds from the northwest quadrant 43% of the time during the winter and 34% of the time during the summer. Calms were experienced 12% of the time during the winter and 23% of the time during the summer. This suggests that, in general, wind speeds are lower and wind directions are more widely distributed in the summer compared to the winter. Average annual wind speeds at Boston station were 17.9 km/h and 18.8 km/h for 2007 and 2008 respectively.

Wind speeds and directions at the Boston and Doris stations were very similar; the prevailing wind was blowing from northwest quadrant at both stations.

The climate normal (1971 to 2000) average annual wind speed for Cambridge Bay station is 21.2 km/h which is slightly stronger than wind speeds measured in the Project area. Similar to Doris and Boston meteorology stations the most common wind direction is from the northwest. The maximum gust speed recorded at Cambridge Bay station was 122 km/h and was recorded on December 23, 1976. On average, 14 days with wind speeds greater than 63 km/h and 44 days with wind speeds greater than 52 km/h occur annually. Most of these high wind days occur during the winter months.



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Doris Station (3 m) Annual Windroses, 2005 to 2008

Figure 3.5-1

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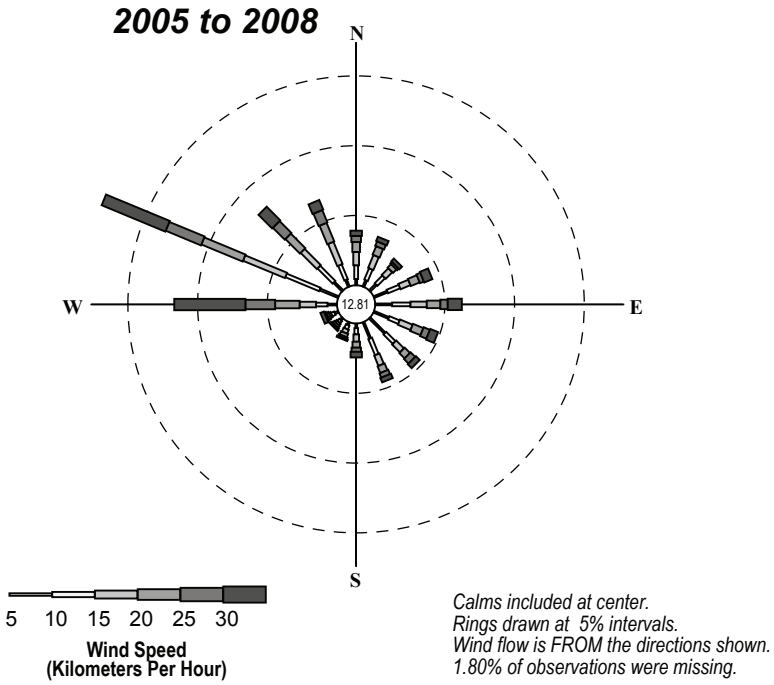
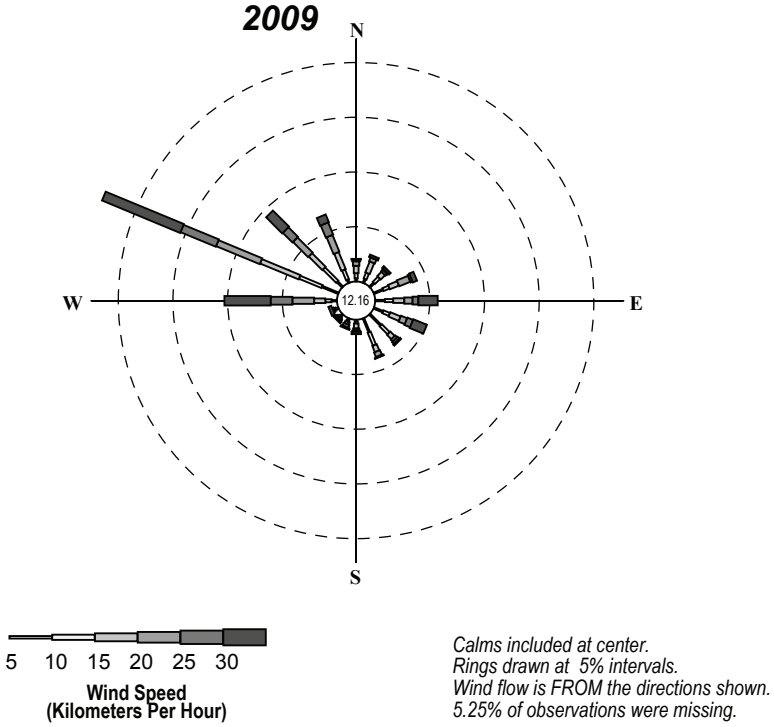


Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
1.80% of observations were missing.



Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
5.25% of observations were missing.

Note: Windroses only show January to October because a complete year was not available for 2009 at the time of reporting.

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Doris Station Windroses, 2005 to 2008 and 2009

Figure 3.5-2

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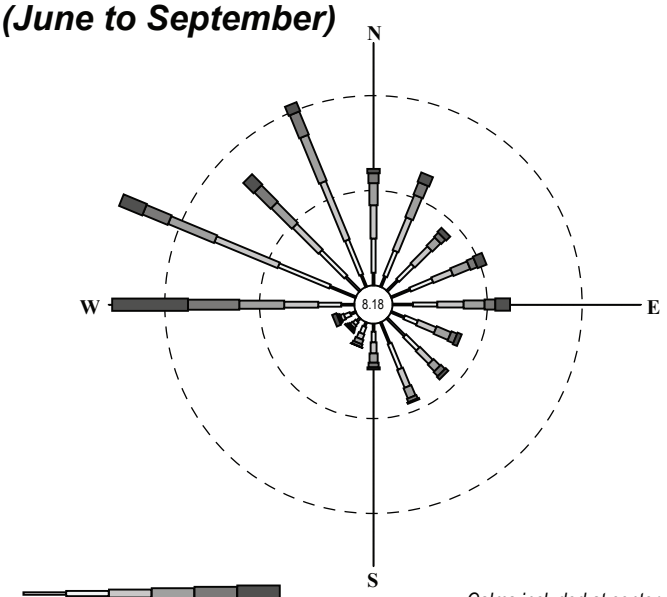
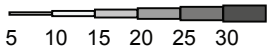
Summer Months (June to September)

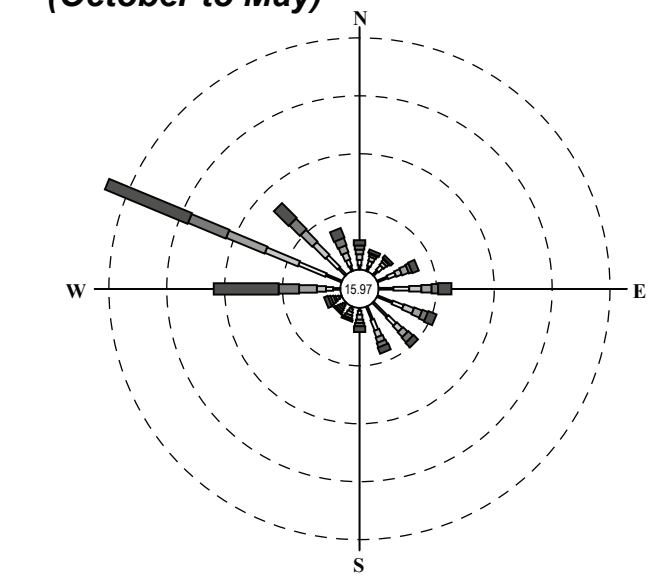


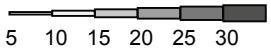


Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
0.18% of observations were missing.

Winter Months (October to May)





Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
2.58% of observations were missing.

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Doris Station (3 m) Seasonal Windrose Comparison, 2005 to 2009

Figure 3.5-3

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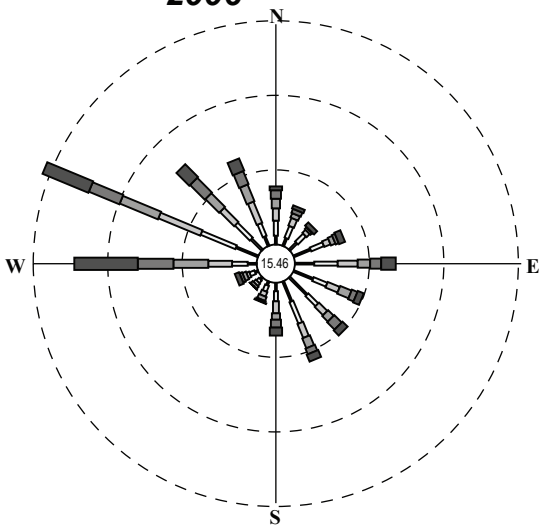
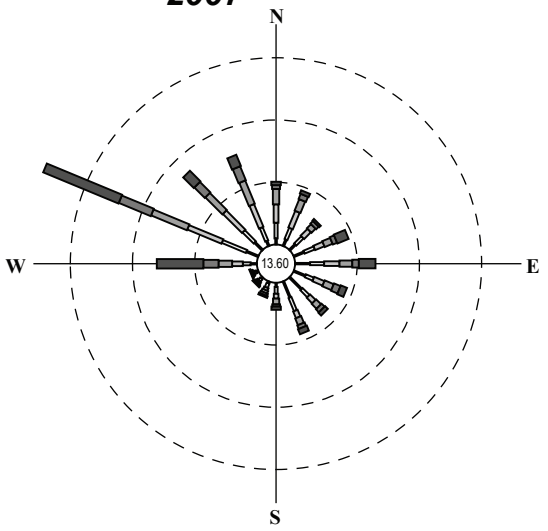
2006



5 10 15 20 25 30
Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
0.59% of observations were missing.

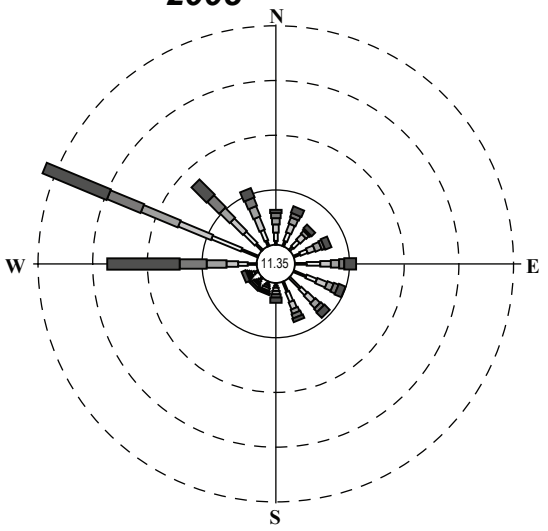
2007



5 10 15 20 25 30
Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
1.78% of observations were missing.

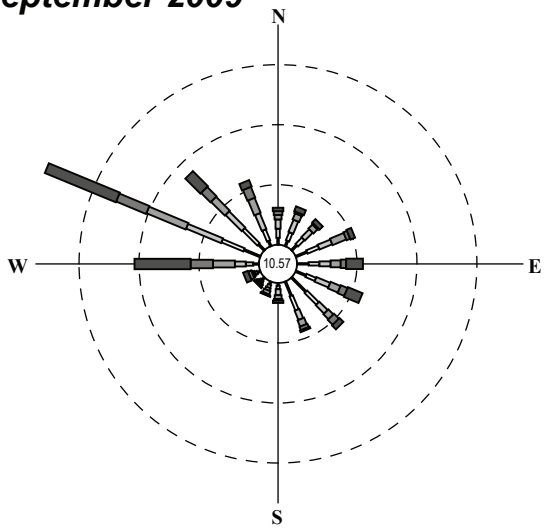
2008



5 10 15 20 25 30
Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
1.95% of observations were missing.

January to September 2009



5 10 15 20 25 30
Wind Speed
(Kilometers Per Hour)

Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
3.91% of observations were missing.

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Boston Station Annual Windroses, 2006 to 2009

Figure 3.5-4

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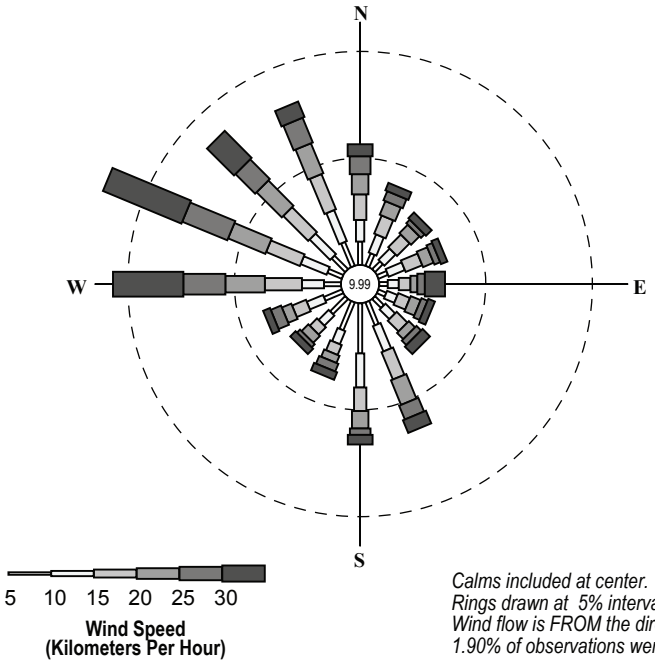
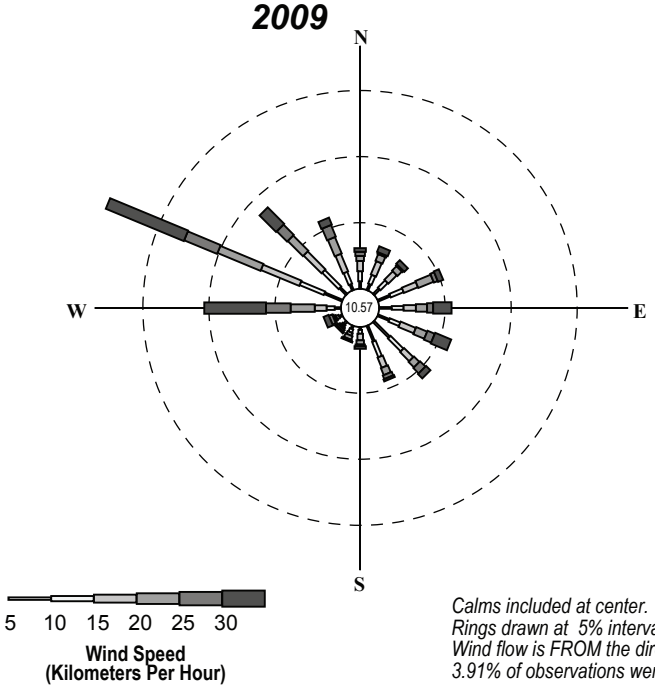
2007 and 2008



Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
1.90% of observations were missing.

2009



Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
3.91% of observations were missing.

Note: Windroses only show January to October because a complete year was not available for 2009 at the time of reporting.

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Boston Station Windroses, 2007 to 2008 and 2009

Figure 3.5-5

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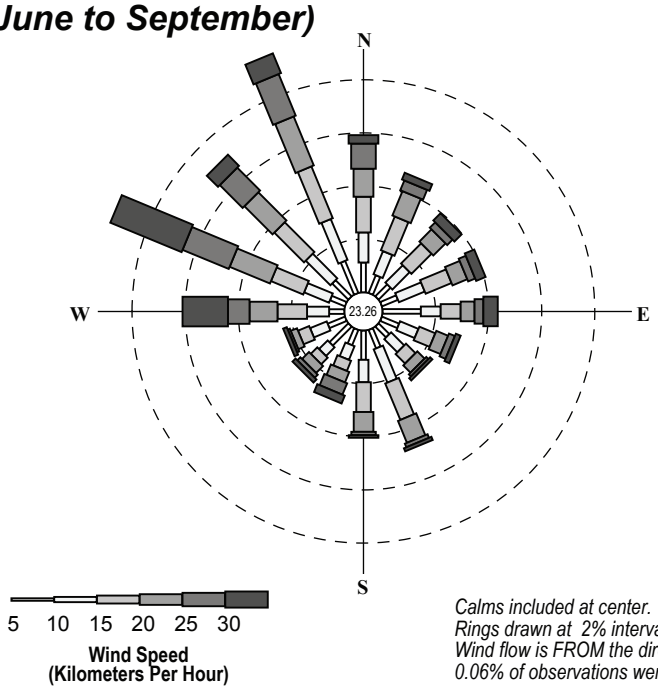
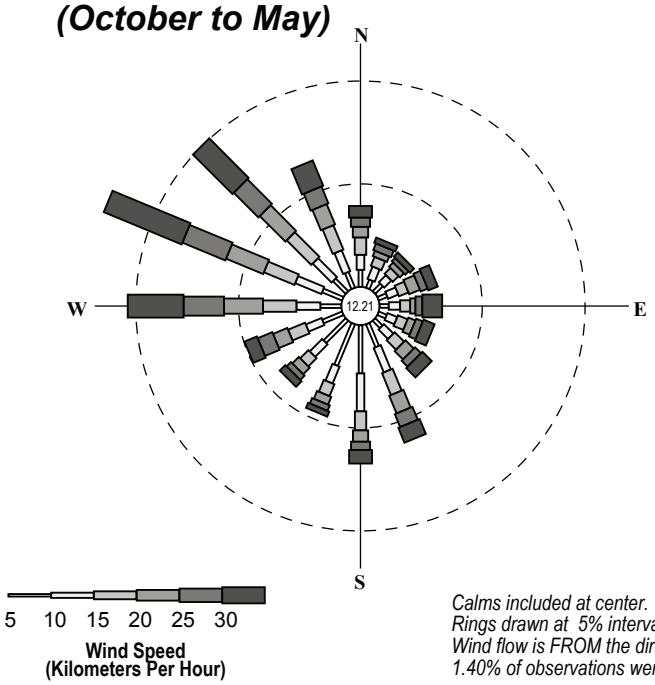
Summer Months (June to September)



Calms included at center.
Rings drawn at 2% intervals.
Wind flow is FROM the directions shown.
0.06% of observations were missing.

Winter Months (October to May)



Calms included at center.
Rings drawn at 5% intervals.
Wind flow is FROM the directions shown.
1.40% of observations were missing.

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Boston Station Seasonal Windrose Comparison, 2006 to 2009

Figure 3.5-6

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3.6 EVAPORATION

Lake evaporation values were calculated using data from the Doris Lake micro-meteorology (evaporation) station (installed on July 2, 2009) by two methods, the Penman Combination and the Priestly-Taylor. In total, 82 days of data were collected (July 2, 2009 to September 22, 2009) which is shorter than a typical open-water season in the low Arctic. On average the Hope Bay Project area likely experiences an open-water season that is about 105 to 120 days long. However, it is difficult to predict this value accurately as there is a lack of evaporation data recorded in the northern regions of Canada. The Doris Lake evaporation station will continue monitoring in 2010.

From July 31, 2009 to August 12, 2009 the thermistor designated to measure water temperature at a depth of 10 cm below the lake surface came out of the water. Doris Lake levels fluctuate over the course of the open-water season in response to the melting and accumulation of ice. The best method available to fill this data gap was to assume that water temperatures at the 10 cm depth were equal to those recorded at the 75 cm depth. This is reasonable because data immediately before and after the gap show that the two sensors recorded very similar temperatures and only diverged slightly.

Total evaporation values in the Hope Bay Project area from July to September 2009 were 167 and 170 mm based on total monthly evaporation values calculated using the Penman Combination and Priestly-Taylor methods, respectively (Table 3.6-1). This value could be an underestimate of evaporation because only 92 days of evaporation data were available or interpolated while the open-water season is likely longer (as discussed above).

Table 3.6-1. Hope Bay Belt Project – 2009 Monthly Evaporation

	Average Daily Evaporation Rate (mm/day)		Total Monthly Evaporation (mm)	
Method	**Penman**	**Priestly-Taylor**	**Penman**	**Priestly-Taylor**
July[a]	3.54	3.33	95	103
August	2.14	1.76	56	56
September[b]	0.93	0.35	17	11
2009 Average	*2.31*	*1.94*	-	-
2009 Sum	-	-	*167*	*170*

Note:
[a] The micro-meteorology station was installed on July 2, 2009. The July 1 to 2, 2009 evaporation rate was assumed to be equal to the July 2009 average evaporation rate for the calculation of total July evaporation.
[b] The micro-meteorology station was uninstalled on September 23, 2009. The September 23 to 31, 2009 evaporation rate was assumed to be equal to the September 2009 average evaporation rate for the calculation of total September evaporation. This likely over estimated evaporation.
From July 31, 2009 to August 12, 2009 the thermistor designated to measure water temperature at a depth of 10 cm below the lake surface came out of the water. The best method available to fill this data gap was to assume that water temperatures at the 10 cm depth were equal to those recorded at the 75 cm depth. This is reasonable because data immediately before and after the gap show that the two sensors recorded very similar temperatures and only diverged slightly.

Evaporation measured at Polar Lake for the Ekati Diamond Mine Project in 2008 was approximately 277 mm using the Penman method and based on 122 days of measurement (June 1 to September 31, 2008; Rescan, 2009). The Ekati Diamond Mine Project is located about 420 km south of the Hope Bay Belt. It is located at lower latitude and is more continental than the Hope Bay Belt Project. These characteristics mean that it experiences a longer open-water season and more heating days than Hope Bay which result in higher evaporation rates.

Lake evaporation has also been measured at the Lupin mine site that is approximately 470 km southwest of the Hope Bay Belt site. The Preistly-Taylor evaporation calculated for a 54 day period in summer 1992 was 171 mm and for a 46 day period in 1993 it was 103 mm (Gibson *et al*. 1996).

4. Summary

4. Summary

Meteorological baseline data was collected from 2002 to 2009 using two automated meteorology stations (Doris and Boston), a micro-meteorology (evaporation) station, and numerous manual snow surveys. Most meteorological data parameters were available for 60 and 38 months at Doris and Boston stations, respectively (some sensors recorded for longer or shorter periods of time). Snow surveys were measured near the beginning of May for five years (2004 to 2008). A micro-meteorology station was installed in Doris Lake during June 2009 and collected evaporation data for most of the open-water season.

The annual average temperatures for 2002 to 2009 (using only complete years of available data) were -11.7°C and -11.1°C at Boston and Doris stations, respectively. Comparisons to MSC regional data from the nearest stations show that temperatures recorded in the Hope Bay Project area followed regional trends. The 1971 to 2000 climate normal average annual air temperatures for the four regional stations ranged from -14.4°C to -10.6°C at the Cambridge Bay and Kugluktuk Airport stations, respectively.

From 2002 to 2009 total annual rainfall values, based on available complete years, were 30 mm (2007 and 2008) and 85 mm (2005 to 2008) at Boston and Doris stations, respectively. The 1971 to 2000 climate normal annual precipitation at the Cambridge Bay regional station is 139 mm, comprised of 70 mm of rainfall and 69 mm of snow water equivalent (SWE).

Solar radiation in the Arctic is high during the summer and almost zero during the winter. The annual average number of bright sunshine hours, where average global solar radiation is greater than 120 W/m^2, was 2,476 at Boston station and 2,457 at Doris station.

In general, wind in the Hope Bay Belt region typically blows from the northwest quadrant year round. Average annual wind speed at the 3 m Doris tower was 18.3 km/h and 18.4 km/h at the 10 m Boston tower.

A mean of the snow water equivalent values for various terrain types based on 2004 to 2008 sampling, is equal to 71.3 mm, and may be used for site-specific water balance calculations. Results collected during 2008 which separated Boston and Doris and Madrid Project areas suggest that mean snow water equivalent values should be slightly higher for Boston Project area than for Doris Project area. Overall, snow water equivalents were higher in 2008 than previous years suggesting that snowpacks were larger during that year.

Total evaporation values in the Hope Bay Project area from July to September 2009 were 167 and 170 mm based on total monthly evaporation values calculated using the Penman Combination and Priestly-Taylor methods, respectively.

References

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References

Benson, C.S. 1982. *Reassessment of winter precipitation on Alaska's Arctic slope and measurement on the flux of wind blown snow*. Geophysical Institute, University of Alaska, Fairbanks, Alaska, 26 pp

Brutsaert, W. 1982. *Evaporation into the Atmosphere*. D. Reidal Publishing, Dordrecht, The Netherlands.

Chow, V. T., Maidment, D. R. & Mays, L. W. 1988. *Applied Hydrology*. McGraw-Hill Book Co., New York, USA.

Gibson, J. J., Prowse, T. D. & Edwards, T. W. D. 1996. *Evaporation from a Small Lake in the Continental Arctic using Multiple Methods*. Nordic Hydrology, 27, 1996, 1-24.

Meteorological Services of Canada (MSC). 2004. *MSC Guidelines for Co-operative Climatological Autostations, Version 3.0*. Environment Canada, MSC, Surface Weather, Climate & Marine Division, Atmospheric Monitoring Water Survey Branch.

National Resources Council (NRC). 2005. *The Atlas of Canada – Snow Cover* found at http://atlas.gc.ca/site/english/maps/environment/climate/snowcover/1

Rescan Environmental Services Ltd. (Rescan). 2009. *Ekati Diamond Mine: 2008 Aquatic Effects Monitoring Program – Appendix B: Data Report*.

Rescan Environmental Services Ltd. (Rescan). 2002. *1993 to 2002 Data Compilation Report for Meteorology and Hydrology*.

Shuttleworth, W. J. 1993. Evaporation. In: *Handbook of Hydrology* (ed. by D. R. Maidment), McGraw-Hill Book Co., New York, USA.

Stewart, R. B. and Rouse, W. R. 1977. Substantiation of the Priestly and Taylor parameter $\alpha = 1.26$ for potential evaporation in high latitudes. *J. Appl. Met*. 16(6), 649-650.

Williams, G.P. 1957. An analysis of snow cover characteristics at Aklavik and Resolute, Northwest Territories. *National Research Council of Canada, Division of Building Research Paper No. 40*, Ottawa, 12 pp.

Woo, M. 1997. *A Guide for Ground Based Measurement of the Arctic Snow Cover*. Climate Research Branch, Atmospheric Environment Service, 30 pp.

Yarwood, T. M. & Castle, F. 1970. *Physical and Mathematical Tables*, third edition. Macmillan and Co. Ltd., Basingstoke and London, UK.

Appendix A

1993 – 2002 Historical Hope Bay Belt Meteorology Data

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Table A-1
Summary of Mean Monthly
Air Temperature (ºC), 1993-2002

Month	Boston Camp	Cambridge Bay Airport	Lupin (Echo Bay Mine)	Lady Franklin Point Airport
July 1993	n/a[1]	n/a	n/a	n/a
August	n/a[1,2]	n/a	n/a	n/a
September	n/a[1]	n/a	n/a	n/a
October	n/a[1]	n/a	n/a	n/a
November	n/a[1]	n/a	n/a	n/a
December	n/a	n/a	n/a	n/a
January 1994	n/a	n/a	n/a	n/a
February	n/a	n/a	n/a	n/a
March	n/a	n/a	n/a	n/a
April	-17.9[3,4]	n/a	n/a	n/a
May	-3.0[4]	n/a	n/a	n/a
June	6.6[4]	n/a	n/a	n/a
July	15.0[4]	n/a	n/a	n/a
August	11.5[4,5]	n/a	n/a	n/a
September	n/a	n/a	n/a	n/a
October	n/a	n/a	n/a	n/a
November	n/a	n/a	n/a	n/a
December	-20.9[6]	n/a	n/a	n/a
January 1995	-26.4	n/a	n/a	n/a
February	-29.1	n/a	n/a	n/a
March	-26.9	n/a	n/a	n/a
April	-21.5[7]	n/a	n/a	n/a
May	n/a	n/a	n/a	n/a
June	n/a	n/a	n/a	n/a
July	n/a	n/a	n/a	n/a
August	n/a	n/a	n/a	n/a
September	n/a	n/a	n/a	n/a
October	n/a	n/a	n/a	n/a
November	-21.8	- 23.7	-20.6	-17.6
December	-31.1	-33.9	-29.9	-30.0
January 1996	-31.9	-33.9	-31.7	-29.3
February	-28.8	-31.3	-26.7	-26.8
March	-25.8	n/a	-25.9	-25.6
April	-19.2	n/a	-16.3	-17.7
May	-7.0	n/a	-5.8	-7.4
June	10.1	n/a	9.7	5.6
July	15.1	n/a	n/a	n/a
August	n/a	n/a	n/a	n/a
September	4.4[8]	2.1	5.2	3.0
October	-11.0	-11.3	-9.5	-6.9

(continued)

Table A-1
Summary of Mean Monthly
Air Temperature (ºC), 1993-2002 (continued)

Month	Boston Camp	Cambridge Bay Airport	Lupin (Echo Bay Mine)	Lady Franklin Point Airport
November 1996	-19.2	-19.9	-19.5	-17.5
December	-28.4	-29.1	-26.8	-25.0
January 1997	-29.6	-31.4	-28.4	-28.3
February	-29.7	-32.1	-26.5	-28.4
March	-28.4	-30.3	-28.8	-28.0
April	-16.7	-20.0	-20.3	-18.6
May	-7.1	-11.0	-9.0	-7.7
June	4.8	1.3	7.5	2.2
July	12.3	9.9	13.5	8.2
August	8.0	6.4	11.0	6.3
September	3.7[9]	-0.7	4.7	2.2
October	-13.2[10]	-12.6	-10.6	-9.7
November	-15.8	-18.7	-15.1	-13.
December	-25.3	-27.1	-23.0	-23.3
January 1998	-32.9	-35.3	-33.4	-31.4
February	-29.6	-33.7	-25.6	-28.4
March	-24.4	-26.8	-22.1	-23.5
April	-12.8	-17.1	-10.7	-18.7
May	-4.2	-6.5	-0.4	-3.7
June	6.3	4.7	8.3	4.6
July	13.4	n/a	n/a	10.8
August	11.2	12.1[12]	11.4	10.5
September	4.2	5.8[12]	3.5	n/a
October	-4.2	-3.0[12]	-4.1	n/a
November	-14.1	-11.1[12]	-12.4	n/a
December	-21.7	-18.9[12]	-22.2	n/a
January 1999	-28.9	-26.7[12]	-28.6	n/a
February	-27.1	-22.4[12]	-21.0	n/a
March	-20.1	-19.9[12]	-19.6	n/a
April	-15.4	-13.9[12]	-12.8	n/a
May	-5.9	-6.1[12]	-4.8	n/a
June	5.4	5.9[12]	6.7	n/a
July	8.4	8.7[12]	8.8	n/a
August	8.3	8.9[12]	8.3	n/a
September	2.6	4.1[12]	2.6	n/a
October	-8.8	-7.2[12]	-8.9	n/a
November	-17.4	-17.5[12]	-17.3	n/a
December	-27.1	-24.6[12]	-24.8	n/a

(continued)

Table A-1
Summary of Mean Monthly
Air Temperature (ºC), 1993-2002 (completed)

Month	Boston Camp	Cambridge Bay Airport	Lupin (Echo Bay Mine)	Lady Franklin Point Airport
January 2000	-26.9	-24.1[15]	-26.8	n/a
February	-28.3	-25.8[15]	-24.9	n/a
March	-25.5	-24.8[15]	-22.3	n/a
April	-17.6	-15.4[15]	-16.1	n/a
May	-4.8	-4.7[15]	-3.9	n/a
June	6.1	5.2[15]	7.3	n/a
July	14.6	12.9[15]	15.1	n/a
August	9.2	9.2[15]	9.0	n/a
September	1.1	2.6[15]	1.0	n/a
October	-9.8	-6.6[15]	-8.7	n/a
November	-19.7	-19.1[15]	-18.8	n/a
December	-28.2	-26.8[15]	-29.4	n/a
January 2001	-28.5	-25.3[15]	-25.4	n/a
February	-29.0	-27.0[15]	-27.7	n/a
March	-25.1	-26.9[15]	-23.8	n/a
April	-17.7	-16.1[15]	-15.8	n/a
May	-4.4	-5.6[15]	-4.7	n/a
June	3.0	2.3[15]	3.8	n/a
July	9.3[11]	n/a	n/a	n/a
August	n/a[12]	n/a	n/a	n/a
September	3.7[13]	n/a	n/a	n/a
October	-10.7	n/a	n/a	n/a
November	-19.9	n/a	n/a	n/a
December	-22.6	n/a	n/a	n/a
January 2002	-29.3	n/a	n/a	n/a
February	-32.4	n/a	n/a	n/a
March	-27.1	n/a	n/a	n/a
April	-20.7	n/a	n/a	n/a
May	-14.5[14]	n/a	n/a	n/a

n/a = no data available due to power failures at the Boston meteorological station.

1) daily average air temperatures are only available from values recorded twice per day.
2) daily average air temperature for July 30 to August 29, 1993 was 9.4°C.
3) data only available for April 12 to 30, 1994.
4) monthly average air temperatures based on 12 values recorded per day.
5) data only available for August 1 to 25, 1994.
6) data only available for December 26 to 31, 1994.
7) data only available for April 1 to 11, 1995.
8) data only available for September 4 to 30, 1996.
9) data only available for September 1 to 12, 1997.
10) data only available for October 7 to 31, 1997.
11) data only available for July 1 to 6, 2001.
12) no data available for August 2001.
13) data only available for September 12 to 30, 2001.
14) data only available for May 1 to 8, 2002.
15) Kugluktuk (Coppermine).

Table A-2
Total Monthly and SWE Precipitation, 1993-2002

Month	Boston Camp Rain (mm)	Boston Camp Total SWE Calculated from Ultrasonic Gauge (mm)	Cambridge Bay Airport Total Precipitation (mm)	Lupin (Echo Bay Mine) Total Precipitation (mm)
August 1993	25.5[a]	n/a	n/a	n/a
September	n/a[b]	n/a	n/a	n/a
October	n/a[b]	n/a	n/a	n/a
November	n/a[b]	n/a	n/a	n/a
December	n/a[b]	n/a	n/a	n/a
January 1994	n/a[b]	n/a	n/a	n/a
February	n/a[b]	n/a	n/a	n/a
March	n/a[b]	n/a	n/a	n/a
April	n/a[c]	n/a	n/a	n/a
May	n/a[c]	n/a	n/a	n/a
June	n/a[c]	n/a	n/a	n/a
July	n/a[c]	n/a	n/a	n/a
August	n/a[c]	n/a	n/a	n/a
September	n/a	n/a	n/a	n/a
October	n/a	n/a	n/a	n/a
November	n/a	n/a	n/a	n/a
December	0.0[d]	1.3[d]	n/a	n/a
January 1995	0.0	8.7	n/a	n/a
February	0.0	10.8	n/a	n/a
March	0.0	10.0	n/a	n/a
April	0.0	2.2[e]	n/a	n/a
May	n/a	n/a	n/a	n/a
June	n/a	n/a	n/a	n/a
July	n/a	n/a	n/a	n/a
August	n/a	n/a	n/a	n/a
September	n/a	n/a	n/a	n/a
October	n/a	n/a	n/a	n/a
November	0.0	0.7	4.8	7.4
December	0.0	1.0	2.2	23.8
January 1996	0.0	7.3	1.5	5.8
February	0.0	13.0	4.3	18.4
March	0.0	8.5	n/a	4.4
April	0.5	14.0	n/a	8.0
May	0.3	19.8	n/a	24.8
June	16.0	0.0	n/a	54.0
July	25.4	0.0	n/a	57.7
August	79.2[f]	0.0	n/a	131.8
September	5.1	16.5[g]	22.8	n/a
October	n/a	22.5	12.4	13.0
November	n/a	20.1	2.6	13.6
December	n/a	16.1	10.0	6.6

(continued)

Table A-2
Total Monthly and SWE Precipitation, 1993-2002 (continued)

Month	Boston Camp Rain (mm)	Boston Camp Total SWE Calculated from Ultrasonic Gauge (mm)	Cambridge Bay Airport Total Precipitation (mm)	Lupin (Echo Bay Mine) Total Precipitation (mm)
January 1997	n/a	4.3	9.2	6.0
February	n/a	4.3	5.0	6.6
March	n/a	5.6	3.6	6.8
April	n/a	4.5	3.8	12.8
May	n/a	10.3	5.8	27.2
June	n/a	0.0	33.2	21.2
July	n/a	0.0	26.4	18.2
August	0.3[h]	0.0	18.7	58.7
September	8.9	7.7[i]	22.4	25.4
October	0.3	10.9[j]	17.6	46.2
November	0.0	14.6	4.8	12.6
December	0.0	12.0	7.8	17.8
January 1998	0.0	7.0	3.2	5.2
February	0.0	10.4	6.2	7.2
March	0.0	10.4	3.6	5.6
April	0.0	9.7	6.6	17.8
May	5.7	7.6	1.6	19.2
June	19.6	0.0	10.2	38.4
July	8.9	0.0	n/a	n/a
August	47.0	0.0	61.9[r]	57.4
September	16.0	0.0	20.7[r]	61.8
October	4.3	13.6	25.9[r]	51.7
November	0.0	22.6	12.5[r]	17.0
December	0.0	12.9	7.7[r]	21.6
January 1999	0.0	8.2	5.6[r]	9.6
February	0.0	9.9	4.6[r]	6.6
March	0.0	9.1	6.4[r]	14.4
April	0.0	13.8	15.0[r]	25.0
May	0.5	11.0	18.4[r]	25.2
June	0.3	0.0	25.4[r]	19.6
July	53.6	0.0	64.0[r]	62.4
August	7.6	0.0	12.4[r]	57.2
September	24.1	2.3	65.5[r]	85.2
October	0.0	n/a[k]	20.8[r]	23.8
November	0.0	n/a[k]	16.0[r]	9.8
December	0.0	n/a[k]	43.5[r]	30.8
January 2000	0.0	n/a[k]	5.8[r]	3.8
February	0.0	n/a[k]	6.5[r]	5.4
March	0.0	n/a[k]	5.6[r]	7.0
April	0.0	n/a[k]	6.8[r]	12.4
May	1.0	n/a[k]	15.0[r]	18.6

(continued)

Table A-2
Total Monthly and SWE Precipitation, 1993-2002 (completed)

Month	Boston Camp Rain (mm)	Boston Camp Total SWE Calculated from Ultrasonic Gauge (mm)	Cambridge Bay Airport Total Precipitation (mm)	Lupin (Echo Bay Mine) Total Precipitation (mm)
June 2000	3.3[l]	n/a[k]	14.2[r]	5.0
July	12.4	0.0	46.0[r]	27.2
August	14.0	0.0	32.6[r]	49.2
September	34.4	13.0	71.5[r]	58.6
October	0.5	13.2	45.1[r]	43.4
November	0.0	23.8	11.7[r]	14.0
December	0.0	12.1	5.4[r]	7.8
January 2001	0.0	30.2	6.4	6.4
February	0.0	7.0	7.0	7.0
March	0.0	10.1[n]	24.6	24.6
April	0.3	5.9[n]	30.2	30.2
May	1.4	14.8[n]	40.2	40.2
June	7.0	5.7[n]	6.4	6.4
July	2.3[m]	n/a	n/a	44.4
August	0.0[m]	n/a	n/a	46.4
September	6.3[m]	4.3[o]	n/a	9.4
October	3.6	14.5	n/a	20.0
November	0.0	n/a[q]	n/a	27.6
December	0.0	n/a[q]	n/a	12.0
January 2002	0.0	9.8[q]	n/a	7.6
February	0.0	0.7[q]	n/a	2.2
March	0.0	n/a[q]	n/a	6.4
April	0.0	n/a[q]	n/a	15.8
May	0.0[p]	n/a[q]	n/a	4.4

n/a = no data is available because there were problems with the sensor (tipping bucket rain gauge or ultrasonic snow depth gauge) or the datalogger.

a) July 30 to August 29, 1993. The total rain is available for this period but the daily rainfall is not.
b) No precipitation data available due to power failure at meteorological station.
c) Rainfall data is available from April 12 to August 2, 1994 but only in a graphical format.
d) Data available for December 26 to 31, 1994.
e) Data available for April 1 to 10, 1995.
f) No data available from the Boston station's tipping bucket rain gauge, this data was from the Windy Lake manual rain gauge.
g) SWE data from the ultrasonic snow depth gauge began September 4, 1996.
h) Tipping bucket rain gauge data only available for August 28 to 31, 1997.
i) SWE data was only available from the ultrasonic snow depth gauge for September 1 to 11, 1997.
j) SWE data from the ultrasonic snow depth gauge was only available for October 8 to 31, 1997.
k) The ultrasonic snow depth gauge was out of service, therefore no SWE data is available. The sensor was back in service on June 19, 2000.
l) Rain data only available for June 18 to 30, 2000 due to a damaged tipping bucket rain gauge.
m) Data is not available from the tipping bucket rain gauge from July 6 to September 12, 2001.
n) The ultrasonic snow gauge was not working, therefore SWE data from Kugluktuk (Coppermine) was used.
o) Data available from the ultrasonic snow gauge September 13 to 30, 2001.
p) Data available only from May 1 to 8, 2002.
q) Several days of SWE data are missing because the ultrasonic snow gauge was only working intermittently.

Appendix B

2004 – 2009 Regional Meteorological Data

Rescan™
Engineers and Scientists

CAMBRIDGE BAY A
NUNAVUT

Latitude: 69° 6.600' N Longitude: 105° 8.400' W Elevation: 27.40 m
Climate ID: 2400600 WMO ID: 71925 TC ID: YCB

Monthly Data Report for 2002

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-27.6	-30.7	-33.8	-16.3	-40.1	0.0	4.6	4.0	18	32E	63E
Feb	-31.3	-34.8	-38.1	-22.1	-42.5	0.0	1.8	1.8	22	34E	67E
Mar	-25.0	-29.0	-32.9	-14.8	-37.3S	0.0	3.8	3.2	19	25E	56E
Apr	-19.6	-24.2	-28.8	-6.6	-37.1	0.0	3.8	2.8	21	12E	54E
May	-6.7	-9.7	-12.7	-0.8	-24.2	T	8.2	6.8	20	36E	69E
Jun	6.3	3.2	0.1	18.5	-7.1	9.0	1.6	10.4	0	13E	61E
Jul	12.3	8.2	4.1	20.6	1.3	8.6	0.0	8.6	0	30E	52E
Aug	10.1	7.2	4.1	16.8	0.8	33.0	T	33.0	0	14E	59E
Sep	3.9	1.4	-1.2	9.6	-12.3	3.8	2.0	5.0	1	36E	74E
Oct	-6.4	-10.0	-13.7	-1.3S	-29.1	T	21.4	19.0	19	26E	69E
Nov	-18.7	-22.5	-26.4	-7.9	-35.0	0.0	5.6	5.0	16	36E	78E
Dec	-20.1	-24.4	-28.5	-8.7	-40.0	0.0	6.0	5.2	22	33E	65E
Sum						**54.4**	**58.8**	**104.8**			
Avg	**-10.2**	**-13.8**	**-17.3**								
Xtrm				**20.6**	**-42.5**					**33E**	**78E**

Monthly Data Report for 2003

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-24.0	-28.1	-32.1	-8.3	-42.7	T	12.0	10.4	25	2E	82E
Feb	-30.7	-34.5	-38.3	-19.2	-46.4	0.0	1.6	1.2	26	33E	76E
Mar	-26.5	-30.4	-34.4	-15.1	-43.4	0.0	11.8	8.4	32	33E	74E
Apr	-14.9	-19.7	-24.4	-3.2	-34.0S	T	10.6	7.2	34	15B	56B
May	-4.6	-8.9	-13.1	2.6	-25.0	0.4	8.6	6.8	32	4E	67E
Jun	3.7	1.1	-1.5	12.0	-6.6	2.2	9.2	11.0	0	33E	80E
Jul	13.9	9.3	4.7	20.7	0.6	36.2	0.0	36.2	0	35E	70E
Aug	8.9	6.1	3.2	17.8	0.4S	34.4	T	34.4	0	13B	76B
Sep	4.2	2.0	-0.3	12.5	-5.7	11.0	1.8	12.8	T	12E	80E
Oct	-5.0	-8.5	-12.0	5.0	-24.7	0.8	9.4	7.6	8	9E	80E
Nov	-16.0	-19.3	-22.5	-2.4	-34.1	0.0	19.2	14.8	25	4B	82B
Dec	-26.4	-29.9	-33.3	-8.4	-39.0	0.0	4.4	3.8	23	15E	78E
Sum						**85.0**	**88.6**	**154.6**			
Avg	**-9.8**	**-13.4**	**-17.0**								
Xtrm				**20.7**	**-46.4**					**15E**	**82B**

Monthly Data Report for 2004

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-30.0	-33.8	-37.5	-15.7	-44.4	0.0	4.0	3.0	28	1E	52E
Feb	-31.5	-35.0	-38.4	-17.6	-44.8	0.0	14.4	10.4	31	28E	70E
Mar	-30.1	-33.9	-37.6	-13.1	-43.6	0.0	5.8	4.2	28	32E	78E
Apr	-18.8	-23.0	-27.2	-12.1	-34.3	0.0	5.4	4.2	34	36E	70E
May	-9.0	-12.3	-15.6	0.8	-24.1	0.2	6.8	4.4	31	3E	56E
Jun	4.6	1.9	-0.8	11.1	-9.0	11.6	4.2	15.6	0	3E	61E
Jul	10.6	6.8	2.9	20.5	0.7	21.6	1.2	22.8	0	1E	67E
Aug	8.5	5.7	2.9	16.4	0.1	16.8	T	16.8	0	33B	74B
Sep	1.8	-0.8	-3.3	12.0	-13.0	9.8	9.8	17.8	7	35E	61E
Oct	-9.2	-12.7	-16.1	12.3	-26.7	T	17.0	14.8	13	3E	78E
Nov	-19.4	-24.0	-28.5	-3.3	-43.9	0.0	16.6	13.4	22	12E	76E
Dec	-29.8	-33.0	-36.1	-21.0	-40.7	0.0	2.4	2.4	21	30E	57E
Sum						**60.0**	**87.6**	**129.8**			
Avg	**-12.7**	**-16.2**	**-19.6**								
Xtrm				**20.5**	**-44.8**					**30E**	**78E**

Monthly Data Report for 2005

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-26.9	-30.3	-33.6	-15.2	-43.9	0.0	4.2	4.0	24	32E	54E
Feb	-31.9	-34.9	-37.8	-22.4	-43.4	0.0	2.6	2.6	25	32B	43B
Mar	-26.8	-30.6	-34.2	-10.8	-41.0	0.0	7.8	7.4	28	4E	48E
Apr	-14.2	-19.1	-24.0	-5.3	-30.4S	T	11.8	10.6	37	15E	50E
May	-6.1	-10.1	-14.1	3.9	-24.4	T	1.0	1.0	10	2E	61E
Jun	5.5	2.8	0.0	12.4	-4.3	17.0	2.2	19.2	0	5B	56B
Jul	10.3	7.0	3.7	17.3	0.7	32.0	T	32.0	0	30E	56E
Aug	10.9	7.7	4.5	16.1	-1.0	17.8	T	17.8	T	25E	74E
Sep	1.5	-0.7	-2.9	13.1	-13.6	4.8	2.6	7.4	2	36E	54E
Oct	-7.6	-10.5	-13.3	-0.7	-25.4	T	9.6	8.0	16	7E	78E
Nov	-19.1	-22.9	-26.6	-7.2	-34.9	0.0	12.0	9.4	23		
Dec	-25.1	-28.8	-32.4	-16.6	-39.2	0.0	7.4	6.8	28		
Sum						**71.6**	**61.2**	**126.2**			
Avg	**-10.8**	**-14.2**	**-17.6**								
Xtrm				**17.3**	**-43.9**					**M**	**M**

Monthly Data Report for 2006

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-25.4	-29.5	-33.6	-11.7	-42.9	0.4	4.6	4.8	29		
Feb	-22.1	-25.8	-29.5	-12.4	-42.3	0.0	5.8	5.4	31		
Mar	-21.2	-25.0	-28.8	-4.0	-43.1	0.0	6.2	5.2	39	6E	52E
Apr	-15.1	-19.7	-24.3	-6.5	-35.5	0.0	6.6	5.6	32	16E	61E
May	-1.0	-4.1	-7.1	3.6	-20.5	1.6	4.2	5.8	10	14E	67E
Jun	9.3	5.4	1.5	19.9	-2.8	6.2	T	6.2	0	32E	57E
Jul	12.9	9.3	5.6	19.9	2.7	7.0	0.0	7.0	0		
Aug	13.6	9.8	6.0	23.3	0.9	20.0	0.0	20.0	0		
Sep	4.4	1.8	-0.8	12.7	-5.5	14.0	0.2	14.2	T	4E	57E
Oct	-3.9	-6.8	-9.7	0.3	-20.3	T	13.4	13.2	11	3E	65E
Nov	-17.4	-21.2	-25.1	-10.5	-35.3	0.0	3.0	2.8	13	2E	57E
Dec	-20.3	-24.7	-29.1	-8.7	-37.2	0.0	9.0	8.8	19		
Sum						**49.2**	**53.0**	**99.0**			
Avg	**-7.2**	**-10.9**	**-14.6**								
Xtrm				**23.3**	**-43.1**					**M**	**M**

Monthly Data Report for 2007

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-27.0	-30.4	-33.7	-17.5	-43.2	0.0	5.0	4.6	21		
Feb	-27.7	-31.3	-34.9	-18.9	-41.0	0.0	2.2	2.0	26		
Mar	-27.7	-31.7	-35.7	-14.9	-44.1S	0.0	2.2	2.2	23		
Apr	-13.9	-18.4	-22.9	-1.5	-33.2	T	5.0	4.6	31		
May	-7.8	-12.4	-16.9	-0.1	-26.8	0.2	3.0	3.0	33		
Jun	6.5	3.4	0.3	22.9	-10.7	1.8	2.4	4.2	0	3B	57B
Jul	16.2	11.9	7.5	24.4	3.6	22.8	0.0	22.8	0	13E	56E
Aug	8.3	5.9	3.5	14.6	0.0	37.2	T	37.2	0	4E	56E
Sep	0.8	-1.3	-3.3	9.1	-9.3	6.0	7.0	12.8	4	5E	59E
Oct	-5.7	-9.0	-12.3	0.5	-23.1	T	24.6	23.4	22	31B	69B
Nov	-23.4	-26.6	-29.8	-12.8	-34.4	0.0	7.6	7.4	24		
Dec	-25.6	-28.4	-31.3	-13.4S	-37.5	0.0	4.8	4.4	30	32E	102E
Sum						**68.0**	**63.8**	**128.6**			
Avg	**-10.6**	**-14.1**	**-17.5**								
Xtrm				**24.4**	**-44.1**					**M**	**M**

Monthly Data Report for 2008

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-28.5	-31.5	-34.6	-10.6	-42.4	0.0	8.6	8.0	26	1E	67E
Feb	-32.5	-35.7	-38.9	-20.5	-43.7	0.0	2.4	2.2	30	30B	57B
Mar	-30.6	-35.0	-39.2	-15.9	-45.4	0.0	6.4	6.4	37	32B	61B
Apr	-17.0	-21.4	-25.7	-7.7	-42.4	T	5.7	5.7	37	1E	83E
May	-4.1	-7.1	-10.1	3.1	-22.7	0.2	1.4	1.6	22	31E	74E
Jun	4.8	2.3	-0.2	17.4	-4.3	13.2	14.0	26.8	T	11E	70E
Jul	13.6	9.5	5.4	22.6	1.5	30.4	0.0	30.4	0	12E	59E
Aug	10.0	7.4	4.7	20.5	-0.8	34.8	T	34.8	0	4E	63E
Sep	0.8	-0.8	-2.3	8.3	-9.0	10.4	7.2	17.9	1	3E	76E
Oct	-3.1	-6.4	-9.7	5.6	-24.6	1.2	22.4	22.2	11	27E	65E
Nov	-17.0	-21.1	-25.1	-5.4	-32.6	0.0	7.0	6.8	21	17B	46B
Dec	-25.3	-29.0	-32.7	-15.7	-43.7	0.0	1.6	1.6	18	30E	65E
Sum						**90.2**	**76.7**	**164.4**			
Avg	**-10.7**	**-14.1**	**-17.4**								
Xtrm				**22.6**	**-45.4**					**30E**	**83E**

Monthly Data Report for 2009

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-24.5	-27.9	-31.4	-7.4	-39.2	0.0	11.6	11.0	23	33E	74E
Feb	-27.8	-31.6	-35.4	-20.9	-40.9	0.0	3.2	3.0	25	3E	65E
Mar	-29.4	-32.7	-35.9	-19.9	-44.1	0.0	11.8	11.6	40	4E	67E
Apr	-15.9	-20.1	-24.2	-1.7	-33.1	0.0	17.8	15.8	33	32E	67E
May	-7.0	-10.5	-13.8	0.6	-23.3	0.0	1.0	1.0	36	31E	50E
Jun	3.7	1.2	-1.3	11.5	-7.4	0.6	4.6	5.2	0	2E	43E
Jul	11.3	7.4	3.5	18.7	0.0	41.6	2.6	44.2	0	36E	50E
Aug	11.5	8.1	4.6	15.6	0.9	25.0	0.0	25.0	0	30E	56E
Sep											
Oct											
Nov											
Sum						**M**	**M**	**M**			
Avg	**M**	**M**	**M**								
Xtrm				**M**	**M**					**M**	**M**

Legend
[empty] = No data available
M = Missing
E = Estimated
A = Accumulated
C = Precipitation occurred, amount uncertain
L = Precipitation may or may not have occurred
F = Accumulated and estimated
N = Temperature missing but known to be > 0
Y = Temperature missing but known to be < 0
S = More than one occurrence
T = Trace
* = The value displayed is based on incomplete data
† = Data for this day has undergone only preliminary quality checking

KUGLUKTUK A
NUNAVUT

Latitude: 67° 49.200' N Longitude: 115° 8.400' W Elevation: 22.60 m
Climate ID: 2300902 WMO ID: 71938 TC ID: YCO

Monthly Data Report for 2002

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-23.7	-28.2	-32.7	-13.2S	-46.9	0.0	33.6	12.5	33	26E	39E
Feb	-27.8	-31.7	-35.6	-18.5	-40.9	0.0	5.2	1.6	31	21E	52E
Mar	-19.8	-24.1	-28.4	-3.4	-38.1	0.0	23.9	6.9	40	33E	67E
Apr	-13.7	-19.5	-25.1	12.4	-34.2	0.0	32.1	8.7	50	32E	65E
May	-4.0	-8.0	-11.9	2.9	-25.0	T	22.0	7.4	13	34E	61E
Jun	10.7	5.9	1.0	27.0	-7.5	17.0	2.0	23.0	0	31E	48E
Jul	15.4	10.5	5.6	28.0	-0.8	31.3	T	31.3	0	32E	57E
Aug	11.6	7.8	3.9	22.8	0.4	25.3	0.0	25.3	0	21E	59E
Sep	6.9	3.9	0.9	15.4	-7.1	15.4	4.6	18.8	3	33E	89E
Oct	-2.6	-6.0	-9.3	2.5	-17.7	0.2	7.2	4.2	3	28E	65E
Nov	-11.1	-16.3	-21.4	-3.5	-30.8	T	33.0	16.6	33	32E	72E
Dec	-14.0	-18.5	-23.1	-2.3	-34.2	T	27.2	9.8	40	28E	76E
Sum						**89.2**	**190.8**	**166.1**			
Avg	**-6.0**	**-10.4**	**-14.7**								
Xtrm				**28.0**	**-46.9**					**28E**	**89E**

Monthly Data Report for 2003

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-20.5	-25.1	-29.5	7.7	-38.3	2.0	12.8	5.2	28	26B	57B
Feb	-26.3	-30.1	-33.8	-7.6	-42.9	0.0	3.2	2.6	25	31B	59B
Mar	-21.9	-26.5	-30.9	-13.1	-39.1	0.0	22.2	9.1	37	34E	63E
Apr	-8.4	-14.1	-19.9	18.5	-32.8S	T	6.2	2.2	19	18E	52E
May	-0.9	-5.0	-9.1	11.0	-23.1	12.7	20.6	17.7	T	27E	56E
Jun	9.6	4.8	0.0	22.8	-4.0	3.8	2.2	5.0	0	8E	44E
Jul	17.1	11.5	6.0	27.5	2.1	26.0	0.0	26.0	0	35E	50E
Aug	12.2	8.1	3.9	20.4	-0.5	132.9	T	132.9	0	35E	59E
Sep	9.5	5.5	1.5	21.2	-3.8	27.7	0.6	28.1	0	28E	61E
Oct	-1.3	-4.4	-7.5	13.8	-18.2	12.0	18.7	19.0	9	32B	57B
Nov	-12.7	-16.9	-20.9	0.7	-33.1	0.0	52.0	26.9	28	32E	80E
Dec	-21.6	-26.4	-31.2	-4.8	-39.5	T	29.8	11.6	33	31E	83E
Sum						**217.1**	**168.3**	**286.3**			
Avg	**-5.4**	**-9.9**	**-14.3**								
Xtrm				**27.5**	**-42.9**					**31E**	**83E**

Monthly Data Report for 2004

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-26.3	-30.5	-34.7	-7.6	-47.3	0.0	22.4	7.0	33	32E	56E
Feb	-28.2	-32.5	-36.7	-19.2	-44.9	0.0	13.6	3.7	32	34E	52E
Mar	-24.5	-29.9	-35.1	-9.9	-44.3	0.0	19.1	6.4	33	24E	83E
Apr	-14.3	-19.5	-24.5	-4.4	-30.5	0.0	19.8	8.9	28	35E	63E
May	-5.9	-10.5	-15.0	7.3	-38.4	T	41.6	18.2	27	34E	39E
Jun	10.1	5.7	1.2	27.4	-2.2	23.0	T	23.4	0	32E	80E
Jul	16.5	11.1	5.6	29.5	0.6	41.6	0.0	41.6	0	36E	43E
Aug	11.2	7.7	4.1	22.5	1.0	36.8	T	36.8	0	28E	65E
Sep	5.0	2.2	-0.6	19.8	-12.4	27.3	13.2	31.7	9	35E	56E
Oct	-5.2	-8.3	-11.4	-0.3	-18.5	0.6	32.5	9.0	15	3E	57E
Nov	-14.9	-19.6	-24.4	-3.8	-34.7	T	42.3	12.7	11		
Dec	-21.3	-26.0	-30.7	-7.5	-39.8	0.0	24.8	7.8	18	29E	65E
Sum						**129.3**	**229.3**	**207.2**			
Avg	**-8.2**	**-12.5**	**-16.9**								
Xtrm				**29.5**	**-47.3**					**M**	**M**

Monthly Data Report for 2005

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-22.5	-26.7	-30.9	-5.1	-41.8	0.0	35.0	8.0	21	27E	63E
Feb	-27.1	-30.8	-34.5	-20.2	-39.6	0.0	9.7	1.5	22	24E	41E
Mar	-20.7	-25.4	-30.1	-8.2	-39.4	0.0	23.2	3.7	24	30E	46E
Apr	-8.3	-12.9	-17.4	3.5	-31.2	0.6	27.4	13.5	17	17E	44E
May	-0.4	-5.2	-10.1	12.1	-19.4	2.4	1.8	3.2	T	21E	57E
Jun	9.7	5.2	0.6	23.9	-3.4	36.8	0.2	37.0	0	26E	43E
Jul	12.6	8.5	4.3	26.2	0.2	67.2	T	67.2	0	34E	67E
Aug	12.9	8.7	4.5	23.0	-2.2	49.4	0.0	49.4	0	30E	67E
Sep	4.9E	2.0E	-1.0E	19.4E	-9.2E	2.4*	8.4*	7.2*	M	10*	44*
Oct	-2.6	-5.8	-8.9	5.5	-23.0	2.8	48.4	24.5	16	33E	69E
Nov	-12.2	-16.5	-20.8	-3.6	-33.9	0.0	49.2	16.7	27	15E	74E
Dec	-17.1	-21.5	-25.8	-6.9	-36.8S	1.0	28.7	11.9	44		
Sum						**162.6***	**232.0***	**243.8***			
Avg	**-5.9E**	**-10.1E**	**-14.2E**								
Xtrm				**26.2**	**-41.8**					**M**	**M**

Monthly Data Report for 2006

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-21.1	-24.8	-28.4	-5.0	-40.9S	0.0	24.4	6.0	35	24E	46E
Feb	-16.3	-20.9	-25.4	-3.5	-42.4	0.0	13.7	5.2	32	20	78
Mar	-17.2	-21.7	-26.1	-3.9	-40.0	0.0	41.4	14.6	45	20E	63E
Apr	-11.0	-16.2	-21.3	6.2	-35.2	M	31.0*	11.9*	32	18E	67E
May	2.8	-0.6	-4.0	11.6	-21.4	4.8	4.2	8.2	T	19E	54E
Jun	15.7	9.9	4.2	28.3	-3.5	9.0	T	9.0	0	34E	72E
Jul	16.6	11.6	6.7	28.8	0.9	28.6	T	28.6	0	35B	46B
Aug	17.6	12.7	7.7	26.1	3.1	47.2	0.0	47.2	0	19E	50E
Sep	10.6E	6.3E	2.0E	21.2E	-2.3E	15.6*	M	15.6*	0	9*	48*
Oct	-1.7	-4.9	-8.0	4.0	-21.8	2.6	63.0	32.2	23	33E	74E
Nov	-14.1	-17.6	-21.0	-3.8	-30.2	0.0	27.4	7.9	22	25E	63E
Dec	-14.0	-18.9	-23.8	-0.5	-37.4	0.0	44.8	16.9	39	22E	61E
Sum						**M**	**M**	**203.3***			
Avg	**-2.7E**	**-7.1E**	**-11.5E**								
Xtrm				**28.8**	**-42.4**					**22E**	**78E**

Monthly Data Report for 2007

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-19.7	-23.9	-28.0	-10.6	-40.1	0.0	21.8	4.4	25	32E	80E
Feb	-22.9	-26.9	-30.8	-14.3	-39.0	0.0	27.0	8.9	31	31E	63E
Mar	-23.6	-28.1	-32.6	-13.2	-40.8	0.0	28.3	10.2	26	27E	56E
Apr	-8.6	-13.6	-18.6	2.7	-35.8	T	35.4	8.6	25	18E	67E
May	-2.7	-6.9	-11.1	8.2	-25.3	0.8	44.2	29.1	8	9E	69E
Jun	10.4	6.0	1.5	29.3	-5.4	7.2	0.8	7.8	0	31E	48E
Jul	16.2	11.8	7.3	29.5	3.0	188.1	0.0	188.1	0	9E	48E
Aug	12.3	8.6	4.9	18.0	1.1	47.8	0.0	47.8	0	34E	63E
Sep	4.4	1.5	-1.4	11.0	-8.3	7.6	3.1	10.0	T	23E	41E
Oct	-2.8	-5.9	-9.0	4.6	-23.3	4.0	55.5	33.4	17	9E	65E
Nov	-17.1	-20.6	-24.1	-8.0	-34.6	0.0	7.8	2.2	8	33E	80E
Dec	-20.8	-25.0	-29.1	-13.9	-38.7	0.0	19.2	5.3	19	32E	59E
Sum						**255.5**	**243.1**	**355.8**			
Avg	**-6.2**	**-10.3**	**-14.3**								
Xtrm				**29.5**	**-40.8**					**32E**	**80E**

Monthly Data Report for 2008

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-23.3	-27.4	-31.4	-3.2	-40.4	0.0	30.6	14.2	22	23B	76B
Feb	-25.5	-29.6	-33.7	-13.8	-42.4	0.0	7.5	3.0	20	27*	48*
Mar	-25.1	-29.5	-33.9	-11.6	-41.9	0.0	21.0	7.5	27	22E	56E
Apr	-13.3	-18.1	-22.9	-1.0	-40.2	T	43.6	19.2	26	32E	69E
May	1.1	-2.5	-6.2	15.9	-20.3	0.2	2.0	1.4	T	16E	70E
Jun	7.9	4.2	0.4	14.7	-3.0S	19.3	T	19.3	0	31E	46E
Jul	14.9	10.5	6.0	27.9	2.3	45.2	0.0	45.2	0	22E	56E
Aug	10.9	7.9	4.8	17.6	-0.2	73.0	0.0	73.0	0	7E	69E
Sep	4.7	2.1	-0.4	11.8	-7.3	17.6	7.1	24.9	T	32B	52B
Oct	-1.3	-4.9	-8.4	10.3	-23.0	16.6	19.6	35.0	5	25E	56E
Nov	-11.8	-15.7	-19.5	-0.9	-29.6	0.0	11.8	4.2	5	18E	56E
Dec	-20.6	-24.4	-28.2	-8.9	-36.9	0.0	21.5	7.1	14	34B	63B
Sum						**171.9**	**164.7**	**254.0**			
Avg	**-6.8**	**-10.6**	**-14.4**								
Xtrm				**27.9**	**-42.4**					**34B**	**76B**

Monthly Data Report for 2009

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-20.2	-23.9	-27.6	0.2	-41.9	T	11.7	5.2	11	32E	82E
Feb											
Mar											
Apr											
May											
Jun											
Jul											
Aug											
Sep											
Oct											
Nov											
Sum						**M**	**M**	**M**			
Avg	**M**	**M**	**M**								
Xtrm				**M**	**M**					**M**	**M**

Legend
[empty] = No data available
M = Missing
E = Estimated
A = Accumulated
C = Precipitation occurred, amount uncertain
L = Precipitation may or may not have occurred
F = Accumulated and estimated
N = Temperature missing but known to be > 0
Y = Temperature missing but known to be < 0
S = More than one occurrence
T = Trace
* = The value displayed is based on incomplete data
† = Data for this day has undergone only preliminary quality checking

LUPIN A
NUNAVUT

Latitude: 65° 45.600' N Longitude: 111° 15.000' W Elevation: 490.10 m
Climate ID: 23026HN WMO ID: TC ID: YWO

Monthly Data Report for 2002

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-24.9	-28.3	-31.7	-8.5	-45.0S	0.0	7.6	7.6	20		
Feb	-26.9	-30.1	-33.2	-19.0	-41.5S	0.0	2.2	2.2	20		
Mar	-22.0	-25.5	-29.0	-9.0	-41.0	0.0	6.4	6.4	21		
Apr	-15.7	-19.9	-24.1	-2.5	-34.0	0.0	15.8	15.8	25		
May	-4.2	-8.4	-12.5	6.5	-27.0	T	4.4	4.4	4		
Jun	12.5	7.4	2.4	23.0	-6.5	33.8	1.8	35.6	0		
Jul	16.7	12.0	7.3	25.0	1.5	67.0	0.0	67.0	0		
Aug	11.3	8.1	4.9	23.0	0.5	91.4	1.4	92.8	0		
Sep	5.1	2.8	0.5	15.5	-7.0	39.6	12.6	52.2	M		
Oct	-6.3	-9.0	-11.7	0.5	-22.0	0.2	14.0	14.2	6		
Nov	-13.8	-17.3	-20.8	-7.5S	-27.5S	0.0	20.2	20.2			
Dec	-16.3	-20.2	-24.0	-7.0	-36.5	T	11.2	11.2	24		
Sum						**232.0**	**97.6**	**329.6**			
Avg	**-7.0**	**-10.7**	**-14.3**								
Xtrm				**25.0**	**-45.0**					**M**	**M**

Monthly Data Report for 2003

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-23.6	-27.2	-30.8	-5.5	-39.5	0.0	3.8	3.8			
Feb	-28.5	-32.0	-35.5	-12.0	-42.5	0.0	0.4	0.4	24		
Mar	-22.4	-26.7	-30.9	-9.0S	-42.5	0.0	19.8	19.8			
Apr	-9.1	-13.5	-17.9	-0.5S	-33.0	0.0	3.4	3.4	16		
May	-1.1	-5.4	-9.6	14.0	-20.0	5.4	16.8	22.2	0		
Jun	9.9	5.6	1.3	17.0S	-7.0	9.6	8.8	18.4	0		
Jul	18.5	13.4	8.3	27.0	1.5	44.0	0.0	44.0	0		
Aug	14.7	10.3	5.8	25.0	0.5	69.2	0.0	69.2	0		
Sep	6.3	3.7	1.1	19.0	-5.0	14.6	21.4	36.0	T		
Oct	-1.5	-4.3	-7.0	13.0S	-24.0	1.4	27.0	28.4			
Nov	-14.9	-18.9	-22.8	-4.5	-32.5	0.0	31.3	31.3			
Dec	-21.3	-25.1	-28.9	-7.5	-38.0S	0.0	15.6	15.6			
Sum						**144.2**	**148.3**	**292.5**			
Avg	**-6.1**	**-10.0**	**-13.9**								
Xtrm				**27.0**	**-42.5**					**M**	**M**

Monthly Data Report for 2004

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-29.7	-33.0	-36.3	-13.5	-42.0	0.0	10.8	10.8			
Feb	-24.9	-29.1	-33.1	-12.5	-41.0	0.0	12.4	12.4			
Mar	-25.1	-29.6	-34.0	-6.0	-44.0	0.0	9.2	9.2			
Apr	-14.9	-19.3	-23.7	-9.0	-30.0	0.0	18.4	18.4			
May	-7.4	-11.2	-15.0	3.0	-25.0	0.2	5.8	6.0	0		
Jun	9.1	5.2	1.2	24.0	-3.0	20.8	0.4	21.2	0		
Jul	17.0	11.6	6.2	24.5S	-0.5	12.2	T	12.2	0		
Aug	9.7	6.5	3.1	20.5	-1.5	110.6	0.4	111.0	0		
Sep	3.0	0.8	-1.5	15.0	-7.5	33.6	27.6	61.2	M		
Oct	-7.8	-10.6	-13.3	-1.0	-21.0S	0.2	29.0	29.2			
Nov	-18.3	-22.0	-25.6	-3.0	-40.0	T	30.2	30.2			
Dec	-26.3	-29.7	-33.1	-16.5	-41.0S	0.0	3.4	3.4			
Sum						**177.6**	**147.6**	**325.2**			
Avg	**-9.6**	**-13.4**	**-17.1**								
Xtrm				**24.5S**	**-44.0**					**M**	**M**

LUPIN CS
NUNAVUT

Latitude: 65° 45.600' N Longitude: 111° 15.000' W Elevation: 488.00 m

Climate ID: 230N002 WMO ID: 71470 TC ID: WIJ

Monthly Data Report for 2004

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-29.0	-32.1	-35.1	-12.8	-40.1						
Feb	-24.4E	-28.8E	-33.0E	-11.4	-39.6E						
Mar	-23.2	-28.4	-33.6	-4.8	-41.5						
Apr	-13.4	-18.4	-23.5	-5.5	-28.8						
May	-6.0	-10.2	-14.4	3.9	-23.7						
Jun	9.5	5.4	1.2	23.3	-1.8				0		
Jul	17.0	11.6	6.2	24.5	0.3		0.0		0		
Aug	9.8	6.5	3.2	20.2	-1.6	31.0	0.0	31.0	0		
Sep	3.0	0.4	-2.2	14.8	-10.0	20.0	15.6	35.6	M		
Oct	-7.7	-10.9	-14.0	-1.2	-22.1	0.0	12.4	12.4			
Nov											
Dec											
Sum						**M**	**M**	**M**			
Avg	**M**	**M**	**M**								
Xtrm				**M**	**M**					**M**	**M**

Monthly Data Report for 2005

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-29.4*	-32.9*	-36.4*	-24.3*	-38.2*	0.0	32.0	32.0	38		
Feb											
Mar	-17.7*	-21.7*	-25.9*	-4.8*	-32.6*						
Apr	-8.2	-12.0	-15.8	1.4	-26.4						
May	-4.9	-9.6	-14.1	6.9	-22.2	0.0	4.5	4.5	66		
Jun	8.7	4.7	0.6	18.8	-1.4	31.4	0.0	31.4	0		
Jul	14.3	9.3	4.2	26.1	-0.8	14.0	0.0	14.0	0		
Aug	12.9	8.6	4.2	22.6	-0.4	42.0	0.0	42.0	0		
Sep	3.0	0.1	-2.8	14.9	-12.2				M		
Oct	-2.3*	-5.3*	-8.2*	0.8*	-14.6*	0.0	17.0*	16.6*	M		
Nov											
Dec	-16.6*	-19.7*	-22.6*	-11.4*	-34.8*	0.0	15.2	11.8	52		
Sum						M	M	M			
Avg	M	M	M								
Xtrm				M	M					M	M

Monthly Data Report for 2006

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-23.3			-9.1							
Feb	-20.1			-9.2							
Mar	-16.2	-19.4	-22.6	-4.3	-33.4	0.0	73.4	73.4	78		
Apr	-9.6			-0.1							
May	2.3			8.1							
Jun	15.6	12.2*	6.2*	23.5	-0.3*		0.0*		0		
Jul	15.6	10.7	5.7	24.7	0.0	0.0	0.0	0.0	0		
Aug	15.6	10.7	5.7	24.3	0.2	0.0	0.0	0.0	0		
Sep	8.3	4.3	0.3	18.9	-5.6	0.0	0.0	0.0	0		
Oct	-3.8	-6.2	-8.6	4.1	-19.3	0.0	30.8	30.8	4		
Nov	-18.4	-20.9	-23.4	-10.9	-33.2	0.0	0.0	0.0	4		
Dec	-17.3*	-20.9*	-24.4*	-7.8*	-33.7*	0.0	8.0*	8.0*	33		
Sum						M	M	M			
Avg	-4.3*	M	M								
Xtrm				24.7	M					M	M

Monthly Data Report for 2007

Month	Mean Max Temp °C	Mean Temp °C	Mean Min Temp °C	Extr Max Temp °C	Extr Min Temp °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow Grnd Last Day cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
Jan	-23.5*	-25.6*	-27.7*	-14.9*	-39.3*	0.0	6.4*	6.4*	M		
Feb	-25.3E	-28.3E	-31.2E	-18.4E	-37.5E				54		
Mar	-24.3E	-27.8E	-31.3E	-10.9E	-41.1E				69		
Apr	-9.7E	-14.3E	-19.0	-0.6	-33.4	0.0	14.2E	14.2E	73		
May	-2.3E	-6.5E	-10.7E	6.8E	-21.3E						
Jun	9.9	5.3	0.7	23.2	-6.4	0.0	1.0	1.0			
Jul	18.6	12.8	7.0	25.3S	1.6	44.4*	0.0	44.4*	0		
Aug	11.0E	7.0E	3.0E	19.4E	-0.5E				0		
Sep	2.0E	-0.8E	-3.4E	13.5E	-7.8E				M		
Oct											
Nov	-18.9	-22.1	-25.3	-10.2	-32.5						
Dec											
Sum						M	M	M			
Avg	M	M	M								
Xtrm				M	M					M	M

Legend
[empty] = No data available
M = Missing
E = Estimated
A = Accumulated
C = Precipitation occurred, amount uncertain
L = Precipitation may or may not have occurred
F = Accumulated and estimated
N = Temperature missing but known to be > 0
Y = Temperature missing but known to be < 0
S = More than one occurrence
T = Trace
* = The value displayed is based on incomplete data
† = Data for this day has undergone only preliminary quality checking

Appendix C

Regional Climate Normal (1971 – 2000) Meteorological Data

Rescan™
Engineers and Scientists

CAMBRIDGE BAY A *
NUNAVUT

Latitude: 69° 6.600' N **Longitude:** 105° 8.400' W **Elevation:** 27.40 m
Climate ID: 2400600 **WMO ID:** 71925 **TC ID:** YCB

Temperature:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**	**Code**
Daily Average (°C)	-32.8	-33	-29.7	-21.4	-9.2	2.4	8.4	6.4	-0.3	-11.5	-23	-29.6	-14.4	A
Standard Deviation	2.6	3.2	2.4	3	2.6	2.3	1.6	1.6	1.9	2.9	3.3	2.8	1.2	A
Daily Maximum (°C)	-29.3	-29.3	-25.7	-16.7	-5.3	5.6	12.3	9.4	1.9	-8.1	-19.3	-26.1	-10.9	A
Daily Minimum (°C)	-36.3	-36.6	-33.7	-26	-13	-0.8	4.6	3.4	-2.5	-14.9	-26.5	-33	-18	A
Extreme Maximum (°C)	7.8	-9.4	-6.1	6.2	13	23.3	**28.9**	26.1	15.6	6.9	0	-4.8		
Date (yyyy/dd)	1948/19	1941/05+	1955/20	1995/30	1993/03	1996/27	**1930/01**	1991/04	1957/06	1988/05	1931/01	1983/24		
Extreme Minimum (°C)	**-52.8**	-50.6	-48.3	-42.8	-35	-17.8	-1.7	-8.9	-17.2	-33	-42.2	-49.4		
Date (yyyy/dd)	**1935/03**	1955/27	1936/02+	1972/03	1935/13	1974/02	1978/01	1952/30	1965/30	1978/29	1941/25	1934/31		

Precipitation:

Rainfall (mm)	0	0	0	0.1	1.6	9.8	21.7	24.5	11.4	0.4	0	0	69.6	A
Snowfall (cm)	5.6	6.4	7.4	7.5	9.3	2.8	0	2.2	8.9	16.2	9.3	6.3	82.1	A
Precipitation (mm)	4.6	5.1	6	6.5	9.4	12.5	21.7	26.7	19.3	14.6	7.2	5.3	138.8	A
Average Snow Depth (cm)	21	24	28	31	30	7	0	0	1	7	14	18	15	A
Median Snow Depth (cm)	21	24	28	31	30	4	0	0	0	8	14	18	15	A
Snow Depth at Month-end (cm)	22	26	30	32	22	0	0	0	2	12	16	20	15	A
Extreme Daily Rainfall (mm)	0.2	0	0	3.8	6.8	19.4	**35.8**	30.7	28.2	10.4	0.3	0		
Date (yyyy/dd)	1993/14	1929/01+	1929/01+	1975/28	1990/29	1997/02	**1988/24**	1949/18	1988/06	1963/16	1968/09	1930/01+		
Extreme Daily Snowfall (cm)	11.9	11.6	10.2	12.7	15.7	17.8	1.5	15.8	10.2	**20.8**	15.2	10.2		
Date (yyyy/dd)	1944/25	1991/06	1965/03	1941/12	1972/23	1929/19	1956/21	1996/21	1997/08	**1962/08**	1940/13	1940/12		
Extreme Daily Precipitation (mm)	11.9	5.6	10.2	12.7	13.5	21.1	**35.8**	30.7	28.2	20.8	15.2	10.2		

Date (yyyy/dd)	1944/25	1956/14	1965/03	1941/12	1965/05+	1969/02	**1988/24**	1949/18	1988/06	1962/08	1940/13	1940/12
Extreme Snow Depth (cm)	48	50	56	58	**59**	57	1	4	10	38	48	47
Date (yyyy/dd)	1993/02+	1983/22+	1958/27+	1958/29+	**1993/09**	2001/01	1978/01	1994/31	1960/26+	1992/17	1992/08+	1992/20+

Days with Maximum Temperature:														
<= 0 °C	31	28.3	31	29.7	25.6	3.6	0	0	9.3	29.2	30	31	248.6	A
> 0 °C	0	0	0	0.3	5.4	26.4	31	31	20.7	1.8	0	0	116.7	A
> 10 °C	0	0	0	0	0.07	5.9	21	12.3	0.87	0	0	0	40.2	A
> 20 °C	0	0	0	0	0	0.27	1.3	0.24	0	0	0	0	1.8	A
> 30 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
> 35 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Days with Minimum Temperature:														
> 0 °C	0	0	0	0	0.2	13.7	30.6	26.6	8	0.07	0	0	79.2	A
<= 2 °C	31	28.3	31	30	31	24.2	4.3	10.3	27	31	30	31	309.1	A
<= 0 °C	31	28.3	31	30	30.8	16.3	0.4	4.4	22	30.9	30	31	286.1	A
< -2 °C	31	28.3	31	30	29.5	8.1	0	0.69	14.3	30.1	30	31	264	A
< -10 °C	31	28.3	31	29.2	20.1	0.83	0	0	1.8	22.6	29.7	31	225.6	A
< -20 °C	30.7	28	30.2	23.7	5.5	0	0	0	0	7.5	24.8	30	180.4	A
< - 30 °C	27.5	24.8	24	9.4	0.07	0	0	0	0	0.37	10	23.6	119.7	A
Days with Rainfall:														
>= 0.2 mm	0.03	0	0	0.03	1.1	5.1	10.1	12.1	7.1	0.45	0.03	0	36	A
>= 5 mm	0	0	0	0	0.03	0.4	1.1	1.2	0.43	0	0	0	3.1	A
>= 10 mm	0	0	0	0	0	0.13	0.2	0.31	0.1	0	0	0	0.74	A
>= 25 mm	0	0	0	0	0	0	0.07	0	0.03	0	0	0	0.1	A
Days With Snowfall:														
>= 0.2 cm	6.5	6.8	8.1	7.2	8	2.5	0.07	1.6	6.8	12.5	9.1	7.7	76.8	A
>= 5 cm	0.03	0.13	0.13	0.17	0.3	0.07	0	0.07	0.3	0.43	0.21	0.13	2	A
>= 10 cm	0	0.03	0	0	0.03	0.03	0	0.03	0.03	0.03	0.03	0	0.21	A
>= 25 cm	0	0	0	0	0	0	0	0	0	0	0	0	0	A

Days with Precipitation:														
>= 0.2 mm	6.3	6.5	7.3	6.6	7.8	6.8	10.2	13.1	12.2	11.8	8.4	7.2	104.1	A
>= 5 mm	0.03	0.07	0.13	0.23	0.37	0.57	1.1	1.3	0.77	0.41	0.07	0.07	5.1	A
>= 10 mm	0	0	0	0	0.07	0.17	0.2	0.38	0.13	0.03	0	0	0.98	A
>= 25 mm	0	0	0	0	0	0	0.07	0	0.03	0	0	0	0.1	A
Days with Snow Depth:														
>= 1 cm	31	28.3	31	30	31	15.7	0.03	0.17	6.6	28.6	30	31	263.4	A
>= 5 cm	31	28.3	31	30	30.6	11.7	0	0	1.7	19.3	28.8	31	243.5	A
>= 10	30.3	28.3	31	30	29.1	8.2	0	0	0.03	9.5	22.8	27.2	216.4	A
>= 20	15.6	19	25.9	26.9	23.8	4	0	0	0	1.1	5.1	10.8	132.4	A

Wind:														
Speed (km/h)	22.4	21.6	21.2	20.4	20.7	19.6	19.7	21.5	22.4	23	20.9	21.4	21.2	A
Most Frequent Direction	NW	NW	NW	NE	NE	NE	N	W	NW	NW	NW	NW	NW	A
Maximum Hourly Speed	89	89	84	80	80	93	71	79	87	**101**	82	97		
Date (yyyy/dd)	1959/19+	1972/22	1970/20	1986/09+	1977/15	1978/18	1976/01	1976/02	1974/26+	**1974/03**	1959/03	1976/24		
Direction of Maximum Hourly Speed	N	NW	NW	NE	NW	NW	SE	NW	NW	NE	NW	NW	NE	
Maximum Gust Speed	108	109	97	102	102	120	93	109	116	121	102	**122**		
Date (yyyy/dd)	1963/09	1972/22	1970/20	1986/09	1977/15	1978/18	1976/01	1971/13	1975/08	1974/07	1977/12+	**1976/23**		
Direction of Maximum Gust	NW	NW	NW	N	NW	NW	SE	W	NE	NE	E	NW	NW	
Days with Winds >= 52 km/h	5.1	3.8	4	3.2	3.4	2.5	2	3.8	3.7	5.4	4.1	3.4	44.3	C
Days with Winds >= 63 km/h	2	1.2	1.2	0.9	1.3	0.7	0.5	0.7	1.1	1.7	1.5	1	13.8	C

Degree Days:

Above 24 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Above 18 °C	0	0	0	0	0	0	0.1	0	0	0	0	0	0.1	A
Above 15 °C	0	0	0	0	0	0	1.2	0.2	0	0	0	0	1.3	A
Above 10 °C	0	0	0	0	0	2.7	19.3	8.8	0	0	0	0	30.7	A
Above 5 °C	0	0	0	0	0	22.7	110	65.6	3.6	0	0	0	202	A
Above 0 °C	0	0	0	0	1.4	96.3	261.2	197.7	42.5	0.6	0	0	599.6	A
Below 0 °C	1017	932.2	920.3	641.2	285.4	24.2	0	0.4	52	357.8	688.8	917.7	5836.8	A
Below 5 °C	1172	1073.5	1075.3	791.2	439	100.6	3.8	23.4	163.2	512.2	838.8	1072.7	7265.5	A
Below 10 °C	1327	1214.8	1230.3	941.2	594	230.6	68.1	121.5	309.5	667.2	988.8	1227.7	8920.6	A
Below 15 °C	1482	1356.2	1385.3	1091.2	749	377.9	205	267.9	459.5	822.2	1138.8	1382.7	10717.5	A
Below 18 °C	1575	1441	1478.3	1181.2	842	467.9	296.9	360.7	549.5	915.2	1228.8	1475.7	11812.1	A

Bright Sunshine:

Total Hours		66.3	174.3	268.1	250.8	300.6	328.8	189.2	71.1	55.6	14.9			A
Days with measureable		16.6	27	27.7	27.4	27.7	29.7	28.1	21.1	15.7	6.5			A
% of possible daylight hours		31.8	48.3	56	37.5	41.8	45.2	34.1	17.7	19.5	11.4			A
Extreme Daily	4.3	8.6	11.2	17.1	24	24	24	19.4	14.3	8.9	6	0		A
Date (yyyy/dd)	1985/31	1975/28	1996/29+	1991/29	1973/29+	1972/28+	1978/02+	1989/03	1980/01	1979/09+	1980/01	1971/01+		

Humidex:

Extreme Humidex	-5	-9.7	-5.6	3.9	10.5	25.3	**30.8**	28.6	16.3	5.8	-1.4	-5		
Date (yyyy/dd)	1987/09	1989/04	1955/20	1975/27	1994/27	1973/27	**1989/17**	1991/04	1957/06	1988/05	1994/12	1983/24		
Days with Humidex >= 30			0	0	0	0	0	0	0	0	0	0		A
Days with Humidex >= 35			0	0	0	0	0	0	0	0	0	0		A
Days with Humidex >= 40			0	0	0	0	0	0	0	0	0	0		A

Wind Chill:

Extreme Wind Chill	**-73.4**	-72.6	-69.8	-60.1	-43.2	-29.2	-7.9	-13.1	-28.6	-49.4	-60.7	-66.3		
Date (yyyy/dd)	**1975/12**	1979/11	1979/04	1964/10	1961/07	1972/02	1978/05	1986/30	1974/29	1978/28	1968/26	1979/17		
Days with Wind Chill < -20	31	28.3	31	28.8	16.6	0.5	0	0	1.3	20.1	29.4	31	217.9	A
Days with Wind Chill < -30	30.7	28	30.3	23.7	4.6	0	0	0	0	7.3	24.8	30	179.3	A
Days with Wind Chill < -40	28.7	26	26.1	13	0.2	0	0	0	0	1.2	14.1	25.9	135.3	A

Humidity:														
Average Vapour Pressure (kPa)			0.1	0.1	0.3	0.6	0.9	0.8	0.6	0.3	0.1	0.1		A
Average Relative Humidity - 0600LST (%)			71.6	77.8	87.4	87.6	85.2	88.9	90.6	87.4	78.9	72.6		A
Average Relative Humidity - 1500LST (%)			73.7	79.4	85.2	76.6	68.6	73.4	82.9	86.2	78.5	71.9		A
Pressure:														
Average Station Pressure (kPa)	101.2	101.4	101.5	101.8	101.6	101.2	100.9	100.8	100.9	101	101.2	101.2	101.2	A
Average Sea Level Pressure (kPa)	101.6	101.8	101.9	102.1	101.9	101.5	101.3	101.2	101.3	101.4	101.5	101.5	101.6	A
Radiation:														
Global (RF1)												0.1		D
Extreme Global (RF1)	0.8	4.7	13.6	23.7	31.3	**32.2**	30.4	23.3	14	7.3	1.9	0.1		
Date (yyyy/dd)	1972/30	1972/28	1972/31	1982/30	1972/29	**1974/06**	1978/02	1991/01	1976/02	1972/06	1977/01	1990/02+		

Visibility (hours with):													
< 1 km	49.2	47	39	23.8	34	15	11.6	9.5	22.7	33.9	26	31	A
1 to 9 km	184.7	189.8	163.9	121.3	109.5	42.4	27.4	35.3	87.6	146.8	136.4	174.3	A
> 9 km	510.1	441	541	575	600.5	662.6	705	699.2	609.7	563.3	557.5	538.8	A
Cloud Amount (hours with):													
0 to 2 tenths	370.8	313.6	349.4	342.8	166.8	134.8	130.2	90.1	59.2	158.2	283.1	340.6	A
3 to 7 tenths	148.6	135	142.4	121.8	108	131.4	173	130	88.3	104.6	120.2	150.2	A
8 to 10 tenths	224.7	229.1	252.2	255.4	469.2	453.8	440.8	523.9	572.5	481.3	316.7	253.3	A

KUGLUKTUK A
NUNAVUT

Latitude: 67° 49.000' N **Longitude:** 115° 8.633' W **Elevation:** 22.60 m
Climate ID: 2300902 **WMO ID:** 71938 **TC ID:** YCO

Temperature:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**	**Code**
Daily Average (°C)	-27.8	-27.4	-25.3	-17	-5.3	5.2	10.7	8.8	2.8	-7.2	-19.6	-25.5	-10.6	C
Standard Deviation	3.8	4.2	3.2	3	3.2	2	2	1.9	1.5	2.5	4.3	3.4	4	C
Daily Maximum (°C)	-23.7	-23	-20.6	-12.1	-1.4	9.5	15.4	13.1	6	-4	-15.7	-21.4	-6.5	C
Daily Minimum (°C)	-31.9	-31.7	-29.8	-21.8	-9.2	0.8	6	4.5	-0.4	-10.3	-23.4	-29.6	-14.7	C
Extreme Maximum (°C)	0.8	-1.2	-0.1	14	19.8	31.1	**34.9**	29.2	22.6	13.4	2.8	27.4		
Date (yyyy/dd)	1981/16	1980/07	1999/22	2000/06	1994/24	1996/25	**1989/15**	2000/01	1994/01	1988/06	1983/03	1999/19		
Extreme Minimum (°C)	-46.9	**-47.2**	-47	-39.7	-30.2	-12.1	0.3	-4.4	-18.9	-35.4	-41	-44.5		
Date (yyyy/dd)	2002/21	**1998/20**	1979/05	1979/04	1983/03	2000/01	1978/04+	1995/29	2000/26	1996/29	1985/24	1977/12		

Precipitation:

Rainfall (mm)	0	0	0	0.6	5.8	12.8	36.3	40.8	32.1	5.1	0	0	133.4	C
Snowfall (cm)	15.4	16.5	16	17.8	16.6	2.7	0	0.3	8.1	34.1	19.7	18.6	165.7	C
Precipitation (mm)	11	9.9	10.6	13.3	19.5	15.1	36.3	41.1	39	29.5	12.6	11.5	249.3	C
Average Snow Depth (cm)	35	43	47	48	28	3	0	0	0	9	20	28	22	C
Median Snow Depth (cm)	36	42	47	49	28	1	0	0	0	9	19	28	22	C
Snow Depth at Month-end (cm)	38	45	48	42	15	0	0	0	2	17	24	32	22	C
Extreme Daily Rainfall (mm)	0	0	0	7.4	20.6	27.4	30.5	**53.7**	28.8	19.3	3.4	0		
Date (yyyy/dd)	1978/01+	1978/06+	1978/01+	1980/27	1992/27	1987/13	1983/10	**1982/12**	1983/07	1980/08	2001/17	1977/01+		
Extreme Daily Snowfall (cm)	**26.2**	24.6	8.6	16	21	13	0.4	5	13.5	23	12.4	26		
Date (yyyy/dd)	**1988/01**	1981/21	2000/27	1980/30	1993/07	1991/05	1985/07	1986/23	1981/22	1981/29	1981/06	1994/25		
Extreme Daily Precipitation (mm)	25.8	9.1	6	16	21.8	27.4	30.5	**53.7**	28.8	23	12.4	14.8		
Date	1988/01	1981/21	1990/07+	1980/30	1978/25	1987/13	1983/10	**1982/12**	1983/07	1981/29	1981/06	1994/25		

Precipitation:

(yyyy/dd)												
Extreme Snow Depth (cm)	80	92	104	107	**128**	64	3	0	23	43	49	73
Date (yyyy/dd)	1993/30+	1993/22+	1991/31	1991/03+	**1993/08**	1993/01	1986/01+	1978/01+	1981/24	1995/29	1992/30	1994/26+

Days with Maximum Temperature:														
<= 0 °C	31	28.3	31	28.4	18.7	1.1	0	0	2.5	23.1	29.6	30.9	224.5	C
> 0 °C	0.05	0	0	1.6	12.3	28.9	31	31	27.5	7.9	0.45	0.08	140.8	C
> 10 °C	0	0	0	0.04	0.91	12	25.6	20.8	5.4	0.1	0	0.08	65	C
> 20 °C	0	0	0	0	0	2.5	6	3.9	0.22	0	0	0.08	12.7	C
> 30 °C	0	0	0	0	0	0.09	0.26	0	0	0	0	0	0.35	C
> 35 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	C
Days with Minimum Temperature:														
> 0 °C	0	0	0	0	0.95	17.9	31	27.7	14	0.71	0	0	92.3	C
<= 2 °C	31	28.3	31	30	30.8	20.7	2.7	7.6	22.7	30.9	30	31	296.7	C
<= 0 °C	31	28.3	31	30	30.1	12.1	0	3.3	16	30.3	30	31	273	C
< -2 °C	31	28.3	31	29.8	27.1	5.1	0	0.59	8.6	27.7	30	31	250.1	C
< -10 °C	30.9	28.2	30.9	28	12.8	0.09	0	0	0.39	14.6	28.6	30.9	205.3	C
< -20 °C	28.7	26.7	28.5	18.4	2	0	0	0	0	3.1	20	27.9	155.3	C
< - 30 °C	20.1	18	16.5	4.7	0.05	0	0	0	0	0.29	6.6	16.2	82.5	C
Days with Rainfall:														
>= 0.2 mm	0	0	0	0.35	2.1	6.4	10.2	12.5	10.4	1.9	0.05	0	43.8	C
>= 5 mm	0	0	0	0.04	0.27	0.65	2.6	2.4	1.9	0.27	0	0	8.1	C
>= 10 mm	0	0	0	0	0.18	0.13	0.78	0.73	0.65	0.09	0	0	2.6	C
>= 25 mm	0	0	0	0	0	0.04	0.04	0.23	0.04	0	0	0	0.35	C
Days With Snowfall:														
>= 0.2 cm	9.4	9.8	10.7	9.4	6.5	1.6	0.09	0.27	3.9	13.9	11.7	10.1	87.4	C
>= 5 cm	0.52	0.65	0.35	0.87	0.86	0.17	0	0.05	0.52	2.1	0.91	0.63	7.6	C
>= 10 cm	0.13	0.04	0	0.17	0.27	0.04	0	0	0.09	0.55	0.18	0.25	1.7	C
>= 25 cm	0.04	0	0	0	0	0	0	0	0	0	0	0.04	0.08	C
Days with Precipitation:														
>= 0.2 mm	8.6	9.1	10	8.9	7.3	7.4	10.2	12.6	12.9	14.5	10.7	9.4	121.5	C
>= 5 mm	0.3	0.22	0.17	0.52	1	0.83	2.6	2.4	2.3	1.7	0.18	0.33	12.6	C
>= 10 mm	0.04	0	0	0.13	0.45	0.17	0.78	0.73	0.74	0.32	0.05	0.08	3.5	C
>= 25 mm	0.04	0	0	0	0	0.04	0.04	0.23	0.04	0	0	0	0.39	C

Days with Snow Depth:														
>= 1 cm	31	28.3	31	30	29.5	9.8	0.7	0	2.4	25.5	29.9	31	249	C
>= 5 cm	31	28.3	31	29.9	26.1	6.4	0	0	0.7	17.8	29.1	31	231.3	C
>= 10	31	28.3	31	29.8	22.8	3.1	0	0	0.39	11.4	25.7	31	214.5	C
>= 20	22.9	24.6	26.6	25.7	16.8	1.4	0	0	0.13	4.8	12	20.5	155.3	C
Wind:														
Speed (km/h)	19	18.5	15.6	13.4	13.9	14	14.4	15.5	16.8	17.4	16.8	18.2	16.1	C
Most Frequent Direction	SW	SW	SW	SW	E	E	E	E	E	SW	SW	SW	SW	C
Maximum Hourly Speed	93	76	83	72	74	61	67	74	74	80	83	**93**		
Date (yyyy/dd)	1988/01	1978/08+	1980/03	1984/16	1986/28	1995/26	1991/25	1986/22+	2002/24	1982/27	1994/19	**1983/25**		
Direction of Maximum Hourly Speed	NW	S	NW	E	NW	NW	N	NW	NW	NW	NW	NW	NW	
Maximum Gust Speed	106	**106**	106	83	89	74	81	83	85	89	100	104		
Date (yyyy/dd)	1988/01	**1978/06**	1980/03	1984/16	1986/28	1992/11+	1988/23	1984/10+	1983/28	1982/27	1994/05	1983/26		
Direction of Maximum Gust	NW	SW	NW	E	NW	W	NW	NW	NW	NW	NW	NW	SW	
Days with Winds >= 52 km/h	1.8	2.7	1.7	0.9	0.6	0.1	0.2	0.8	1.2	1.3	0.9	2.2	14.4	C
Days with Winds >= 63 km/h	0.5	0.8	0.4	0.2	0.3	0	0	0.2	0.4	0.5	0.2	0.7	4.2	C

Degree Days:

Above 24 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	C
Above 18 °C	0	0	0	0	0	0.6	3.1	0.8	0	0	0	0	4.4	C
Above 15 °C	0	0	0	0	0	1.8	12.3	5.7	0	0	0	0	19.7	C
Above 10 °C	0	0	0	0	0.1	13.8	60.3	37.7	2.3	0	0	0	114.1	C
Above 5 °C	0	0	0	0	1.9	56.7	178.7	129.1	20.6	0.3	0	0	387.3	C
Above 0 °C	0	0	0	0.3	14	160.6	332.2	274.9	100.3	5.2	0	0	887.5	C
Below 0 °C	855.2	783.1	782.7	510.1	177.8	6	0	0	15.8	225.4	581.5	790.4	4728.1	C
Below 5 °C	1010.2	924.5	937.7	659.7	320.7	52.2	1.5	9.2	86.1	375.5	731.5	945.4	6054.3	C
Below 10 °C	1165.2	1065.8	1092.7	809.7	474	159.2	38.1	72.8	217.9	530.2	881.5	1100.4	7607.5	C
Below 15 °C	1320.2	1207.2	1247.7	959.7	628.9	297.3	145.1	195.8	365.6	685.2	1031.5	1255.4	9339.5	C
Below 18 °C	1413.2	1292	1340.7	1049.7	721.9	386	228.9	283.9	455.6	778.2	1121.5	1348.4	10420	C

Bright Sunshine:

Total Hours		75.8	161.8	221.7	242.5	376.2	342.9	213.2	88.2	52.4	19.7		C
Days with measureable		18	25.8	25.8	25.9	28.6	29.4	27.4	21.1	15.9	9.1		C
% of possible daylight hours		34.8	44.8	47.2	38	52.3	48.7	39.5	22.1	18.1	12.8		C
Extreme Daily	5.2	8.4	12.9	17.2	22.9	24	24	19.1	14.1	10.5	6.4	1	C
Date (yyyy/dd)	1998/30	1980/27	1997/28	1994/28	1985/31	1981/09+	1982/05+	1987/01	2000/01	1988/02	2000/05	1981/01	

Humidex:

Extreme Humidex	0.3	-1.7	-0.3	7.9	19.8	30.3	36.8	**36.8**	22.7	12.3	2.2	-1.5		
Date (yyyy/dd)	1981/16	1980/07	1999/22	1995/28	1994/24	1996/25	1989/15	**1992/02**	1994/01	1988/06	1983/03	1999/24		
Days with Humidex >= 30			0	0	0	0	0.5	0.2	0	0	0	0		C
Days with Humidex >= 35			0	0	0	0	0.1	0	0	0	0	0		C
Days with Humidex >= 40			0	0	0	0	0	0	0	0	0	0		C

Wind Chill:

Extreme Wind Chill	-64.3	-64.4	**-65**	-54.4	-39.7	-15.6	-6.2	-11.8	-22.9	-46.5	-54.1	-61.5		
Date (yyyy/dd)	1990/26	1985/21	**1979/05**	1979/04	1983/04	1978/09	1985/21	1995/29	1992/25	1996/27	1985/25	1984/09		
Days with Wind Chill < -20	30.7	28.1	30.4	25.5	7.8	0	0	0	0.2	10.5	27.1	30.7	190.9	C
Days with Wind Chill < -30	28.4	25.3	27.2	14.7	1.2	0	0	0	0	2.4	18.8	27.1	145.1	C
Days with Wind Chill < -40	22.3	18.9	17.2	4.6	0	0	0	0	0	0.2	8.1	18	89.3	C

Humidity:														
Average Vapour Pressure (kPa)			0.1	0.2	0.4	0.7	1	0.9	0.6	0.4	0.1	0.1		C
Average Relative Humidity - 0600LST (%)			78.4	82.8	87.4	84.1	81.9	87.7	88.8	87	81.5	78		C
Average Relative Humidity - 1500LST (%)			78.4	83	84.1	71.2	64.2	68.4	75.9	84.9	81.1	78.3		C
Pressure:														
Average Station Pressure (kPa)	101.6	101.7	101.8	101.8	101.7	101.2	101.1	101	101	101.2	101.4	101.5	101.4	C
Average Sea Level Pressure (kPa)	101.9	102	102.1	102.1	102	101.5	101.4	101.3	101.3	101.5	101.7	101.8	101.7	C
Visibility (hours with):														
< 1 km	21.2	29.8	18.6	23.6	27.9	9	11.1	5.9	4.8	9.1	11.8			D
1 to 9 km	138.3	129.8	122.9	101.1	74.9	23.2	26	27.7	45	106	97.9			D
> 9 km	584.6	518.1	602.5	595.3	641.2	687.8	706.9	710.4	670.2	628.9	610.3			D
Cloud Amount (hours with):														
0 to 2 tenths	298.4	261.5	290	240.6	171	188.4	146.1	111.1	80.2	105.5	200.2			D
3 to 7 tenths	136	130.8	132.5	120.3	106.3	151.6	181	155.6	105.7	89.9	140.8			D
8 to 10 tenths	309.6	285.4	321.5	359.1	466.7	380.1	416.9	477.4	534.1	548.6	379.1			D

LADY FRANKLIN POINT A
NUNAVUT

Latitude: 68° 30.000' N **Longitude:** 113° 13.200' W **Elevation:** 15.90 m
Climate ID: 2302680 **WMO ID:** 71937 **TC ID:** YUJ

Temperature:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**	**Code**
Daily Average (°C)	-28.6	-30.1	-27.4	-18.8	-6.9	2.8	6.8	6.3	1.4	-7.3	-20	-26.5		C
Standard Deviation	3.3	3.8	2.8	2.9	2.9	1.8	1.3	1.9	1.6	2.8	3.1	2.9		C
Daily Maximum (°C)	-25.1	-26.6	-23.6	-14.4	-3.4	5.7	10.4	9	3.4	-4.6	-16.5	-23.1		C
Daily Minimum (°C)	-32.3	-33.7	-31.2	-23.1	-10.5	-0.1	3.1	3.6	-0.6	-10	-23.5	-29.8		C
Extreme Maximum (°C)	-4.4	-4.4	-4.4	5.2	9.2	18	**22.8**	21.1	13.9	6.1	14.4	-4		
Date (yyyy/dd)	1974/02+	1980/07	1988/12	1981/29	1984/26	1991/30	**1989/26**	1991/04	1957/05	1969/04	1986/02	1987/03		
Extreme Minimum (°C)	**-46.1**	-45.6	-44.4	-41.5	-27.5	-14.4	-3.3	-3	-13.1	-30.2	-37.8	-44.4		
Date (yyyy/dd)	**1975/12**	1966/18+	1964/01+	1978/02	1979/01	1974/01	1967/07	1979/28	1979/30	1978/29	1966/25	1957/22+		

Precipitation:

Rainfall (mm)	0	0	0	0	1.5	9.4	20.6	19.9	14.8	0.9	0	0	67	C
Snowfall (cm)	4.7	4.8	4.2	4.4	3.5	1.4	0	0.8	4.7	15.3	6.4	4.2	54.3	C
Precipitation (mm)	4.7	4.8	4.2	4.4	5	10.8	20.6	20.6	19.5	16.1	6.4	4.2	121.2	C
Average Snow Depth (cm)	21	24	28	26	17	2	0	0	0	7	14	18		C
Median Snow Depth (cm)	21	24	28	25	18	1	0	0	0	6	14	18		C
Snow Depth at Month-end (cm)	22	27	27	24	9	0	0	0	2	12	16	20		C
Extreme Daily Rainfall (mm)	0	0	0	0.2	10.4	22.9	27.1	28.5	18.6	**44.2**	0	0		
Date (yyyy/dd)	1959/01+	1959/01+	1959/01+	1978/28	1992/27	1974/25	1980/09	1978/05	1983/06	**1967/11**	1959/01+	1958/01+		
Extreme Daily Snowfall (cm)	8.2	8	6	12.7	7	6.4	0	5.1	**15.2**	13	10.2	7.6		
Date (yyyy/dd)	1987/09	1991/14	1981/01	1964/02	1987/05	1991/05	1958/01+	1974/20	**1976/30**	1989/23	1964/16	1959/13		
Extreme Daily Precipitation (mm)	8.2	8	6	12.7	10.4	23.9	27.1	28.5	18.6	**44.2**	10.2	7.6		
Date	1987/09	1991/14	1981/01	1964/02	1992/27	1974/25	1980/09	1978/05	1983/06	**1967/11**	1964/16	1959/13		

Precipitation:

(yyyy/dd)												
Extreme Snow Depth (cm)	52	57	62	63	**70**	29	0	5	8	42	42	44
Date (yyyy/dd)	1993/19+	1993/18+	1993/24+	1993/15+	**1993/08**	1993/01	1973/01+	1974/20	1980/28+	1983/27+	1983/01+	1992/31

Days with Maximum Temperature:													
<= 0 °C			31	29.3	22.1	2.7	0	0	4.9	25.6	30	31	C
> 0 °C			0	0.71	8.9	27.3	31	31	25.2	5.4	0.05	0	C
> 10 °C			0	0	0	5	15.7	10.4	1	0	0.05	0	C
> 20 °C			0	0	0	0	0.24	0.05	0	0	0	0	C
> 30 °C			0	0	0	0	0	0	0	0	0	0	C
> 35 °C			0	0	0	0	0	0	0	0	0	0	C
Days with Minimum Temperature:													
> 0 °C	0	0	0	0	0.55	15.5	28.5	27.9	13.2	0.7	0	0	C
<= 2 °C	31	28.3	31	30	31	23.2	12.1	9.6	24.1	31	30	31	C
<= 0 °C	31	28.3	31	30	30.5	14.5	2.5	3.1	16.8	30.3	30	31	C
< -2 °C	31	28.3	31	30	28.2	6.4	0.09	0.19	8.6	28.2	30	31	C
< -10 °C	31	28.3	31	28.7	15.3	0.33	0	0	0.7	13.9	29.2	31	C
< -20 °C	29.5	27.6	29.9	20.2	2.6	0	0	0	0	2.3	21.1	29.2	C
< - 30 °C	22.5	21.3	19.2	4.9	0	0	0	0	0	0.05	5.1	17.2	C
Days with Rainfall:													
>= 0.2 mm	0	0	0	0.05	0.77	2.9	7	8.1	5.5	0.67	0	0	24.8 C
>= 5 mm	0	0	0	0	0.09	0.57	1.1	1	0.8	0	0	0	3.5 C
>= 10 mm	0	0	0	0	0.05	0.24	0.45	0.36	0.2	0	0	0	1.3 C
>= 25 mm	0	0	0	0	0	0	0.05	0.05	0	0	0	0	0.1 C
Days With Snowfall:													
>= 0.2 cm	3.4	3	3.3	3.6	2.9	0.95	0	0.45	3	8	4.8	4	37.4 C
>= 5 cm	0.17	0.05	0.1	0.09	0.09	0.05	0	0.05	0.15	0.62	0.09	0.1	1.6 C
>= 10 cm	0	0	0	0.05	0	0	0	0	0.05	0.1	0	0	0.2 C
>= 25 cm	0	0	0	0	0	0	0	0	0	0	0	0	0 C
Days with Precipitation:													
>= 0.2 mm	3.4	3	3.3	3.7	3.6	3.6	7	8.2	8.1	8.5	4.8	4	61 C
>= 5 mm	0.17	0.05	0.1	0.09	0.18	0.62	1.1	1.1	1	0.62	0.09	0.1	5.2 C
>= 10 mm	0	0	0	0.05	0.05	0.24	0.45	0.36	0.3	0.1	0	0	1.6 C
>= 25 mm	0	0	0	0	0	0	0.05	0.05	0	0	0	0	0.1 C

Days with Snow Depth:														
>= 1 cm	31	28.3	31	30	30.7	11.8	0	0.1	3.3	26.2	30	31		C
>= 5 cm	31	28.3	31	30	28.4	6.6	0	0.05	1.6	17.2	28.1	31		C
>= 10	26.4	25.1	27.7	26.9	20.8	1.9	0	0	0	5.6	18.7	25.3		C
>= 20	12.3	17.3	22.7	17	8.9	0.42	0	0	0	2	7.2	8.7		C
Wind:														
Speed (km/h)	19.5	20.5	19.6	20	20.4	20	18.7	19.4	21.4	22.3	19.9	19.3	20.1	D
Most Frequent Direction	NW	NW	E	E	E	E	NW	NW	NW	E				D
Maximum Hourly Speed	80	84	74	82	77	72	65	63	72	**85**	76	83		
Date (yyyy/dd)	1974/06+	1989/27	1990/18	1983/05	1973/05	1999/19	1982/28	1995/31	1996/28+	**1998/21**	1997/25	1990/22		
Direction of Maximum Hourly Speed	NW	NW	NW	E	E	E	NW	W	W	W	E	W	W	
Maximum Gust Speed						0	44			0				
Date (yyyy/dd)						1989/24+	1989/01			1989/04+				
Direction of Maximum Gust						N	W			N				
Days with Winds >= 52 km/h				2.5			0.7							D
Days with Winds >= 63 km/h				0.7			0.2							D

Degree Days:													
Above 24 °C			0	0	0	0	0	0	0	0	0	0	C
Above 18 °C			0	0	0	0	0	0	0	0	0	0	C
Above 15 °C			0	0	0	0	0.2	0	0	0	0	0	C
Above 10 °C			0	0	0	0.3	7.3	5.3	0	0	0	0	C
Above 5 °C			0	0	0	17.4	68.5	54.8	6.3	0	0	0	C
Above 0 °C			0	0	3.9	97.2	208.9	189.6	65.9	2.5	0	0	C
Below 0 °C			853.2	564.8	219	15.1	0	0.1	24.8	230.1	587.6	812.3	C
Below 5 °C			1008.2	714.8	370.1	85.2	14.7	20.2	115.1	382.6	737.6	967.3	C
Below 10 °C			1163.2	864.8	525.1	218.2	108.4	125.8	258.9	537.6	887.6	1122.3	C
Below 15 °C			1318.2	1014.8	680.1	367.8	256.3	275.5	408.9	692.6	1037.6	1277.3	C
Below 18 °C			1411.2	1104.8	773.1	457.8	349.1	368.5	498.9	785.6	1127.6	1370.3	C
Humidex:													
Extreme Humidex	-5.4	-5	-7.1	4	6	16.5	**23.8**	20.9	13.5	6.1	-1	-4.3	
Date (yyyy/dd)	1981/16	1980/08	1993/23	1981/29	1984/25+	1984/21	**1989/16**	1989/09	1989/01	1988/07	1983/04	1979/01	
Wind Chill:													
Extreme Wind Chill	**-67.4**	-62.9	-62	-56	-38.3	-21.2	-8.4	-9.4	-20.3	-40.8	-50	-57.5	
Date (yyyy/dd)	**1975/12**	1985/16	1991/05	1978/02	1979/01	1974/01	1979/13	1974/15	1986/30	1978/20	1986/23	1976/23	
Humidity:													
Average Relative Humidity - 0600LST (%)				79.9	88.6	89.6	89	91.2	91.7	87.4	80.5	76.8	C

LUPIN A
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Latitude: 65° 45.600' N **Longitude:** 111° 15.000' W **Elevation:** 490.10 m
Climate ID: 23026HN **WMO ID:** **TC ID:** YWO

Temperature:	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**	**Code**
Daily Average (°C)	-30.4	-28.5	-24.9	-15.9	-5.7	6.5	11.5	8.8	1.8	-8.6	-20.7	-26.8	-11.1	D
Standard Deviation	3.3	3.7	3	2.4	3.2	1.7	2	1.9	1.7	1.7	4	3.3	1.3	D
Daily Maximum (°C)	-26.8	-24.8	-20.9	-11.5	-1.9	11	16.3	12.6	4.5	-6.1	-17.2	-23.2	-7.4	D
Daily Minimum (°C)	-34	-32.1	-28.8	-20.2	-9.4	1.9	6.7	5	-0.8	-11.1	-24.2	-30.4	-14.8	D
Extreme Maximum (°C)	-5	-5	0.5	6	17.5	27.5	**31**	27.5	21	11.5	0	-4.5		
Date (yyyy/dd)	1987/08	1986/28	1993/23	1998/18	1994/25	1999/18	**1989/15**	1989/14	1997/02	1988/05	1983/02+	1991/29		
Extreme Minimum (°C)	**-49**	-46	-44	-38	-29.5	-9	-1.5	-6.5	-11	-30.5	-40.5	-42		
Date (yyyy/dd)	**1990/26+**	1993/05	1991/05	1997/06	1983/02	1986/04	1983/03	1982/23	1989/30	1996/30	1982/19	1993/24		

Precipitation:

Rainfall (mm)	0	0	0	0.1	6.2	25.6	42.7	56.9	27.7	1.9	0	0	161.1	D
Snowfall (cm)	9.4	8.4	11.3	13.7	12.3	3.6	0.5	3.3	18	28.2	15.2	14.4	138.1	D
Precipitation (mm)	9.4	8.4	11.3	13.8	18.5	29.2	43.1	60.1	45.7	30.1	15.2	14.4	299.2	D
Average Snow Depth (cm)						0	0	0						D
Median Snow Depth (cm)						0	0	0						D
Snow Depth at Month-end (cm)						0	0	0						D
Extreme Daily Rainfall (mm)	0	0	0	2.2	10.2	36.8	**41.8**	38.6	34.2	10.8	0.2	0		
Date (yyyy/dd)	1982/01+	1982/01+	1982/01+	1999/23	1992/26	1987/13	**1983/09**	1986/29	1999/10	1988/08	1987/02	1982/01+		
Extreme Daily Snowfall (cm)	11.6	14.2	9.6	13.8	14.3	13.4	3.4	8.8	17	**31.8**	14	10		
Date (yyyy/dd)	1992/02	1993/01	2001/19	1991/08	1989/11	1992/15	1985/18	1985/19	1983/27	**1998/28**	1987/09	1987/08		
Extreme Daily Precipitation (mm)	11.6	14.2	9.6	13.8	14.3	36.8	**41.8**	38.6	34.2	31.8	14	10		
Date	1992/02	1993/01	2001/19	1991/08	1989/11	1987/13	**1983/09**	1986/29	1999/10	1998/28	1987/09	1987/08		

Precipitation:

(yyyy/dd)												
Extreme Snow Depth (cm)	20	20	21	**25**	10	0	0	0	4	10	18	18
Date (yyyy/dd)	2002/31	2002/28	2002/31	**2002/30**	2001/31	1982/18+	1982/01+	1982/01+	1993/30	2001/31	2001/30	2001/01+

Days with Maximum Temperature:														
<= 0 °C	31	28.3	31	28.8	19.1	0.89	0	0.05	7	28.1	30	31	235	D
> 0 °C	0	0	0.05	1.2	12	29.1	31	31	23	3	0	0	130.2	D
> 10 °C	0	0	0	0	0.47	15.9	26.9	19.7	4	0.16	0	0	67.2	D
> 20 °C	0	0	0	0	0	1.8	7.8	2.7	0.05	0	0	0	12.3	D
> 30 °C	0	0	0	0	0	0	0.11	0	0	0	0	0	0.11	D
> 35 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	D
Days with Minimum Temperature:														
> 0 °C	0	0	0	0	1.3	19.6	29.8	27.3	10.8	0.26	0	0	89.2	D
<= 2 °C	31	28.3	31	30	30.8	16.8	3.6	8.6	23.8	31	30	31	295.8	D
<= 0 °C	31	28.3	31	30	29.7	10.4	1.2	3.7	19.2	30.7	30	31	276.1	D
< -2 °C	31	28.3	31	30	26.2	4.3	0	0.53	10.5	29.2	30	31	251.8	D
< -10 °C	31	28.3	30.8	26.9	13.1	0	0	0	0.16	15.5	29	31	205.7	D
< -20 °C	29.8	26.8	27	14.9	1.8	0	0	0	0	3.1	21.7	28.3	153.3	D
< - 30 °C	23.3	17.9	14.7	2.4	0	0	0	0	0	0.05	6.1	17.9	82.3	D
Days with Rainfall:														
>= 0.2 mm	0	0	0	0.11	2.5	7.4	11.8	15.1	9.7	0.79	0.05	0	47.5	D
>= 5 mm	0	0	0	0	0.42	1.4	2.5	3.6	1.7	0.11	0	0	9.7	D
>= 10 mm	0	0	0	0	0.05	0.58	0.79	1.5	0.37	0.05	0	0	3.3	D
>= 25 mm	0	0	0	0	0	0.21	0.16	0.11	0.11	0	0	0	0.59	D
Days With Snowfall:														
>= 0.2 cm	8.8	9.1	9	10.5	7.1	2.4	0.47	2.2	8.7	17	12.9	10.6	98.6	D
>= 5 cm	0.32	0.11	0.37	0.47	0.74	0.16	0	0.21	1.1	1.4	0.42	0.58	5.9	D
>= 10 cm	0.05	0.05	0	0.11	0.11	0.16	0	0	0.37	0.26	0.05	0.05	1.2	D
>= 25 cm	0	0	0	0	0	0	0	0	0	0.05	0	0	0.05	D
Days with Precipitation:														
>= 0.2 mm	8.8	9.1	9	10.5	9	9.2	11.8	16.1	16.1	17.4	12.9	10.6	140.4	D
>= 5 mm	0.32	0.11	0.37	0.53	1.2	1.5	2.5	3.8	2.8	1.6	0.42	0.58	15.8	D
>= 10 mm	0.05	0.05	0	0.11	0.21	0.74	0.79	1.6	0.89	0.37	0.05	0.05	4.9	D
>= 25 mm	0	0	0	0	0	0.21	0.16	0.11	0.11	0.05	0	0	0.64	D

Days with Snow Depth:

>= 1 cm							0	0					D
>= 5 cm							0	0					D
>= 10							0	0					D
>= 20							0	0					D

Wind:

Maximum Hourly Speed	80	**109**	83	67	74	56	74	61	74	70	93	70	
Date (yyyy/dd)	1989/13	**1982/14**	1996/02	1986/09	1989/23	1992/11+	1993/07	1982/24+	1996/29	1983/24+	1985/26	1985/11	
Direction of Maximum Hourly Speed	NW	NW	NW	NW	N	NW	N	N	NW	NW	N	NW	NW

Degree Days:

Above 24 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	D
Above 18 °C	0	0	0	0	0	0	2.5	0.7	0	0	0	0	3.3	D
Above 15 °C	0	0	0	0	0	1.3	14.7	5.4	0	0	0	0	21.4	D
Above 10 °C	0	0	0	0	0	21.1	79.8	38.5	1.9	0	0	0	141.3	D
Above 5 °C	0	0	0	0	1	84.7	203	133.2	19.8	0.2	0	0	441.9	D
Above 0 °C	0	0	0	0.1	14.1	199	356	273.6	84.6	2	0	0	929.3	D
Below 0 °C	934.8	804.3	771.3	476.1	189.9	5.1	0	0.3	29.5	267.8	621	831	4931.2	D
Below 5 °C	1089.8	945.6	926.3	626.1	331.9	40.8	1.9	14.9	114.8	421.1	771	986	6270.1	D
Below 10 °C	1244.8	1086.9	1081.3	776.1	485.9	127.2	33.8	75.2	246.8	575.9	921	1141	7795.8	D
Below 15 °C	1399.8	1228.3	1236.3	926.1	640.9	257.4	123.6	197.1	394.9	730.9	1071	1296	9502.2	D
Below 18 °C	1492.8	1313	1329.3	1016.1	733.9	346.1	204.5	285.4	484.9	823.9	1161	1389	10579.9	D

Humidex:

Extreme Humidex	-5.6	-5.4	0.3	5	17.5	28.1	**35.3**	30.8	21.7	15.5	0	-4.5	
Date (yyyy/dd)	1987/09	1986/28	1993/23	1998/18	1994/25	1999/18	**1989/17**	1989/14	1997/02	1988/06	1983/03	1991/29	

Wind Chill:													
Extreme Wind Chill	-62.5	-63.3	**-67.4**	-51.8	-35.9	-17.8	-6.4	-12.4	-22.4	-40.7	-56.9	-60.8	
Date (yyyy/dd)	1989/31	1985/22	**1991/05**	1995/02	2002/02	1992/02	1989/02	1982/24	1996/29	1996/30	1985/24	1984/22	
Humidity:													
Average Relative Humidity - 0600LST (%)			77.8	82.4	87	82.1	81	88	89.9	88.1	81.5	78	D
Average Relative Humidity - 1500LST (%)			77.9	81.9	82.2	61.5	56.1	64.8	77.6	86.6	81	77.6	D