Kiggavik Project
Final Environmental Impact Statement

Tier 3 Technical Appendix 4A:
Climate Baseline

September 2014

History of Revisions

Revision Number	Date	Details of Revisions
01	December 2011	Initial release Draft Environmental Impact Statement (DEIS)
03	September 2014	FINAL Environmental Impact Statement

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1 Introduction

1.1 Overview

Climate data were collected near the Kiggavik Project (the Project) for a research study in 1983 (Roulet and Woo 1986), by Beak Consultants Ltd. (Beak) in 1988, 1989, and 1991, and by Ecometrix from 1995 to 1997. In May 2009, a climate station was installed by AREVA Resources Canada Inc. (AREVA) for the Project near the temporary exploration camp. In August 2009, EBA Consultants installed another climate station near the proposed airstrip, also in the vicinity of the Project. This report contains a compilation of regional and local climatic data that have been collected in support of the Project and provides an estimate for extreme precipitation events including and estimate of the Probable Maximum Precipitation (PMP) for the site.

1.2 Purpose

The purpose of a baseline climate program is to document the range of local climate conditions by examining available regional historical information and local short-term climate data. These data are used in combination with other modeled information to characterize normal climatic conditions and extreme events which are important in describing the environment of the Project area. Precipitation, temperature and evaporation directly affect the natural variability of lake levels and streamflow and adjustments to these baseline parameters under climate change scenarios could affect hydrological conditions and project operations in the future. Climate data are often used in the design of buildings, infrastructure, and water management for a project. Water management is typically an important operating license component and will be a major area for review by regulatory agencies.

Climate greatly influences terrestrial and aquatic ecosystems through its continual modification of air, soil, and water environments. Climate is a major constraint for plant and animal communities that exist in an area; for example, it directly impacts the availability of water in the environment and amount of energy required for survival. Climatological and meteorological parameters, including wind speed and direction, temperature, and precipitation, are important in establishing climatic conditions and determining dispersion patterns of air emissions that may affect local and regional air quality. This report describes existing regional and local climate for the Project, including estimations of extreme events.

The World Meteorological Organization (WMO1986), defines the PMP as “the greatest depth of precipitation for a given duration meteorologically possible for a given size storm area at a particular location at a particular time of year, with no allowance made for long term climatic trends”. The PMP

value provided in this report serves as a conservative basis for design of various engineered structures such as tailings management areas and water treatment ponds.

1.3 Scope

The scope of the climate baseline report is document the local and regional climatic conditions using a combination of local, regional, and derived data for various parameters. Historic and season ranges provide climatic boundaries for hydrological assessments and air quality purposes, and for subsequent use for site planning and environmental assessment purposes and as a baseline to assess potential climate change scenarios. Information provided in this document includes the following;

- Precipitation;
- Air temperature;
- Wind speed and direction;
- Relative humidity;
- Atmospheric pressure;
- Evaporation and evapotranspiration; and
- Solar radiation.

This report provides an estimated value for PMP near the Project. Methodologies employed in determining the PMP value are described in detail. The calculation method used in this assessment has been previously approved for use in Saskatchewan's uranium mines.

2 Setting

The Project is located within the physiographic region of the Canadian Shield and, as such, the land contains features formed by glaciation, including eskers and boulder moraines (EC 2009a, internet site). The topography is gently undulating, and is filled with hummocks and patterned ground resulting from permafrost. Vertical drainage is impeded by the permafrost layer, and the land surface is plentiful with wetlands, lakes and small ponds. The Project occurs within the Southern Arctic terrestrial ecozone, which is characterized by continuous permafrost that may be present just a few centimetres below the surface (EC 2009a, internet site). Low precipitation and extremely low winter temperatures stunt tree growth in this ecozone (EC 2009a, internet site). Summers in the Southern Arctic ecozone are cool and approximately four months in length. This ecozone is bounded to the south by the treeline and the Taiga Shield ecozone and to the north by the Northern Arctic ecozone, which includes most of the islands off the northern shores of Nunavut and the Northwest Territories, as well as the top of the Ungava Peninsula. The types of vegetation that may be found include low-lying shrubs such as willow (*Salix* spp.), shrub birch (*Betula nana exilis*) and Labrador tea (*Ledum groenlandicum*), and lichens and mosses (EC 2009a, internet site).

3 Study Areas

3.1 Regional Study Area

The climate Regional Study Area (RSA) includes an area 100 km around the Project. Data from the long-term station at Baker Lake was used to define the RSA climate. The Meadowbank Project is also within 100 km of Kiggavik, although this station has a shorter record length and is not an official EC station. The location of several regional stations is provided in Figure 3.1-1.

3.2 Local Study Area

The Project climate Local Study Area (LSA) is represented by the climate that was observed at short-term and recently installed local climate stations near Kiggavik. Climate parameters measured at the Kiggavik stations were assumed to be representative of the watersheds surrounding Kiggavik that were identified as the LSA for the hydrology baseline programs (Appendix VIII). This assumption is based on physical conditions in the LSA such as no major topographical differences, relatively small area (852 square kilometres [km^2]), and similar distance from Hudson Bay. Subsequent analysis in this report investigates this assumption. The location of the local climate station is illustrated in Figure 3.1-1.

3.3 All Weather Road Study Area

For the environmental assessment, the climate of the proposed winter and alternative all-weather access road study areas will be the same as the RSA, due to the proposed road's location between the Project and Baker Lake.

Legend

- Baker Lake
- Regional and Local Climate Station
- Proposed All Weather North Road
- Proposed All Weather South Road
- Proposed Winter Road

N

Back River
Yathkyed Lake
Robertson Lake
Robertson Lake
Meadowbank Project
Schultz Lake
Qamanaajuk Lake
Thelon River
Kiggavik Camp
Weather Station
Aberdeen Lake
Siamese Lake
Thelon River
Whitehills Lake
Baker Lake A
Baker Lake
Thom Lake
Judge Sissons Lake
Audra Lake
Pointer Lake
Airstrip Station
Aniguq River
Aniguq River
Quoich River
Baker Lake
Boulder Bay
Tasiqsiuvii River
Marjorie Lake
Wharton Lake
Mallery Lake
Princess Mary Lake
Pitz Lake
Kazan River
Tebesjuak Lake
Thirty Mile Lake
Dubawnt Lake
Dubawnt Lake

0 15 30 60 90 120 Kilometres

Projection: NAD 1983 UTM Zone 14N
Creator: MGD
Date: 11/25/2009 Scale: 1:1,500,000
File: KI08B001
Data Sources: *Canadian National 1:2,000,000 Water Dataset*
Environment Canada
Cumberland Resources Ltd. 2003

FIGURE 3.1-1
REGIONAL AND LOCAL CLIMATE STATIONS

KIGGAVIK PROJECT - EIS

Golder Associates
AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5

4 Methods

4.1 Data Sources

4.1.1 Regional Data Sources

Several regional climate stations are located within 300 km of the Project (Table 4.1-1). The nearest climate station is located at Baker Lake, approximately 80 km east of the Project. While most stations in Table 4.1-1 are operated by EC, one station was installed at the Meadowbank Project in 1997 (Cumberland Resources Ltd. 2003). The Meadowbank station is located 70 km north of Baker Lake, and 100 km northeast of the Project.

Table 4.1-1 Regional Climate Stations

Station ID	Station Name	Latitude	Longitude	Approximate Distance from Project (km)	Years of Record[(a)]
2300500	Baker Lake A	64° 18.000' N	96° 4.800' W	80	1946-present
2300501	Baker Lake	64° 19.200' N	96° 0.000' W	80	2004-present
none	Meadowbank Project[(b)]	65° 01.183' N	96° 4.00' W	100	1997-2003
2300MQM	Back River	66° 5.400' N	96° 30.600' W	193	1995-2004
230J048	Dubawnt Lake	63° 13.800' N	101° 45.600' W	240	1993-2005
2303610	Robertson Lake	65° 6.000' N	102° 25.800' W	233	1994-present
2304058	Yathkyed Lake	62° 42.600' N	98° 17.400' W	201	1993-2004

NOTES:
[(a)] Years of record was determined from daily climate data availability
[(b)] Source: Cumberland Resources Ltd. 2003
° = degrees; ' = minutes

Several EC climate stations in the region around the Project collect radiation data of various types. The nearest climate station at Baker Lake A has collected net all-wave radiation since 1963 and on a continuous basis since 1969. In addition to net radiation, global solar radiation data were collected at Baker Lake A from 1970 to 1981 (EC 2007a, internet site). Global solar radiation measures all the incoming radiation at the earth's surface, including diffuse (i.e., scattered and reflected) radiation and direct shortwave radiation.

Temperature and precipitation normals for the regional climate stations were examined to determine the extent to which regional trends existed. However, most of these stations did not have datasets of sufficient length, completeness, and/or quality that would allow calculation of long-term normals for the most recent 30-year period.

Data have been collected at Baker Lake A climate station since 1946 and are considered the most representative of conditions at the Project site based on data comparisons, close proximity, and the long observation record. Baker Lake A climate normals provide a good approximation of climate conditions at the Kiggavik site (Beak 1990). The Baker Lake A climate station meets WMO standards for calculation of climate normals. These data were used for previous feasibility studies for the Project (Beak 1989a, 1990), and the Meadowbank Project environmental assessment (Cumberland Resources Ltd. 2003).

A substantial amount of analysis was completed in previous reports that compared climate data for Baker Lake and the Kiggavik site, to determine whether the Baker Lake data were representative of the Kiggavik site (Beak 1987, 1989a, 1990, EcoMetrix 2006). Comparisons were made between Baker Lake A data and Kiggavik climate data for the years 1983 to 1984, 1990 to 1991, and 1995 to 1997 time periods versus Baker Lake; temperature and wind patterns were generally similar (EcoMetrix 2006). Differences in the climate were attributed to the possible influence of Baker Lake, and the difference in elevation between the two sites (e.g., 180 metres above sea level (masl) at Kiggavik versus 18 masl at Baker Lake) (Beak 1990). The presence of Baker Lake would have a modifying influence on the local climate as measured at the climate station during the ice-free period (Beak 1990).

4.1.2 Local Data Sources

Climate data were collected at Kiggavik during a short-term research study in 1982 and 1983 (Roulet and Woo 1986), from August 1990 to August 1991 (SENES 1992), and from May 2009 to the present (Carter 2009, pers. comm.). The location of the most recently installed climate monitoring stations at Kiggavik are provided in Figure 3.1-1. The climate data that have been collected in the Kiggavik area are summarized in Table 4.1-2.

In May 2009, a climate monitoring station was installed at the Kiggavik camp (Figure 3.1-1). This station made observations at ten-minute time intervals until September 2009 and during the winter of 2009 to 2010, the data loggers were reprogrammed to measure at two-hour time intervals. Station parameters include air temperature, rainfall, atmospheric pressure, wind speed and direction, humidity, solar radiation, and ultra-violet (UV) radiation. Installation of a meteorological station at the Project in 2009 allowed for improved comparisons with the Baker Lake climate station. These results are provided in Section 5.2 of this report.

In August 2009, EBA Consultants installed an aeronautical meteorological station at the air strip located 3 km from Kiggavik camp. This station currently records several parameters at 15-minute intervals (Table 4.1-2).

Table 4.1-2 Data Collected in the Kiggavik Climate Local Study Area

Source Report or Company	Location	Type of Data	Parameters	Date of Collection
Roulet and Woo (1986)	64°27'N, 97°47'W	Half hour to hourly averaged measurements	T, RH, WS, WD, NRAD, P, TBRG, SWE, EV	Summers 1982 to 1983
SENES Consultants Ltd. (1992)	Unknown	Hourly measurements	T (2 elevations), RH, WS, WD	August 1990 to August 1991
EcoMetrix Inc. (2006)	Unknown	Hourly measurements	T, RH, WS, WD	September 1995 to April 1997 (incomplete periods)
AREVA Resources Canada Inc.	Camp	Ten-minute to 2-hour measurement intervals	T, RH, WS, WD, AP, SRAD, UV, TBRG	May 2009 to present
EBA Consultants Ltd.	Proposed Airstrip 3 km south of camp	15-minute measurements	T, RH, WS, WD, AP	August 2009 to present

NOTES:

T = air temperature, RH = relative humidity, WS = wind speed, WD = wind direction, AP = atmospheric pressure, SRAD = solar radiation (incoming shortwave), UV = ultra-violet radiation, NRAD = net radiation, P = total precipitation (rain & melted snow), and TBRG = tipping bucket rain gauge, SWE = snow water equivalent, EV = evaporation pans.

4.2 Climate Equipment and Field Methods

Environment Canada climate stations use standard methods and equipment for observing weather parameters. Descriptions of the parameters monitored at the stations are available on the EC website (EC 2009b, internet site). At the Baker Lake A climate station, net radiation data were measured with a CSIRO Middleton CN-1 net pyrradiometer (Dickson 2008, pers. comm.). Net radiation is the resultant of downward and upward total radiation received on a horizontal surface (EC 2009b, internet site); this parameter is a key component for many methods of estimating evapotranspiration. Net radiation data measured with a pyrradiometer are not reliable during periods of rain (Oke 1987).

Rainfall is usually measured using a standard Canadian rain gauge, a cylindrical container 40 centimetres (cm) high and 11.3 cm in diameter. Precipitation is funnelled into a plastic graduated cylinder that serves as the measuring device. Snowfall is the measured depth of newly fallen snow, measured using a snow ruler. Measurements are made at several points which appear representative of the immediate area, and then averaged. The Baker Lake A climate station recorded daily snow depths using a ruler from 1946 to 2008 (EC 2009b, internet site). Snow surveys

done by designated stations are made at regular intervals during the winter months to estimate the snow water equivalent (SWE) and depth of the snowpack (EC 2009b, internet site). Snow density was measured along the Baker Lake snow course station at bimonthly or monthly time intervals for the years 1965 to 2006; no data were available for the years 1994 to 2002 (Meteorological Society of Canada [MSC] 2000 and 2008, internet sites). In 1962, the Baker Lake A climate station was equipped with a Nipher gauge that measures snow amount and SWE (National Snow and Ice Data Center 2009, internet site).

The earliest Kiggavik climate data was recorded in June and July of 1982 and 1983. The station was installed near Kiggavik (UTM NAD83 Coordinates Zone 14W 558564 metres (m) E 7147722 m N) from mid-May to early August in 1982 and 1983; methods and results of the study are provided in Roulet and Woo (1986). Station parameters included Campbell Scientific air temperature (thermocouple) and relative humidity (self-aspirating wet and dry bulb, single-junction) probes at four levels. Wind speed was measured with a Cassella Shepherd anemometer. Three small evaporation pans were set in a pool in the wetland during the summer. Rainfall was monitored with a tipping bucket rain gauge, and 12 standard rain gauges located throughout the small watershed that was being studied. Snow accumulation in the late winter was measured through snow course surveys that measured snow depth and densities (using an MSC type snow sampler). Additional parameters related to snow melt and the ground thermal regime included snow temperature (measured with Fenwall thermistors), ground temperatures, and frost/active layer depths (measured with a frost probe).

The equipment used for subsequent climate monitoring programs in 1990 to 1991, and 1995 to 1997, was not documented in the summary and feasibility reports.

The climate station installed at the Project camp location began recording data on May 6, 2009. The station is a Davis Instruments Wireless Vantage Pro2™ Plus with an RM-Young fan-aspirated radiation shield. The station measures wind speed and direction using a rotating-cup type anemometer with a magnetic switch and a wind vane with a potentiometer. Rainfall is monitored using a tipping bucket rain gauge. The temperature (i.e., thermistor) and humidity (film capacitor element) sensors are sheltered inside the fan-aspirated radiation shield. The solar radiation sensor is a pyranometer which measured direct and diffuse short-wave incoming (downward) radiation (i.e., global solar radiation). A UV sensor measures short wave UV radiation.

A meteorological station was installed in August 2009 at the airstrip located 3 km south of the Kiggavik camp. Instrumentation at the station includes an YSI thermistor sensor for measuring air temperature and a Vaisala capacitive relative humidity probe. These sensors are enclosed in a radiation shield. An RM-Young propeller-type wind speed sensor with a torpedo-shaped wind vane and barometric pressure sensor were installed. Additionally, a Kipp & Zonen pyranometer was included to measure incident solar radiation.

4.3 Data Analysis

4.3.1 Climate Data Analysis

Regional climate data provided by EC (2008 and 2009b, internet sites) for Baker Lake climate station were subject to quality assurance and quality control (QA/QC) procedures that may have included the removal of outliers, estimation of data gaps, and other procedures according to standard protocols. Climate data from EC are provided with flags to indicate their QA/QC-related status. At the climate station at the Project site, wind and temperature data were checked by AREVA personnel for errors during installation in May 2009.

4.3.2 Calculation of Probable Maximum Precipitation

The most common methods to estimate PMP are storm maximization (Hydro meteorological) approach. Storm maximization more sites specific data and thus provides more reliable estimate than other methods. Where site–specific data are not available statistical method (Hershfield method) can be applied that requires data for annual maximum rainfall series in the region for required storm durations. Weather elements that are used in calculations of PMP values are rainfall, dew point temperature, and pressure.

The PMP value for the Project was estimated using meteorological data from the weather station at Baker Lake. This weather station is the closest and most complete data set to the project site and is located 80 km to the east of the project area. While this station is located 80 km from the Project, and therefore may experience small differences in precipitation, the Baker Lake station was considered suitable for several reasons:

- Strong precipitation gradients typically exist in high relief areas where orographic effects are strong. The Kiggavik site is only 168 m higher than Baker Lake with a relatively homogeneous intervening terrain of undulating hills, lakes and river valleys. The highest point between Baker Lake and the Project is only 218 m higher than Baker Lake.
- Increases in surface elevation typically result in a decrease in the moisture held in the air; therefore, the use of the lower elevation Baker Lake station is a more conservative assumption. Adjustments for differences in elevation of less than approximately 300 m are not typically made (WMO, 1986).
- The region is considered to be a meteorologically homogeneous area.
- Due to their proximity (within 80 km), and similarity in vegetative cover and geomorphology, the Project and Baker Lake are considered to be part of the same climatological region. A corridor of relatively low terrain extends northwest from Baker Lake, through the Project area, and weather typically moves in a band through this terrain with north-westerly winds. Weather in the region is predominantly from the northwest,

traveling from the Project to Baker Lake (Nav Canada, 2001). Based on this rationale, the Baker Lake precipitation data were considered representative of the Project area.

The calculation methodology was adopted from Environment Canada report prepared by R.F. Hopkinson (Point Probable Maximum Precipitation in Northern Saskatchewan, March 1994). Based on the large body of work done by R.F. Hopkinson in the field of PMP in northern climates of Canada that methodology was chosen to be the appropriate approach for the Kiggavik project.

Available precipitation data was obtained from Baker Lake, and the area of concern was defined as 1.0 km^2 with extreme rainfall duration period of one day (24-hours). The Baker Lake station has daily precipitation data, hourly dew-point temperature and atmospheric pressure (all parameters required when calculating PMP) for the period 1953 to 2009.

Using the 12 hour persisting dew point for the entire period of data a monthly maximum was derived from 12 hour persisting dew-point data series. The persisting dew-point is defined as "the highest dew-point temperature which is equalled or exceeded during specified period (e.g., 12 hours)".

Using the monthly maximum 12 hr persisting dew-point at surface pressure of 100 kiloPascal (kPa), the maximum precipitable water (which is defined as is the amount of water in a column of the atmosphere that would be achieved if all the water in that column were precipitated out as rain) of any given month, for a saturated column of air from the surface pressure of 100 kPa to the height of 30 kPa pressure level can be determined from Table A.1.1 in Annex 1 of WMO Manual (1986). The extreme precipitation can be maximized by multiplying the storm rainfall amount by the ratio of maximum precipitable water to the actual storm precipitable water.

5 Results

5.1 Regional Climate Data

5.1.1 Precipitation

Precipitation climate normals at the Baker Lake A climate station include rainfall, snowfall, and total precipitation amounts (Table 5.1-1). Monthly precipitation data measured over the period of record for Baker Lake climate station are provided in Attachment I. Snowfall may occur during any month of the year at Baker Lake (EC 2008, internet site). The months of October, November, and April have generally had the highest amounts of snowfall during the period of record (Beak 1990). The values in Table 5.1-1 were estimated for a thirty year period from 1971 to 2000, and data were not adjusted or corrected. Adjusted climate data published by EC (2009b, internet site) for Baker Lake will be provided in the following sub-sections.

Table 5.1-1 Historical Precipitation Data for Baker Lake, 1971 to 2000

Month	Rainfall (mm)			Snowfall (cm)			Total Precipitation (mm)		
	Mean	25th Percentile	75th Percentile	Mean	25th Percentile	75th Percentile	Mean	25th Percentile	75th Percentile
January	0	0.0	0.0	8.4	3.4	11.5	7.5	2.2	10.3
February	0	0.0	0.0	8.6	4.1	11.9	7.2	3.6	10.2
March	0	0.0	0.0	12.8	6.0	16.0	10.5	5.8	12.9
April	0.5	0.0	0.0	15.3	9.5	21.1	13.6	7.3	18.7
May	6.7	0.2	8.2	10.2	4.0	12.7	15.6	9.5	19.7
June	20.8	10.5	25.6	3.3	0.0	2.8	24.1	10.3	30.3
July	41.8	23.0	57.8	0.0	0.0	0.0	41.8	23.0	57.8
August	45.7	28.2	63.4	1.3	0.0	0.0	47.0	37.4	65.1
September	35.8	19.5	48.7	8.1	1.7	12.2	44.1	28.1	57.9
October	5.3	0.2	7.2	29.2	18.7	37.2	32.1	17.1	44.1
November	0.1	0.0	0.0	21.0	13.5	25.3	17.0	10.9	19.1
December	0	0.0	0.0	12.9	7.3	16.6	10.2	6.3	14.4
Annual	**156.7**	**124.5**	**179.8**	**131.0**	**68.1**	**167.1**	**270.4**	**237.9**	**302.0**

NOTES:
mm = millimetres; cm = centimetres

5.1.1.1 Rainfall

Adjusted rainfall data for Baker Lake climate station were used to calculate the rainfall statistics provided in Table 5.1-2 (EC 2007b, internet site). Environment Canada maintains a record of adjusted historical climate data, where precipitation and temperature records have been adjusted for a number of northern climate stations (EC 2007b, internet site). The months in which most of the rainfall may be expected to fall are July and August, whereas little or no rainfall is expected from the months of October through May. Historical adjusted monthly rainfall for Baker Lake is presented in Attachment I.

Table 5.1-2 Mean, Maximum and Minimum Monthly Adjusted Rainfall for Baker Lake, 1949 to 2007

Month	Mean (mm)	Maximum (mm)	Minimum (mm)
January	0.1	0.9	0
February	0.1	2.3	0
March	0.0	0.8	0
April	0.6	13.3	0
May	6.7	35.4	0
June	21.9	57.8	2.5
July	43.6	96.3	2.9
August	46.2	95	5.8
September	37.3	92	4.9
October	8.0	43.6	0
November	0.3	3.2	0
December	0.1	0.9	0
Annual	**168.9**	**276.2**	**70.5**

NOTE:
mm = millimetres

Extreme rainfall statistics have the potential to be used for design purposes, as in the sizing of cross-drainage structures, freshwater diversion channels and retention ponds, requirements for freeboard, or peak flow. Extreme rainfall statistics were previously estimated for Baker Lake, but recent intensity-duration-frequency rainfall data have been compiled for Baker Lake by Environment Canada and are provided in Table 5.1-3. The 1 in 100-year maximum precipitation event over a 24-hour period is estimated to be 74.7 millimetres (mm) (Environment Canada 2011).

Table 5.1-3 Extreme Rainfall Statistics for Baker Lake

Duration	Return Period (years)[(a)]					
	2	5	10	25	50	100
24 hours	27.3	40.0	48.4	59.0	66.9	74.7
12 hours	22.4	32.4	39.1	47.5	53.8	60.0
6 hours	16.7	22.8	26.8	32.0	35.8	39.5
1 hour	6.3	8.7	10.2	12.2	13.6	15.1
15 minutes	2.8	3.8	4.5	5.3	6.0	6.6

NOTE:
[(a)] measurements are in millimetres

5.1.1.2 Snow

Adjusted snowfall data for Baker Lake climate station were used to calculate the snowfall statistics in Table 5.1-4 (EC 2007b, internet site). Mean annual snowfall (as SWE) was 176 mm for the years 1949 to 2007. Maximum and minimum annual snowfalls were 310 mm and 65 mm, respectively. The largest snowfalls occurred in October, followed by November and April. Adjusted historical monthly snowfall data for Baker Lake are provided in Attachment I.

Table 5.1-4 Mean, Maximum and Minimum Monthly Adjusted Snowfall for Baker Lake, 1949 to 2007

Month	Mean (mm)	Maximum (mm)	Minimum (mm)
January	13.2	36.8	1.3
February	12.2	35.4	2.2
March	17.0	58.5	2.9
April	21.5	93.6	3.2
May	13.3	53.1	0.6
June	4.4	34	0
July	0.0	0.6	0
August	1.0	24	0
September	10.6	47.8	0.3
October	34.9	102.7	4.6
November	27.5	88.7	6.4
December	17.6	50.2	2.6

Table 5.1-4 Mean, Maximum and Minimum Monthly Adjusted Snowfall for Baker Lake, 1949 to 2007

Month	Mean (mm)	Maximum (mm)	Minimum (mm)
Annual	**175.5**	**309.7**	**64.8**

NOTE:
mm = millimetres

The Canadian Cryospheric Information Network provides current snow cover information for areas across Canada (SOCC 2008, internet site). The Canadian Snow Water Equivalent Database contains SWE and snow depth measurements from snow on ground surveys taken by more than twenty agencies at weekly, biweekly or monthly frequencies (MSC 2000, 2008, internet sites). Mean monthly and extreme monthly values of SWE were estimated for Baker Lake for the years 1965 to 2006 (Table 5.1-5). Mean monthly SWE was generally highest in May. The highest recorded SWE of 188 mm was measured January 1, 1975.

Table 5.1-5 Mean and Extreme Monthly Snow Water Equivalent for Baker Lake Based on the Snow Course Dataset, 1965 to 2006

Month	Mean SWE (mm)[(a)]	Extreme Maximum SWE (mm)	Extreme Minimum SWE (mm)
October	29.0	91	0
November	29.6	94	0
December	37.1	130	1
January	47.7	188	9
February	48.6	150	7
March	53.8	163	12
April	59.6	160	11
May	71.9	163	0
June	25.4	127	0

NOTE:
[(a)] No data were provided for the years 1994 to 2002
mm = millimetres; SWE = snow water equivalent

Bimonthly or monthly SWE data were available for Baker Lake for the years 1965 to 2006 (Attachment II). These results may generally be representative of the snow accumulation in the RSA, although snow redistribution causes the amount of snow accumulation to vary between terrain types subject to the same snowfall. Snowfall is transported by the wind and redistributed over the landscape within and between watersheds, and a portion of snowfall is lost to the atmosphere by sublimation. For example, SWE measured for the Jericho Project in Nunavut ranged from 68 mm on the tundra, to 76 mm on the lakes, to 117 mm in the valley areas (Tahera 2003).

5.1.1.3 Total Precipitation

Adjusted total precipitation monthly statistics were calculated for Baker Lake climate station for the years 1949 to 2007 and are provided in Table 5.1-6 (EC 2007b, internet site). The main adjustment was made for snow gauge under-catch caused by elevated wind speeds. The adjusted precipitation for the Baker Lake climate station was 40 percent (%) greater than reported in climate normals. From the adjusted dataset, mean annual precipitation was estimated to be 344 mm, 168 mm (49%) of which falls as rain. Total annual precipitation is estimated to range between 195 mm and 520 mm. Total monthly precipitation data for Baker Lake are provided in Attachment I

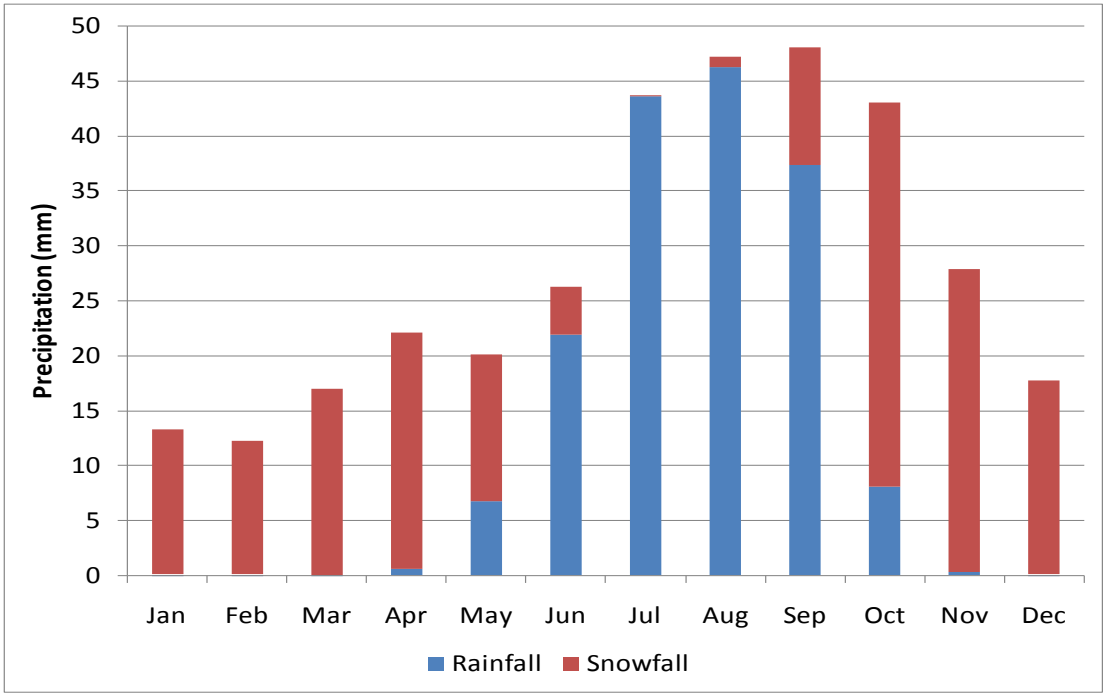
Table 5.1-6 Mean, Maximum, and Minimum Monthly Adjusted Precipitation for Baker Lake, 1949 to 2007

Month	Mean (mm)	Maximum (mm)	Minimum (mm)
January	13.2	36.8	1.3
February	12.2	35.4	2.2
March	17.0	58.5	2.9
April	22.0	93.9	3.2
May	20.0	54.3	1.5
June	26.3	66.7	3.6
July	43.6	96.3	2.9
August	47.1	95.1	6.3
September	48.0	104.4	8.1
October	43.0	113.1	8.6
November	27.8	90.1	6.7
December	17.7	51.1	2.6
Annual	**344.4**	**519.7**	**195.4**

NOTE:
mm = millimeters

Rainfall and snowfall contributions to total precipitation at Baker Lake are shown in Figure 5.1-1. These results are based on the adjusted precipitation dataset for the years 1949 to 2007. The highest amounts of precipitation tend to occur between July and October.

Figure 5.1-1 Adjusted Monthly Mean Precipitation for Baker Lake, 1949 to 2007



5.1.2 Air Temperature

The mean daily air temperature for Baker Lake climate station was estimated to be -12 degrees Celsius (°C). Mean, maximum, and minimum daily temperatures are presented in Table 5.1-7 (EC 2009b, internet site). Mean temperatures range between -32.4°C in January and 11.2°C in July. Extreme temperatures have ranged between -50.6°C and 33.6°C in January and July, respectively. The historical daily mean temperatures on a monthly basis for Baker Lake are presented in Attachment III.

Table 5.1-7 Air Temperatures for Baker Lake, 1946 to 2008

Month	Warmest and Coldest Day in the Month				Monthly Mean (°C)
	Extremes		Means		
	Maximum (°C)	Minimum (°C)	Maximum (°C)	Minimum (°C)	
January	-1.7	-50.6	-28.9	-35.8	-32.4
February	-4.1	-50.0	-28.6	-35.5	-32.0
March	1.5	-50.0	-22.9	-31.3	-27.1
April	19.2	-41.1	-12.7	-22.1	-17.4
May	13.9	-27.8	-2.7	-9.9	-6.3
June	28.1	-13.9	8.3	0.2	4.3
July	33.6	-1.7	16.4	5.9	11.2
August	30.9	-3.4	14.1	5.3	9.7
September	22.6	-14.4	5.8	-0.5	2.7
October	9.8	-30.6	-3.9	-10.4	-7.2
November	2.2	-42.7	-16.0	-23.8	-20.0
December	-1.1	-45.6	-24.0	-31.2	-27.7

5.1.3 Wind

5.1.3.1 Wind Speed

Wind speed statistics for the Baker Lake climate station (EC 2009b, internet site) are provided in Table 5.1-8. The mean monthly wind strength varied between 16.9 kilometres per hour (km/h) in July and 23.9 km/h in January. Maximum mean daily wind speeds range between 22.4 km/h in August and 37.1 km/h in February. Similarly, minimum mean daily wind speeds have ranged between 11.0 km/h in July and 16.7 km/h in October. The historical wind record for Baker Lake is presented in its entirety in Attachment IV.

Table 5.1-8 Mean, Maximum, and Minimum Daily Wind Speeds at Baker Lake, 1962 to 2008

Month	Mean (km/h [m/s])	Maximum (km/h [m/s])	Minimum (km/h [m/s])
January	23.9 (6.6)	33.4 (9.3)	12.2 (3.3)
February	22.9 (6.3)	37.1 (10.3)	11.8 (3.2)
March	21.3 (5.9)	33.2 (9.2)	11.4 (3.1)
April	20.7 (5.7)	25.5 (7.1)	15.3 (4.2)
May	19.9 (5.5)	30.6 (8.5)	14.4 (4.0)
June	17.7 (4.9)	29.6 (8.2)	13.2 (3.6)
July	16.9 (4.6)	23.7 (6.6)	11.0 (3.0)
August	17.7 (4.9)	22.4 (6.2)	12.2 (3.4)
September	19.7 (5.4)	25.4 (7.0)	13.1 (3.6)
October	21.7 (6.0)	27.6 (7.6)	16.6 (4.6)
November	22.1 (6.1)	29.2 (8.1)	15.4 (4.2)
December	22.3 (6.1)	34.0 (9.4)	14.5 (4.0)
Annual	21.3 (5.9)	24.3 (6.7)	17.9 (4.9)

NOTES:
km/h = kilometres per hour; m/s = metres per second

Extreme wind data for a number of communities are provided in the National Building Code of Canada (NRC 2005). The one in 10- and one in 50-year, one hour duration wind pressures are available for Baker Lake, which may subsequently be converted to wind velocities. The document also provides an equation to convert the one in 10-and one in 50-year wind velocities into an nth-year wind velocity as follows:

$$V_{1/n} = \frac{1}{1.4565}\left\{V_{1/50} + 0.4565V_{1/10} + \frac{V_{1/50} - V_{1/10}}{1.1339} * \ln\left(\frac{-0.0339}{\ln(1-1/n)}\right)\right\} \qquad (1)$$

Where V is wind speed (m/s) and *n* is the return period in years. Extreme wind statistics for Baker Lake are presented in Table 5.1-9. One hour wind speeds of 78 km/h can be expected to occur once every two years, on average. Wind speeds exceeding 100 km/h are expected to occur only once in 30 years.

Table 5.1-9 Extreme Wind Statistics for Baker Lake

Duration	Return Period (years)[(a)]					
	2	5	10	30	50	100
1 hour	77.7 (21.6)	86.2 (23.9)	91.8 (25.5)	100.2 (27.8)	104.0 (28.9)	109.2 (30.3)

NOTES:

Extreme wind statistics for the 10-year and 50-year return periods were provided by NRC (2005) while the remaining wind statistics were calculated using Equation (1)

[(a)] measurements are in kilometres per hour (metres per second)

5.1.3.2 Wind Direction

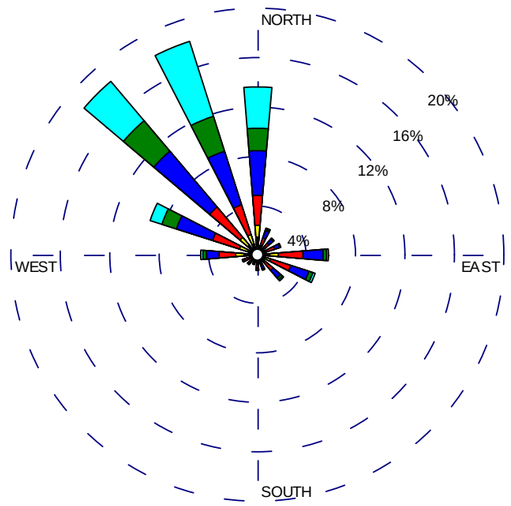
The most frequent wind direction at the Baker Lake climate station for the years 1953 to 2009 was north-northwest (Table 5.1-10); similarly, the most frequent wind speed in this direction was of the range 20.5 km/h to 31.7 km/h (5.7 metres per second (m/s) to 8.8 m/s) (EC 2009b, internet site). Frequencies were calculated for 16 wind directions and calm conditions; the percentage of missing or incomplete data was also calculated. Seasonal and historical wind roses for Baker Lake are presented in Figure 5.1-2. On a seasonal basis, the wind is predominantly from the north during the second and third quarters of the year, and from the northwest during the first and fourth quarters (Figure 5.1-2). Wind speeds greater than 11 m/s are most frequent over the period of January to March. On an annual basis, the wind rarely blows from the southwest or the northeast.

Table 5.1-10 Wind Direction Frequencies for Baker Lake, 1953 to 2009

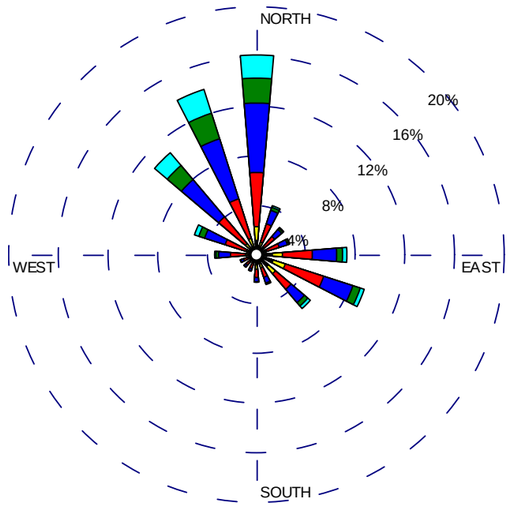
Direction	Annual	Jan - Mar	Apr-Jun	Jul-Sep	Oct-Dec
N	14.9%	13.6%	16.1%	16.0%	13.8%
NNE	3.6%	2.3%	4.2%	4.2%	3.5%
NE	2.6%	1.8%	2.9%	2.7%	2.9%
ENE	2.7%	2.0%	2.9%	2.7%	3.1%
E	6.1%	5.8%	7.3%	5.9%	5.1%
ESE	6.6%	5.0%	9.2%	7.6%	4.6%
SE	4.7%	2.8%	5.7%	5.4%	5.0%
SSE	2.6%	1.4%	2.6%	3.0%	3.3%
S	2.4%	1.3%	2.3%	2.7%	3.1%
SSW	1.6%	0.9%	1.5%	2.1%	1.8%
SW	1.6%	1.1%	1.4%	2.1%	1.8%
WSW	1.7%	1.3%	1.4%	2.1%	1.7%

Table 5.1-10 Wind Direction Frequencies for Baker Lake, 1953 to 2009

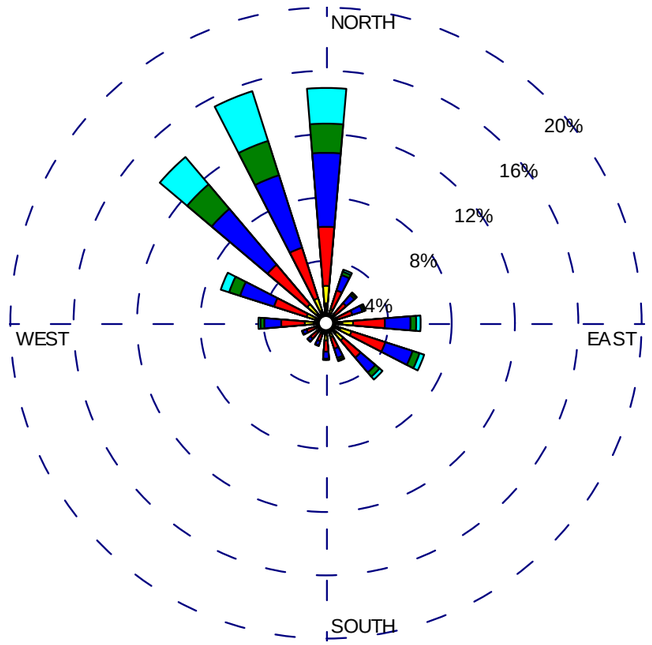
Direction	Annual	Jan - Mar	Apr-Jun	Jul-Sep	Oct-Dec
W	4.3%	4.6%	3.4%	4.4%	4.8%
WNW	7.0%	9.1%	5.3%	5.9%	7.8%
NW	13.8%	18.4%	10.8%	10.8%	15.3%
NNW	15.4%	18.1%	14.0%	14.5%	15.1%
Sub-Total	79.8%	56.6%	57.6%	58.5%	58.7%
Calms	7.6%	6.5%	5.8%	5.1%	4.6%
Missing/Incomplete	12.7%	37.0%	36.6%	36.5%	36.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%



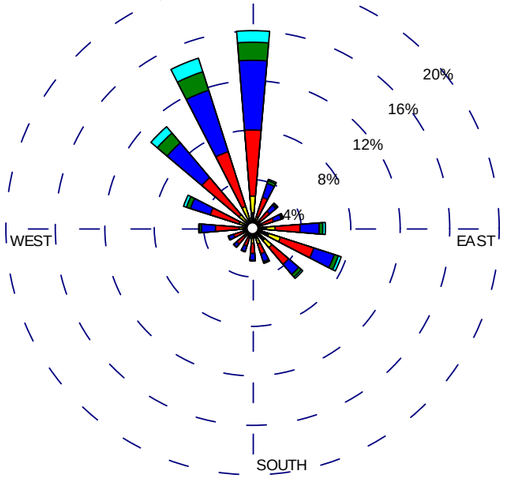
Jan - Mar



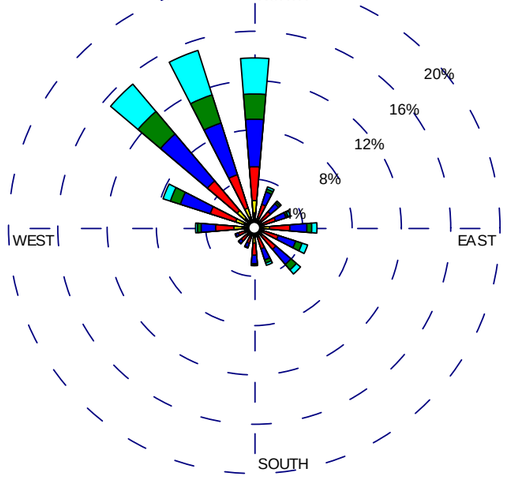
Apr - Jun



Annual



Jul - Sept



Oct - Dec

WIND SPEED (m/s)
- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 10.29%

Calms: 9.16%

Calms: 8.62%

Calms: 7.95%

Calms: 7.28%

Projection: NAD 1983 UTM Zone 14N
Creator: MGD
Date: 11/25/2009
File: KI08B002
Data Sources: *Environment Canada*

FIGURE 5.1-2
WIND ROSES FOR BAKER LAKE, 1953-2009

KIGGAVIK PROJECT - EIS

Golder Associates
AREVA
AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5

5.1.4 Relative Humidity

Humidity is the amount of water vapour present in the air, and is a climatic parameter that is related to evaporation and condensation (Viesmann and Lewis 1996). Relative humidity is the amount of water vapour present in the air relative to its carrying capacity, or saturation point. Relative humidity was measured at the Baker Lake climate station from 1946 to 2008 (EC 2009b, internet site). Monthly statistics for relative humidity are provided in Table 5.1-11, and the monthly record over 1946-2008 is presented in Attachment V. Mean monthly relative humidity ranged between 65.3% in March and 84.5% in October.

Table 5.1-11 Mean, Maximum, and Minimum Monthly Relative Humidity at Baker Lake, 1946 to 2008

Month	Mean (%)	Maximum (%)	Minimum (%)
January	67.6	82.9	62.9
February	65.4	67.2	62.9
March	65.3	72.8	61.0
April	74.2	85.9	62.5
May	82.5	90.3	71.3
June	76.8	86.6	66.1
July	71.8	78.7	57.9
August	76.4	82.2	65.4
September	82.3	88.7	72.8
October	84.5	92.1	72.4
November	74.2	84.0	64.2
December	67.8	75.4	62.3
NOTE: % = percent			

The mean monthly relative humidity values for the Baker Lake climate station for the years 1971 to 2000 are provided in Table 5.1-12 (EC 2009b, internet site). Data were archived every hour, and the long term normal is computed from relative humidity measurements at 0600 hours local standard time (LST) and 1500 hours LST. The mean relative humidity at Baker Lake over this period of record was about 69.2% and ranged from 58% in July during the afternoon to over 88% in September during the morning. During the warmer months, the long-term mean at 1500 hours is lower than at 0600 hours.

Table 5.1-12 Normal Monthly Relative Humidity for Baker Lake, 1971 to 2000

Month	Mean Relative Humidity 0600LST (%)	Mean Relative Humidity 1500LST (%)
January	65.7	64.8
February	65.1	63.9
March	65.5	65.0
April	72.7	73.0
May	84.0	80.0
June	82.7	66.9
July	81.0	58.0
August	86.4	64.6
September	88.2	73.6
October	84.5	81.4
November	73.0	72.5
December	66.7	66.7
Annual	-	69.2
NOTES: % = percent; LST= local standard time		

5.1.5 Atmospheric Pressure

Mean, maximum, and minimum measured atmospheric pressure for each month of the year was estimated for the Baker Lake climate station for the years 1962 to 2009 (EC 2009b, internet site). Results are provided in Table 5.1-13. Annual mean pressures ranged between 100.73 kPa and 102.14 kPa. The historical monthly record for Baker Lake atmospheric pressure is presented in Attachment VI.

Table 5.1-13 Mean, Maximum, and Minimum Daily Atmospheric Pressure at Baker Lake, 1962 to 2009

Month	Mean (kPa)	Maximum (kPa)	Minimum (kPa)
Jan	101.50	102.82	100.69
Feb	101.66	102.59	100.90
Mar	101.84	102.68	101.13
Apr	101.93	102.73	101.11
May	101.71	102.31	101.19

Table 5.1-13 Mean, Maximum, and Minimum Daily Atmospheric Pressure at Baker Lake, 1962 to 2009

Month	Mean (kPa)	Maximum (kPa)	Minimum (kPa)
Jun	101.23	101.68	100.72
Jul	100.92	101.40	100.46
Aug	100.92	101.44	100.36
Sep	101.07	101.91	100.57
Oct	101.12	101.76	100.66
Nov	101.30	102.12	100.34
Dec	101.42	102.28	100.65
Annual	101.38	102.14	100.73
NOTE: kPa = kiloPascals			

5.1.6 Evaporation and Evapotranspiration

Evaporation and evapotranspiration are important factors for consideration in mine planning and water balance estimates. Evaporation may be defined as the process that transfers water from land and waterbodies to the atmosphere (Viessman and Lewis 1996). Transpiration is the process that moves water from plants into the atmosphere (Viessman and Lewis 1996); therefore *evapotranspiration* is the combined process that moves water from both land surfaces and plants into the atmosphere (Chow et al. 1988). Factors that influence evaporation and evapotranspiration rates include temperature, precipitation, relative humidity, wind speed, net radiation, and available energy. Mean monthly estimates for evaporation (*E*) were calculated for Baker Lake climate station using the Priestley-Taylor method (Priestley and Taylor 1972) for the years 1966 to 2003 using the following equation:

$$E = \alpha \frac{\Delta}{\Delta + \gamma} E_r \qquad (2)$$

Where α = 1.26 for subarctic regions (Gibson et al. 1998; Reid 2004; Stewart and Rouse 1977), *E* is in m/s, Δ is the gradient of saturated vapour pressure (Pascals per degree Celsius, Pa/^{o}C), γ is the psychometric constant (Pa/^{o}C), and E_r is the evaporation rate (m/s). The gradient of saturated vapour pressure may further be defined as follows (Chow et al. 1988):

$$\Delta = \frac{4098 e_s}{(237.3 + T)^2} \qquad (3)$$

Where e_s is the saturation vapour pressure (Pa) and T is temperature in °C. The saturation vapour pressure may be estimated using the following equation (Chow et al. 1988):

$$e_s = 611\exp\left(\frac{17.27T}{237.3+T}\right) \qquad (4)$$

The psychometric constant, γ, may be determined as follows (Chow et al. 1988):

$$\gamma = \frac{C_p K_h p}{0.622 l_v K_w} \qquad (5)$$

Where C_p is the specific heat at constant pressure (assumed to be 1005 Joules per kilogram ·Kelvin (J/kg·ºK) for air), K_h/K_w is the ratio of heat to vapour diffusivities and assumed to be 1, and p is atmospheric pressure (Pa). The evaporation rate, E_r may be determined using Equation (6), as follows (Chow et al. 1988):

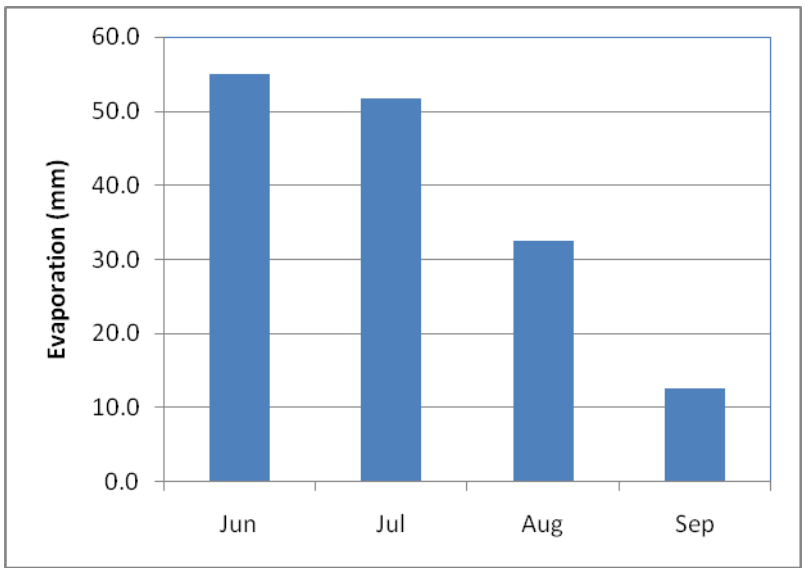
$$E_r = \frac{R_n}{l_v \rho_w} \qquad (6)$$

Where R_n is net radiation (in watts per square metre, W/m^2), l_v is latent heat of vaporization (J/kg), and ρ_w is the density of water (kg/m^3). The latent heat of vaporization may be determined from temperature (°C), as follows (Raudkivi 1979):

$$l_v = 2.501x10^6 - 2371T \qquad (7)$$

Mean total evaporation for June to September, 1966-2003, was estimated to be 152 mm for Baker Lake (Figure 5.1-3). Maximum evaporation was estimated to occur in June.

Figure 5.1-3 Estimated Historical Mean Monthly Evaporation for Baker Lake (1966 to 2003)



Historical estimates of evapotranspiration for Baker Lake and other Nunavut locations have ranged from less than 100 mm to 360 mm (Table 5.1-14). Mean annual estimates for evaporation rates for Baker Lake and other regional locations are in the range of 150 mm to 232 mm.

Table 5.1-14 Historical Estimates of Actual and Potential Evapotranspiration and Evaporation for Nunavut Locations

Method	Location	Source	Evapotranspiration (mm)		Evaporation (mm)
			1983	1988	Mean Annual
Bowen Ratio and Priestley-Taylor	Kiggavik	Roulet and Woo 1986	223	--	--
Blaney-Criddle[(a)]	Baker Lake, NU	Beak 1989b	137	290	--
Thornthwaite[(a)]	Baker Lake, NU	Beak 1989b	205	360	--
Penman and Priestley-Taylor	Nanisivik, NU[(b)]	Reid 2001	--	--	189
Pan Evaporation	Baker Lake, NU	Prowse and Ommanney 1990	<100	--	150
Pan Evaporation	Doris North, NU[(c)]	Golder 2006	--	--	220
Pan Evaporation	Meadowbank, NU	Cumberland Resources Ltd. 2003	--	--	232

NOTES:
[(a)] Potential Evapotranspiration
[(b)] Located on Baffin Island, approximately 400 km southeast of Resolute Bay
[(c)] Located 685 km Northeast of Yellowknife and 160 km southwest of Cambridge Bay, based on 1997 data
mm = millimetres; < = less than; -- = no data

5.1.7 Radiation

Radiation is defined by Chow et al. (1988) as the direct transfer of energy by means of electromagnetic waves. Solar radiation is radiation emitted by the sun, whereas net radiation is the difference between solar radiation and terrestrial radiation (radiation from the earth and atmosphere). Net radiation had previously been collected for Baker Lake until 2003. Mean monthly net radiation for the years 1969 to 2003 are presented in Table 5.1-15 (EC 2009b and EC 2009c). In addition, the maximum and minimum monthly net radiation values (based on the hourly archive data) are included in Table 5.1-15. Extreme net radiation values are the extreme maximum total net radiation values recorded over a 24 hour period, determined for each month.

Table 5.1-15 Mean, Maximum and Minimum Daily Net Radiation at Baker Lake, 1969 to 2003

Month	Maximum Net Radiation (W/m^2)	Mean Net Radiation (W/m^2)	Minimum Net Radiation (W/m^2)	Extreme Net Radiation Daily (MJ/m^2)
January	44.6	-79.0	-223.9	1.1
February	52.7	-83.9	-215.8	1.2
March	88.3	-66.1	-197.3	2.1
April	219.2	-15.3	-169.5	5.2
May	810.0	158.0	-115.5	15.9
June	887.1	455.9	22.8	16.8
July	785.7	443.1	48.2	15.8
August	553.7	270.5	-15.8	11.1
September	327.1	109.1	-100.2	6.9
October	125.4	-36.3	-257.0	3.0
November	46.3	-79.7	-261.8	0.6
December	35.8	-74.5	-227.5	0.8

NOTE:
W/m^2 = watts per square metre; MJ/m^2 = megajoules per square metre

5.1.8 Project Climate Design Parameters

Climate data are considered in the design of buildings, building heating and cooling systems, and other site infrastructure. The design low air temperature of -45°C with an exceedence probability of 2.5% occurs in January (NRC 2005). The design high dry-bulb temperature of 21°C with an exceedence probability of 2.5% occurs in July (NRC 2005). Heating degree days below 18°C (i.e., the sum of the difference from 18°C of the mean daily air temperature in a year) from were estimated to be 11,000 for Baker Lake (NRC 2005). The design snow load was 2.9 kPa for a building roof in Baker Lake, corresponding to an exceedence probability of 50% (NRC 2005). Design hourly wind pressures for Baker Lake were 0.54 kPa with a one in 50 exceedence probability in any given year, and corresponded to a wind speed of 104 km/h (NRC 2005). In comparison, the maximum recorded wind speed in a gust at Baker Lake was 177 km/h on June 6, 1970 (EC 2009b).

Extreme rainfall statistics for Baker Lake are provided in Table 5.1-3; additional rainfall design statistics for use in building design and infrastructure sizing (e.g., water retention ponds) are provided by NRC (2005). The annual maximum 15 minute design rainfall intensity with a one in ten year probability of exceedence was 3 mm for Baker Lake, the one day design rainfall with a one in 50 year probability of exceedence was 55 mm, and the average annual rainfall was 160 mm (NRC 2005).

5.2 Local Climate Data

5.2.1 Precipitation

5.2.1.1 Rainfall

Rainfall amounts monitored in 2009 and 2010 at the Project climate station are presented in Table 5.2-1. Daily rainfall data observed at the Project climate station in 2009 and 2010 are provided in Attachment VIII. The total rainfall measured at Kiggavik from May 7 to December 31, 2009 was 127.4 mm. The total rainfall measured at Kiggavik from January 1 to August 24, 2010 was 90.8 mm.

Table 5.2-1 Kiggavik Monthly Rainfall, May 2009 - August 2010

Year	Month	Unadjusted Rainfall (mm)
2009	May [(a)]	0
	June	14.4
	July	23.6
	August	78.8
	September[(b)]	6.2
	October	4.4
	November	0
	December	0
2010	January	0
	February	0
	March	0
	April	1.4
	May	0.4
	June	23.4
	July	56
	August[(c)]	9.6

Table 5.2-1 Kiggavik Monthly Rainfall, May 2009 - August 2010

Year	Month	Unadjusted Rainfall (mm)
NOTES: [a] May data was collected from May 7 to May 31, 2009 [b] September data is limited to September 1, 2009 [c] August 2010 data was collected from August 1 to August 24, 2010 mm = millimetres		

5.2.1.2 Snow

Snow course surveys were conducted during the late winters of 1982 and 1983 near the Kiggavik site (Roulet and Woo 1986). Mean SWE estimated from the snow course surveys was 142 mm in 1982 and 134 mm in 1983. An additional 12 mm of SWE fell after the survey was completed in 1983 (Roulet and Woo 1986).

5.2.1.3 Total Precipitation

Precipitation has been measured during a few seasons at Kiggavik. Rainfall amounts and rates were most recently monitored in 2009 and 2010 at the Project climate station using a tipping bucket rain gauge. Snowfall data have not been collected on site, therefore annual estimates for total precipitation have not been made.

5.2.2 Air Temperature

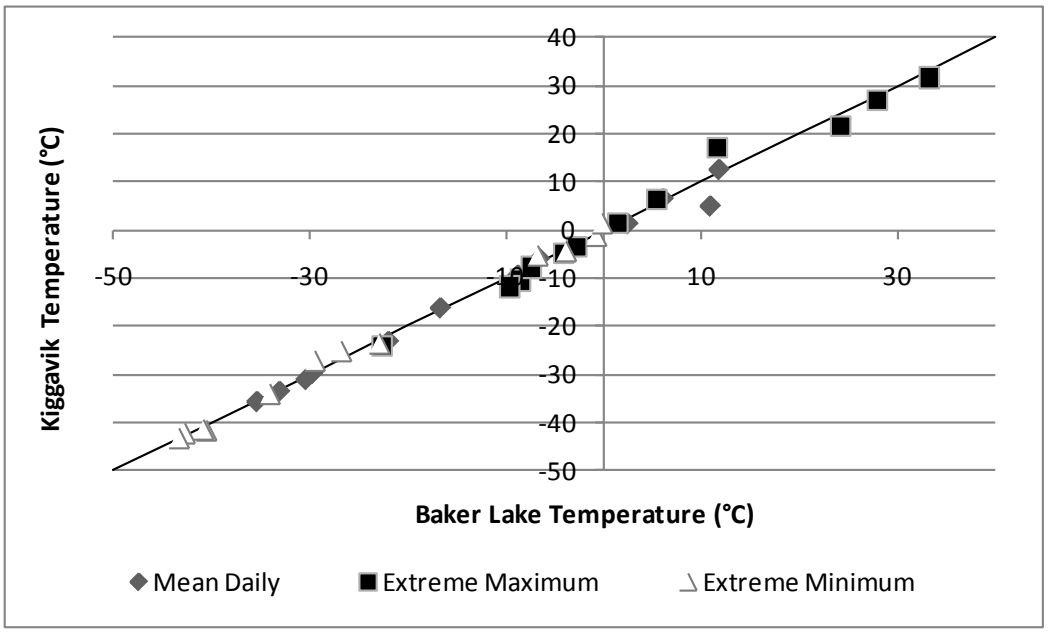
Air temperature data were collected at Kiggavik from September 1990 to August 1991. Monthly air temperature statistics for Kiggavik for the years 1990 and 1991 are provided in Table 5.2-2 (SENES 1992). Extreme temperatures ranged between -43.2°C in March 1991 and 31.7°C in July 1991. Mean daily temperatures ranged between -35.8°C (January 1991) and 12.5°C (July 1991).

Table 5.2-2 Temperature Record for Kiggavik, September 1990 to August 1991

1990	1991	Extreme Maximum °C	Extreme Minimum °C	Mean Daily °C
n/a	January	-24.2	-42.2	-35.8
n/a	February	-4.8	-41.6	-31.2
n/a	March	-10.5	-43.2	-29.9
n/a	April	-3.5	-27.1	-16.3
n/a	May	6.2	-23.5	-6.1
n/a	June	21.7	-4.3	6.4
n/a	July	31.7	-1.1	12.5
n/a	August	27.0	1.5	4.9
September	n/a	17.0	-5.2	1.2
October	n/a	1.3	-25.1	-9.5
November	n/a	-7.7	-34.0	-23.3
December	n/a	-11.8	-41.4	-33.7
NOTE: n/a = not available				

The mean and extreme daily temperatures for Baker Lake are plotted versus Kiggavik temperatures in Figure 5.2-1. During this time, the Kiggavik and Baker Lake temperatures were similar for both mean monthly and monthly extremes. Kiggavik temperatures were slightly lower than those observed at Baker Lake.

Figure 5.2-1 Kiggavik and Baker Lake Monthly Mean and Extreme Air Temperatures, September 1990 to August 1991



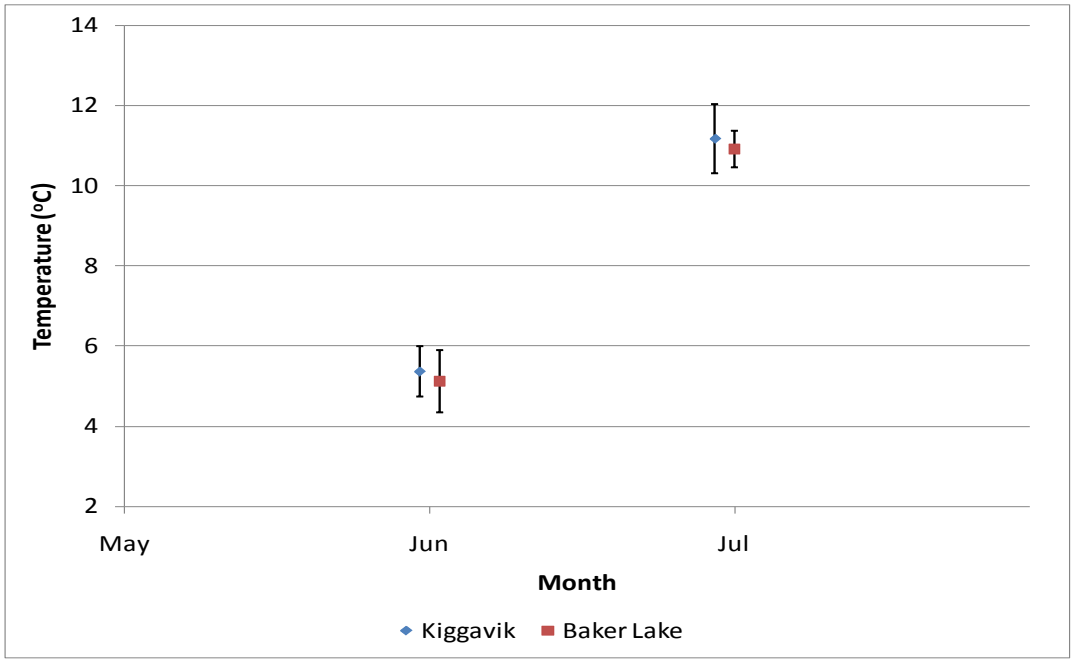
There are limited periods of coincident data available at Kiggavik that could be used to provide a statistical comparison between Kiggavik and Baker Lake. In a paper by Smith (2009, internet site), hypothesis testing with confidence intervals is proposed as a method to compare means. In this method, if the mean data presented are located within the selected confidence interval for the data that are being compared, the hypothesis that the mean data are the same is not rejected (within the given confidence interval). Mean daily temperatures and summary statistics at Kiggavik for the months of June and July are presented in Table 5.2-3.

Figure 5.2-2 presents the concurrent data summarized for Baker Lake. For the data presented, the mean temperatures at Kiggavik and Baker Lake fall within the 95% confidence interval. As more data are collected on site, the number of mean monthly estimates will increase and the comparison could be made for additional months of the year.

Table 5.2-3 Mean Monthly Temperature (ºC) and Summary Statistical Data for Kiggavik

Month	1982	1983	1991	2009	2010	Mean	Standard Deviation	95% Confidence
June	3.9	6.5	6.4	4.7	4.4	5.2	1.1	0.9
July	12	8.6	12.5	11.6	12.9	11.5	1.5	1.3

Figure 5.2-2 Mean Monthly Temperatures and 95% Confidence Intervals for Kiggavik and Baker Lake (1982, 1983, 1991, and 2009)



Air temperature statistics for Kiggavik in 2009 and 2010 are provided in Table 5.2-4 and Table 5.2-5 respectively. Over the measurement period, mean temperatures ranged between -25.2°C in January and 12.9°C in July. Daily extremes ranged between -33.9°C in January and 23.8°C in July.

Table 5.2-4 Daily Air Temperature Statistics for Kiggavik, May to August 2009

Month	Warmest and Coldest Day in the Month				Mean Monthly °C
	Extremes		Means		
	Maximum °C	Minimum °C	Maximum °C	Minimum °C	
May[a]	-0.9	-18.9	-7.4	-12.0	-9.6
June	20.8	-6.6	8.4	0.2	4.6
July	22.4	1.3	16.3	6.6	11.7
August	22.3	0.3	14.2	5.5	9.8
September[b]	11.5	3.7	-	-	-
October	2.3	-23.9	-6.0	-9.7	-7.8
November	-5.2	-24.2	-12.9	-18.8	-15.8
December	-8.1	-34.6	-20.7	-25.8	-23.4

NOTES:
[a] May data was the mean for the May 7 to May 31, 2009
[b] September data is limited to September 1, 2009

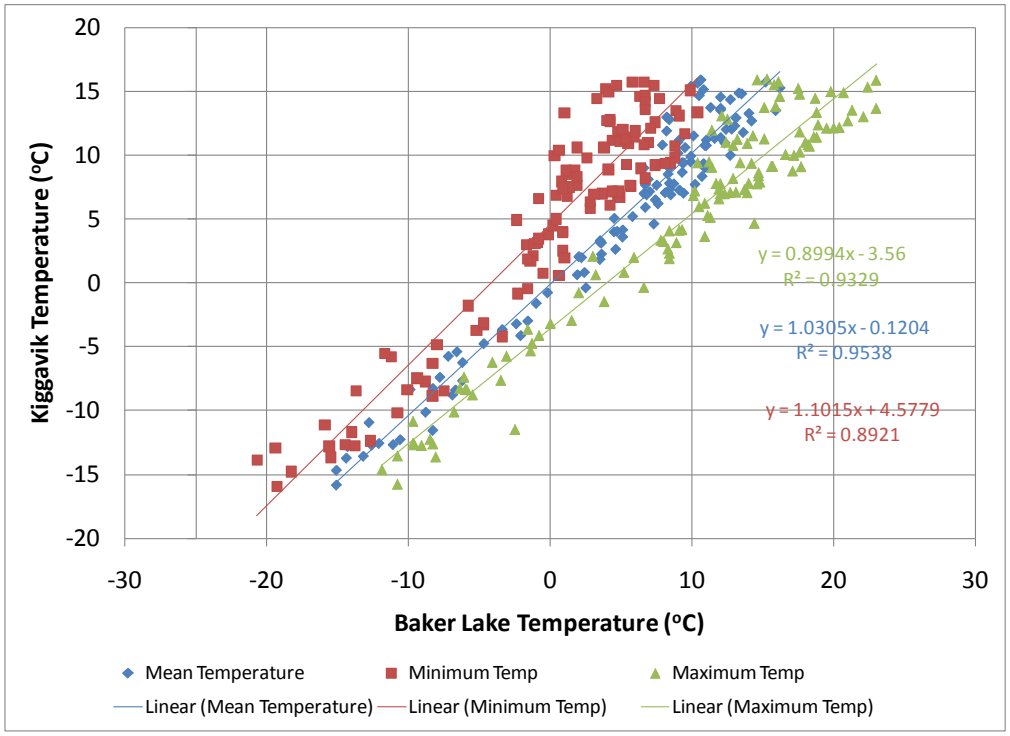
Table 5.2-5 Daily Air Temperature Statistics for Kiggavik, January to August, 2010

Month	Warmest and Coldest Day in the Month				Mean Monthly °C
	Extremes		Means		
	Maximum °C	Minimum °C	Maximum °C	Minimum °C	
January	-8.3	-33.9	-22.0	-28.1	-25.2
February	-11.8	-39.1	-22.7	-27.6	-25.1
March	-5.8	-31.9	-15.4	-21.1	-18.2
April	0.6	-19.4	-5.5	-10.6	-7.9
May	-1.2	-17.1	-5.7	-10.1	-7.7
June	18.7	-5.4	7.5	0.8	4.4
July	23.8	2.7	17.2	8.2	12.9
August[a]	21.8	1.6	14.6	6.3	10.4

NOTE:
[a] August 2010 data is the mean for August 1 to August 24, 2010

In 2009, mean daily air temperatures were approximately 1°C lower at Kiggavik than recorded at Baker Lake, although daily maximum (minimum) were not as high (low) as those at Baker Lake (Figure 5.2-3). The plot of temperatures at Kiggavik and Baker Lake are presented in Figure 5.2-3. Their relationship is used in subsequent evaporation analysis. Daily air temperature data observed at the Project climate station in 2009 are provided in Attachment VIII.

Figure 5.2-3 Kiggavik versus Baker Lake Mean, Minimum and Maximum Daily Air Temperatures, May to August 2009



5.2.3 Wind

5.2.3.1 Wind Speed

Comparison of the Kiggavik climate data to the data from Baker Lake indicates the following for the period 1990 to 1991 (SENES 1992):

- Mean annual wind speeds at Kiggavik were 10% higher than at Baker Lake;
- Mean seasonal wind speeds were 14% higher at Baker Lake than Kiggavik for December to February, but 58% higher at Kiggavik than Baker Lake during June to August; and
- Mean annual percent frequency of the most frequent wind directions (N, NNW, NW) were similar at the two sites; however, Kiggavik experienced more winds in the easterly direction, compared with the ESE direction at Baker Lake.

Wind speed statistics for all wind directions recorded at Kiggavik from September 1990 to August 1991 are provided in Table 5.2-6. Wind speed and direction statistics for the Project climate station from May 2009 to August 2010, provided in Table 5.2-7. Daily wind speed data observed at the Project climate station in 2009 and 2010 are provided in Attachment VIII.

Table 5.2-6 Wind Speed for Various Wind Directions at Kiggavik, September 1990 to August 1991

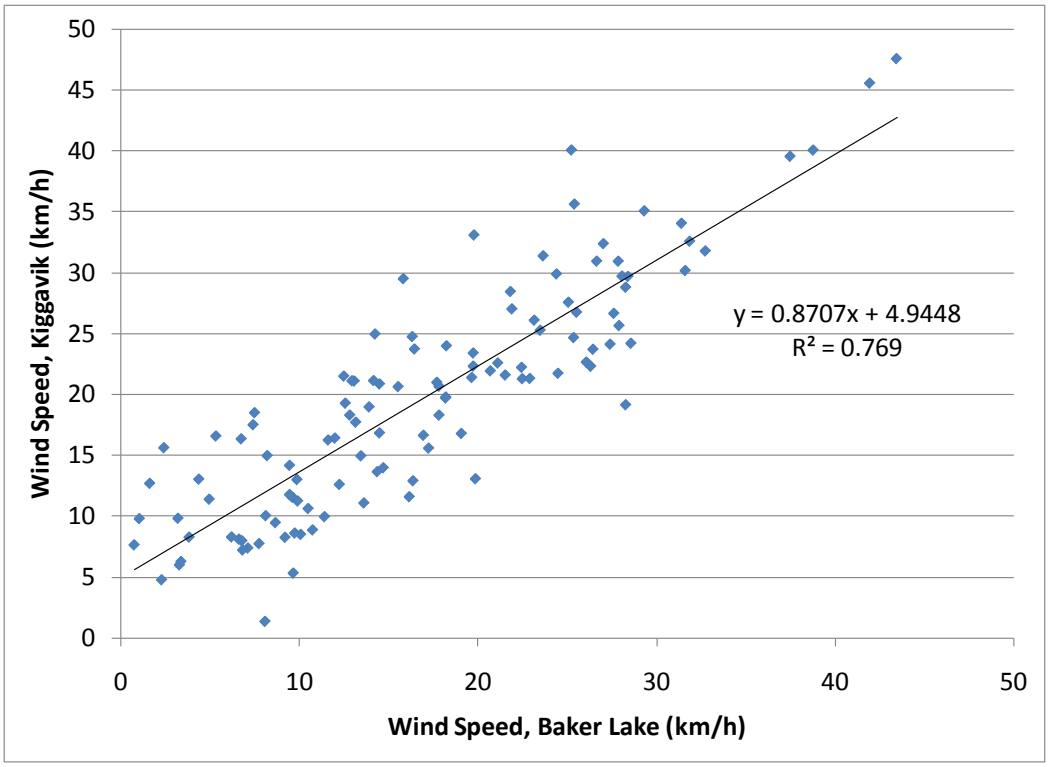
Direction	Annual (km/h[m/s])	Sep-Nov (km/h[m/s])	Dec-Feb (km/h[m/s])	Mar-May (km/h[m/s])	Jun-Aug (km/h[m/s])
N	28.8(8.0)	39.2(10.9)	30.6(8.5)	24.1(6.7)	22.3(6.2)
NNE	21.2(5.9)	31.6(8.8)	17.6(4.9)	15.4(4.3)	20.1(5.6)
NE	17.6(4.9)	27.7(7.7)	7.56(2.1)	18.3(5.1)	17.2(4.8)
ENE	14.7(4.1)	16.5(4.6)	11.8(3.3)	16.5(4.6)	13.3(3.7)
E	16.9(4.7)	15.8(4.4)	16.9(4.7)	18.7(5.2)	16.5(4.6)
ESE	16.9(4.7)	15.8(4.4)	17.6(4.9)	16.2(4.5)	17.6(4.9)
SE	19.4(5.4)	21.2(5.9)	20.1(5.6)	16.5(4.6)	19.8(5.5)
SSE	20.5(5.7)	17.2(4.8)	33.1(9.2)	16.5(4.6)	14.7(4.1)
S	19.8(5.5)	14.7(4.1)	36(10.0)	11.5(3.2)	17.6(4.9)
SSW	12.2(3.4)	15.4(4.3)	11.8(3.3)	7.92(2.2)	14.4(4.0)
SW	12.6(3.5)	16.9(4.7)	10.8(3)	8.28(2.3)	14.7(4.1)
WSW	12.9(3.6)	12.9(3.6)	13.6(3.8)	9.36(2.6)	15.4(4.3)
W	14.7(4.1)	14.4(4.0)	18(5.0)	9.36(2.6)	17.2(4.8)
WNW	20.1(5.6)	19.8(5.5)	24.1(6.7)	18.3(5.1)	17.6(4.9)
NW	24.4(6.8)	24.1(6.7)	30.2(8.4)	22.6(6.3)	20.5(5.7)
NNW	28.8(8.0)	28.4(7.9)	36.7(10.)	27.7(7.7)	22.3(6.2)
Mean	19.8(5.5)	20.8(5.8)	21.2(5.9)	16.2(4.5)	17.6(4.9)
NOTE: km/h = kilometers per hour; m/s = metres per second					
Source: SENES (1992).					

Table 5.2-7 Wind Speed Record for Kiggavik May 2009 - August 2010

Wind Direction	0-10 km/h (0 - 2.8 m/s)	10-20 km/h (2.8 - 5.6 m/s)	20-30 km/h (5.6 - 8.3 m/s)	30-40 km/h (8.3 - 11.1 m/s)	40-50 km/h (11.1 - 13.9 m/s)	>50 km/h (>13.9 m/s)	Sub-Total
N	1.14%	2.91%	3.87%	4.46%	2.62%	1.56%	16.56%
NNE	0.71%	1.44%	2.46%	1.34%	0.92%	0.42%	7.30%
NE	0.86%	0.93%	0.85%	0.31%	0.07%	0.04%	3.05%
ENE	1.48%	1.14%	0.45%	0.30%	0.04%	0.02%	3.42%
E	1.66%	1.61%	1.41%	0.40%	0.10%	0.12%	5.30%
ESE	2.03%	1.38%	1.49%	0.64%	0.14%	0.31%	6.00%
SE	1.34%	1.07%	0.98%	0.63%	0.09%	0.02%	4.12%
SSE	1.37%	1.69%	1.75%	0.60%	0.07%	0.00%	5.47%
S	1.06%	2.28%	3.65%	2.82%	1.04%	0.17%	11.03%
SSW	1.69%	1.07%	0.99%	0.36%	0.05%	0.00%	4.17%
SW	1.40%	0.72%	0.71%	0.08%	0.03%	0.00%	2.95%
WSW	1.06%	0.65%	0.42%	0.08%	0.01%	0.00%	2.22%
W	1.23%	1.35%	1.01%	0.52%	0.37%	0.04%	4.51%
WNW	1.35%	1.82%	1.82%	0.61%	0.29%	0.16%	6.05%
NW	1.20%	1.54%	2.13%	1.12%	0.44%	0.18%	6.61%
NNW	0.94%	2.20%	3.16%	2.09%	1.15%	0.55%	10.09%
Missing	1.14%	0.00%	0.00%	0.00%	0.00%	0.00%	1.14%
Sub-Total	21.66%	23.80%	27.16%	16.37%	7.42%	3.60%	-

Kiggavik mean daily wind speeds and Baker Lake mean daily wind speeds in 2009 are plotted against one another in Figure 5.2-4. In general, measured wind speeds were higher at the Kiggavik station. Wind speed data at Baker Lake are measured at the standard height of 10 m. The mean wind speed at Kiggavik over the period of May 7 to August 31 was 19.8 km/h, compared to 17.0 km/h at Baker Lake. Mean wind speeds over the measurement period were therefore approximately 16% higher at Kiggavik than at Baker Lake. The relationship between the two data sets is used in subsequent evaporation analysis.

Figure 5.2-4 Kiggavik versus Baker Lake Wind Speed, May to August 2009



5.2.3.2 Wind Direction

Wind direction frequency statistics for the Kiggavik climate station from September 1990 to August 1991 are provided in Table 5.2-8. Over this measurement period winds were mainly from the northwest. Seasonally, the winds ranged from being predominantly from the northwest (December to February), from the north northwest (March to May), and from the north (June to November).

Wind direction frequency statistics for the Project climate station from May to December 2009 and 2010 are provided in Table 5.2-9 and Table 5.2-10 respectively. Daily wind direction data observed at the Project climate station in 2009 and 2010 are provided in Attachment VIII. Concurrent wind roses for Kiggavik and Baker Lake in 2009 are provided in Figure 5.2-5. Over the 2009 measurement period, winds were mainly from the north at both Kiggavik and Baker Lake. There was a higher prevalence, however, of winds from the north at Baker Lake. There was also a slightly higher prevalence for winds out of the south at Kiggavik relative to Baker Lake (Figure 5.2-6).

Table 5.2-8 Wind Direction Frequency Record for Kiggavik, September 1990 to August 1991

Direction	Annual (%)	Sep-Nov (%)	Dec-Feb (%)	Mar-May (%)	Jun-Aug (%)
N	10.2	13.9	6.1	10.4	10.3
NNE	5.6	10.2	0.9	5.6	5.8
NE	4.1	6.3	2.4	3.8	3.8
ENE	3.8	3.1	3.1	4.6	4.5
E	6.3	6.5	3.8	7.3	7.7
ESE	4.7	5.0	2.4	6.7	4.8
SE	4.4	5.7	2.9	4.4	4.4
SSE	3.7	5.1	0.8	3.9	4.8
S	4.3	3.9	0.7	3.5	9.3
SSW	2.8	3.4	0.5	3.5	3.9
SW	3.6	4.5	0.7	5.2	4.0
WSW	3.8	3.6	2.3	4.8	4.5
W	5.5	4.2	5.1	5.1	7.7
WNW	9.7	5.1	18.5	8.3	7.1
NW	14.9	11.4	29.9	10.2	8.2
NNW	12.2	8.0	19.7	12.0	9.3
Calm	0.3	0.1	0.2	0.8	0.0

Source: SENES (1992)
% = percent

Table 5.2-9 Wind Frequency Record for Kiggavik, May 2009 to December 2009

Wind Direction	May	June	July	August	September	October	November	December
N	18.9%	11.7%	17.5%	17.2%	0.0%	16.4%	1.5%	17.0%
NNE	7.3%	14.6%	4.6%	6.2%	0.0%	13.5%	5.2%	2.1%
NE	2.5%	3.8%	2.2%	2.9%	0.0%	7.3%	4.2%	0.3%
ENE	0.7%	1.3%	4.1%	2.9%	0.0%	9.7%	14.8%	2.3%
E	0.5%	4.0%	5.2%	1.9%	0.0%	5.3%	14.8%	2.6%
ESE	0.9%	3.5%	7.0%	2.6%	0.0%	3.5%	9.4%	2.1%
SE	2.6%	3.9%	7.1%	3.2%	0.0%	3.8%	1.2%	0.6%
SSE	3.5%	5.1%	6.2%	4.1%	0.0%	2.9%	0.9%	1.5%
S	3.3%	6.6%	6.8%	6.2%	0.0%	0.9%	1.2%	0.0%
SSW	1.9%	6.9%	5.8%	5.2%	0.0%	0.9%	0.3%	1.8%
SW	2.3%	5.7%	2.7%	5.5%	0.0%	0.0%	0.9%	0.0%
WSW	2.1%	3.8%	1.3%	4.3%	0.0%	4.7%	1.2%	0.3%
W	3.1%	5.1%	1.5%	6.8%	0.0%	6.2%	7.6%	2.3%
WNW	9.0%	7.1%	3.0%	6.0%	39.7%	9.1%	9.1%	5.3%
NW	21.6%	7.6%	8.2%	7.6%	54.8%	7.0%	9.1%	15.0%
NNW	18.6%	8.4%	16.2%	16.2%	5.5%	8.8%	4.2%	22.0%
Missing	1.1%	0.9%	0.8%	1.3%	0.0%	0.0%	14.2%	24.9%

(a) Data collection began on May 7

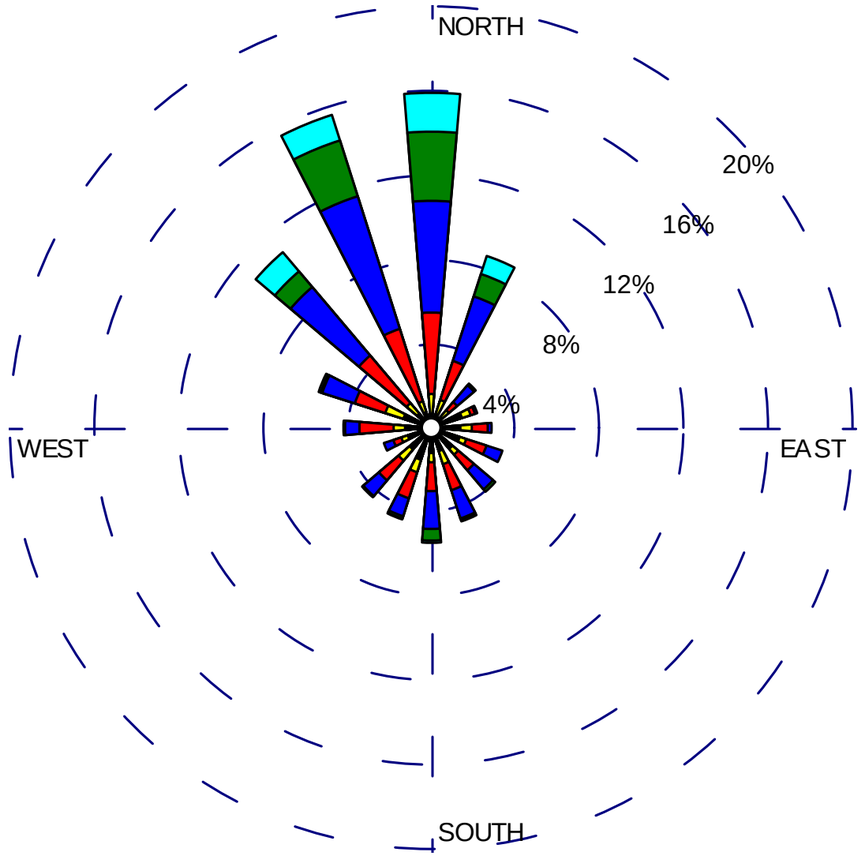
% = percent

Table 5.2-10 Average Monthly Wind Direction Frequency Record for Kiggavik January - August 2010

Wind Direction	January	February	March	April	May	June	July	August
N	12.0%	38.3%	5.6%	12.4%	10.3%	13.8%	13.6%	27.8%
NNE	1.5%	0.3%	2.6%	9.4%	6.7%	2.2%	9.2%	8.4%
NE	13.5%	0.6%	2.1%	3.6%	6.2%	1.4%	5.7%	1.0%
ENE	5.6%	5.2%	5.9%	10.3%	4.7%	3.7%	6.3%	1.8%
E	2.3%	3.6%	7.6%	10.3%	3.8%	6.7%	15.0%	1.6%
ESE	1.2%	1.3%	10.9%	7.3%	6.2%	6.9%	14.2%	6.7%
SE	0.0%	1.0%	4.7%	3.6%	2.3%	5.8%	4.8%	2.2%
SSE	2.6%	2.6%	1.2%	1.2%	0.9%	7.0%	7.2%	8.1%
S	2.9%	1.9%	0.3%	5.8%	4.7%	7.9%	4.9%	8.1%
SSW	3.8%	3.9%	0.9%	6.1%	2.6%	5.5%	1.7%	2.7%
SW	2.1%	2.3%	4.4%	6.1%	2.1%	2.7%	1.0%	0.5%
WSW	3.2%	2.6%	2.6%	1.8%	2.6%	1.5%	0.9%	1.2%
W	3.5%	1.6%	8.8%	6.4%	12.6%	8.1%	2.2%	3.9%
WNW	9.4%	4.9%	17.0%	3.3%	9.1%	6.7%	2.0%	7.6%
NW	21.7%	16.6%	14.1%	7.6%	11.1%	8.9%	3.9%	9.7%
NNW	14.7%	12.7%	11.1%	4.8%	12.9%	10.9%	6.6%	8.5%
Missing	0.0%	0.6%	0.3%	0.0%	1.2%	0.4%	0.7%	0.1%

Table 5.2-11 Average Monthly Wind Direction Frequency Record for Kiggavik May - August Based on 2009 and 2010 Data

Wind Direction	May	June	July	August
N	18.2%	12.7%	15.6%	21.7%
NNE	7.2%	8.7%	6.9%	7.1%
NE	2.8%	2.7%	3.9%	2.1%
ENE	1.0%	2.5%	5.2%	2.4%
E	0.8%	5.3%	10.1%	1.8%
ESE	1.4%	5.1%	10.6%	4.4%
SE	2.6%	4.8%	5.9%	2.8%
SSE	3.2%	6.0%	6.7%	5.8%
S	3.5%	7.2%	5.8%	7.0%
SSW	2.0%	6.2%	3.8%	4.1%
SW	2.3%	4.3%	1.9%	3.3%
WSW	2.1%	2.7%	1.1%	3.0%
W	3.9%	6.5%	1.8%	5.6%
WNW	9.0%	6.9%	2.5%	6.7%
NW	20.7%	8.2%	6.0%	8.5%
NNW	18.1%	9.6%	11.4%	12.9%
Missing	1.1%	0.6%	0.7%	0.8%

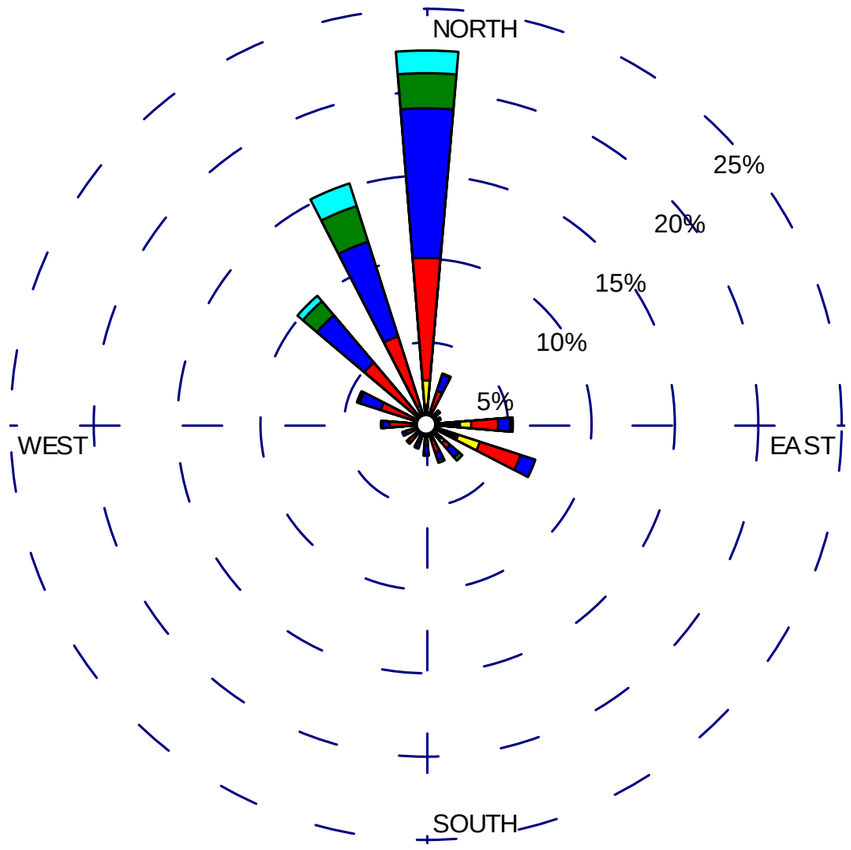


Kiggavik
May - Aug 2009

WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 2.05%



Baker Lake
May - Aug 2009

WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 15.21%

Projection: NAD 1983 UTM Zone 14N
Creator: MGD
Date: 11/25/2009
File: KI08B003
Data Sources: *Environment Canada*

FIGURE 5.2-5
WIND ROSES FOR KIGGAVIK AND BAKER LAKE, MAY - AUGUST 2009

KIGGAVIK PROJECT - EIS

Golder Associates
AREVA
AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5

5.2.4 Relative Humidity

Relative humidity was measured at the Project climate station in 2009 and 2010, and statistical results are provided in Table 5.2-12. Mean relative humidity ranged between 40.9% and 91.8% over the measurement period in 2009 and 2010. Daily relative humidity data observed at the Project climate station in 2009 are provided in Attachment VIII.

Table 5.2-12 Kiggavik Relative Humidity, May 2009 to August 2010

Year	Month	Average	Maximum	Minimum
2009	May	87.4%	92.8%	76.8%
	June	80.4%	92.9%	52.1%
	July	71.7%	93.4%	44.6%
	August	79.4%	97.7%	64.2%
	September	89.7%	89.7%	89.7%
	October	91.8%	97.9%	86.6%
	November	88.9%	94.0%	83.6%
	December	84.4%	89.9%	77.7%
2010	January	78.9%	82.3%	76.5%
	February	79.1%	82.4%	75.0%
	March	82.1%	86.0%	78.5%
	April	85.0%	86.9%	83.3%
	May	80.4%	84.5%	59.3%
	June	40.9%	52.0%	35.6%
	July	45.9%	53.5%	38.1%
	August	42.9%	51.4%	35.1%

(a) May data was the mean for the May 7 to May 31, 2009

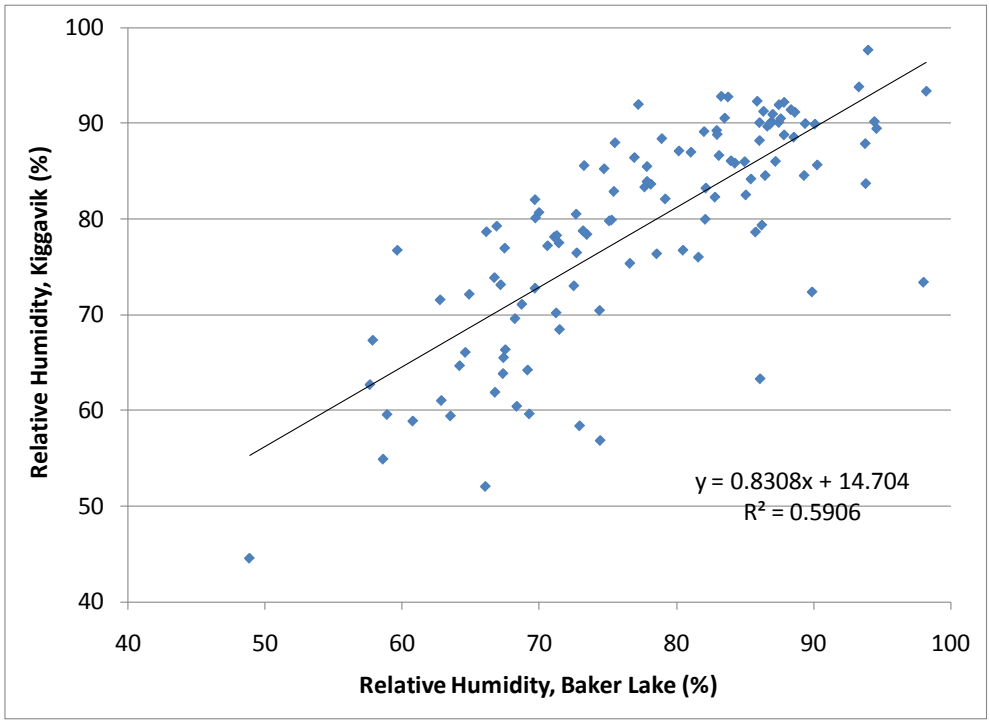
(b) September data is limited to September 1, 2009

(c) August 2010 data is the mean for August 1 to August 24, 2010

% = percent

Daily relative humidity values at Kiggavik and Baker Lake for 2009 are plotted in Figure 5.2-6. Relative humidity data for the two sites were generally similar in magnitude. The relationship derived through regression as presented in Figure 5.2-6 is used subsequently in the assessment of lake evaporation.

Figure 5.2-6 Kiggavik versus Baker Lake Relative Humidity, May to August 2009



5.2.5 Atmospheric Pressure

Barometric pressure statistics measured at the Project climate station in 2009 and 2010 are provided in Table 5.2-13. The mean atmospheric pressure ranged between 100.5 and 101.8 kPa during the measurement period. Daily barometric pressure data observed at the Project climate station in 2009 and 2010 are provided in Attachment VIII.

Daily barometric pressure datasets for Kiggavik and Baker Lake in 2009 are plotted in Figure 5.2-7. As would be expected from its higher elevation above sea level, Kiggavik atmospheric pressure is consistently lower than that measured at Baker Lake.

Table 5.2-13 Mean, maximum and minimum atmospheric pressure, May 2009-August 2010 (kPa)

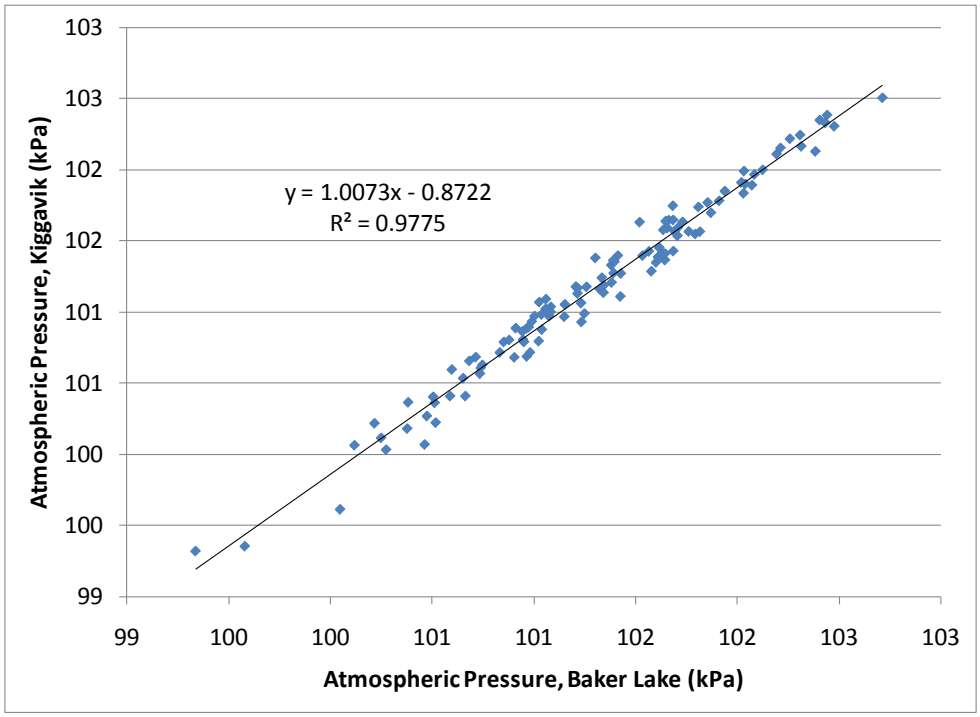
Year	Month	Mean	Maximum	Minimum
2009	May[a]	101.5	102.2	100.9
	June	101.2	102.4	100.0
	July	101.2	102.5	100.4
	August	100.8	102.0	99.3
	September[b]	98.8	98.8	98.8
	October	101.5	102.8	99.9
	November	100.6	102.5	99.0
	December	101.3	102.8	99.6
2010	January	101.5	103.9	99.2
	February	101.8	103.4	100.6
	March	100.7	101.8	99.2
	April	101.5	103.3	99.7
	May	101.8	102.5	100.8
	June	101.0	102.1	100.0
	July	100.5	101.1	99.7
	August[c]	100.6	101.4	99.7

[a] May data was the mean for the May 7 to May 31, 2009

[b] September data is limited to September 1, 2009

[c] August 2010 data is the mean for August 1 to August 24, 2010

Figure 5.2-7 Kiggavik versus Baker Lake Atmospheric pressure, May to August 2009



5.2.6 Evaporation and Evapotranspiration

Lake evaporation was calculated using a revised Meyer formulation proposed by the Prairie Farm Rehabilitation Administration (Martin 2002). These estimates used available data for the Project climate stations and could be applied to waterbodies near the Project. The formulation is dependent on an estimation of the temperature at the surface of the waterbody and appears as follows.

$$EG = C \cdot K \cdot (V_w - V_a) \cdot \left[1 + 6.2139 \cdot (10^{-2}) \cdot W\right] \cdot \left[1 + 3.28084 \cdot (10^{-5}) \cdot A\right] \quad (8)$$

where: *EG* – monthly gross lake evaporation (mm);
C – coefficient dependent on the number of observations of relative humidity or vapour pressure in one 24-hour period;
K – metric conversion factor of 0.750062;
V_w – mean monthly saturated vapour pressure corresponding to the temperature of the water at the surface of the waterbody (millibars);
V_a – mean monthly actual vapour pressure of the atmosphere (millibars);
W – mean monthly wind speed (km/h); and
A – elevation (masl).

The weather data collected in 2009 were used directly in the formula for that year. In 2007 and 2008, the relationships developed between the Kiggavik and Baker Lake data sets as presented in Section 5.1 were used, as follows:

$$T_K = 1.0305T_{BL} - 0.1204 \quad (9)$$

$$W_K = 0.8707W_{BL} + 4.9448 \quad (10)$$

$$RH_K = 0.8308RH_{BL} + 14.704 \quad (11)$$

Where T_k and T_{BL} are temperatures (°C), W_k and W_{BL} are wind speeds (km/h) and RH_k and RH_{BL} are relative humidities (%) of Kiggavik and Baker Lake, respectively. Water temperatures were estimated using the mean monthly stream temperature data that had been collected during the hydrometric program at Kiggavik during the open water period in the years 2007 to 2009. Monthly lake evaporation results for Kiggavik are provided in Table 5.2-14.

Table 5.2-14 Monthly Lake Evaporation Estimates for Kiggavik, 2007 to 2009

Year	June	July	August	September	Total
2007	37.0 mm	62.5 mm	40.3 mm	39.0 mm	178.8 mm
2008	17.4 mm	28.7 mm	45.8 mm	--	91.9 mm
2009	36.9 mm	58.1 mm	55.2 mm	--	150.2 mm
mm =- millimetres; -- = no data					

For the summers of 1982 and 1983, evapotranspiration from a wetland located near Kiggavik was estimated using a combination of the Bowen Ratio method and the Priestley-Taylor equations (Roulet and Woo 1986). Total evapotranspiration in 1982 was estimated to be 183 mm (i.e., 2.9 mm/day on average). Total evapotranspiration in 1983 was estimated to be 223 mm (i.e., 3.7 mm/day on average).

Water loss by evapotranspiration has previously been estimated for the Project area using Thornthwaite and Blaney-Criddle methods (Beak 1989b). The evapotranspiration results estimated by Beak (1989b) were slightly lower than those calculated by Roulet and Woo (1986) for the time periods that overlap (i.e., June and July 1983) (Table 5.1-14).

5.2.7 Radiation

Statistics for incoming diffuse and direct shortwave radiation measured at the Project climate station are provided in Table 5.2-15 and Table 5.2-16 for 2009 and 2010, respectively. The highest incident solar radiation occurred in May and June for both years. Daily solar radiation data observed at the Project climate station in 2009 are provided in Attachment VIII.

Table 5.2-15 Extreme Maximum, Maximum Daily Mean, and Mean Daily Incident Solar Radiation at the Project during 2009

Month	Extreme Maximum (W/m^2)	Maximum Daily Mean (W/m^2)	Mean Daily (W/m^2)
May[(a)]	923.0	348.0	267.0
June	1042.0	353.0	279.6
July	982.0	326.9	231.3
August	862.0	254.0	166.8
September[(b)]	343.0	61.9	61.9
October	230.0	59.7	41.4
November	153.0	29.3	11.0
December	33.0	4.5	2.8

Note: The extreme maximum radiation is for the ten-minute measurement time interval

(a) May data was the mean for the May 7 to May 31, 2009

(b) September data is limited to September 1, 2009

W/m^2 = watts per square metre

Table 5.2-16 Extreme Maximum, Maximum Daily Mean, and Mean Daily Incident Solar Radiation at the Project during 2010

Month	Extreme Maximum (W/m^2)	Maximum Daily Mean (W/m^2)	Mean Daily (W/m^2)
January	89.0	18.0	7.7
February	310.0	80.5	40.3
March	506.0	175.7	108.1
April	689.0	284.8	205.4
May	803.0	374.8	296.0
June	923.0	447.3	258.9
July	961.0	321.5	214.0
August[(a)]	978.0	274.5	180.8

Note: The extreme maximum radiation is for the ten-minute measurement time interval

(a) August 2010 data is the mean for August 1 to August 24, 2010

W/m^2 = watts per square metre

5.3 Probable Maximum Precipitation

The methods adopted for calculating PMP in this report uses maximum persisting dew-point temperatures and maximum daily precipitation values.

5.3.1 Maximum Persisting Dew-Point Temperatures

Maximum persisting dew-point for each day is defined as; the dew-point value that has been equalled or exceeded throughout the day. In order calculate PMP, 12 hours duration is used to determine the persisting dew point. The numbers for each day are numerically the same whether 12-hour or 24-hour periods are used. As an example, the dew-point temperature values for July 18, 2009 would be 4.2°C (Table 5.3-1).

Table 5.3-1 Maximum Persisting Dew-Point Temperature

Time	Hourly Dew-point	Persisting Dew-Point
7/18/2009 8:00	8.3	-
7/18/2009 9:00	9.8	-
7/18/2009 10:00	9.9	-
7/18/2009 11:00	9.4	-
7/18/2009 12:00	4.2	4.2
7/18/2009 13:00	7.5	-
7/18/2009 14:00	7.9	-
7/18/2009 15:00	5.9	-
7/18/2009 16:00	5.7	-
7/18/2009 17:00	5.4	-
7/18/2009 18:00	4.7	-

From the 12-hour persisting dew-point values, a monthly maximum persisting dew point temperatures was determined for every month from 1953 to 2009 (Attachment IX). A maximum persisting dew point temperature value for each month was calculated from the fifty three years of data (See Table 5.3-2).

Table 5.3-2 Maximum Monthly Persisting Dew-Point

Month	12-hour Persisting Dew-Point
January	-10
February	-10
March	-5.9
April	0.6
May	4.2
June	11
July	15
August	15
September	12.2
October	4.4
November	-0.3
December	-6.6

5.3.2 Maximum Daily Precipitation

From the daily precipitation data for the period from 1953 to 2009, the highest 24 hr precipitation event for each year is determined (Attachment X). From that list the ten highest daily precipitation values were selected (Table 5.3-3).

Table 5.3-3 Ten Highest Daily Precipitation Values

Year	Month	Day	Daily Precipitation (mm)
1975	7	30	52.1
1996	9	2	50.8
1994	7	22	48.6
1999	7	26	44.0
2001	8	25	37.3
2004	9	20	37.0
1985	8	26	36.7
1956	7	23	35.8
1968	9	4	35.3
2003	9	10	35.0

5.3.3 Probable Maximum Precipitation Estimates

Calculating the PMP involves the analysis of major storm events with significant precipitation. This analysis included reviewing daily precipitation data from various storm events throughout the fifty three years of data and then analysing each storm event. The objective of the storm analysis was to obtain “Storm Maximization” factor.

Storm maximization factor, assumes that rainfall can be determined from the product of available moisture in the atmosphere and the storm mechanism. Storm maximization factor was determined using the surface dew point temperature, in conjunction with an assumed saturated atmosphere column above surface level through to 30 kPa.

The maximum precipitable water possible during the month when a storm occurred is determined using Table A.1.1 in Annex 1 of WMO Manual (1986). Given the maximum persisting dew point temperature for each month, the actual “storm” precipitable water is established using the same table in WMO Manual given the actual dew point during the storm. The following equation formulates the storm maximization:

$$R_{max} = (W_{max}/W_{act}) \times R_{act}$$

The W_{max} represents the maximum precipitable water, while the W_{act} refers to the actual storm precipitable water. The R_{act} represents the actual precipitation amount, while the R_{max} is the maximized precipitation amount.

Table 5.3-4 shows the monthly maximum persisting dew-point for the month during the storm occurrences and the actual persisting dew-point on the day during the rain events. Since the dew point temperature data is hourly and the rain event is from daily data, the actual dew-point temperature is the day average of dew-point temperature during the rain event.

Table 5.3-4 Maximum and Actual Persisting Dew-Point

Year	Month	Day	Maximum Monthly Dew-Point (°C)*	Actual Daily Dew-Point (°C)
1975	7	30	15.0	8.70
1996	9	2	12.2	5.58
1994	7	22	15.0	12.84
1999	7	26	15.0	4.70
2001	8	25	15.0	5.00
2004	9	20	12.2	2.35

Table 5.3-4 Maximum and Actual Persisting Dew-Point

Year	Month	Day	Maximum Monthly Dew-Point (°C)*	Actual Daily Dew-Point (°C)
1985	8	26	15.0	1.38
1956	7	23	15.0	4.50
1968	9	4	12.2	6.78
2003	9	10	12.2	9.28
*note: maximum monthly dew-points (Table 5.3-2)				

Table 5.3-5 shows the ratio of maximum to actual precipitable water from land surface to 30kPa pressure level. Knowing the maximum and actual persisting dew-point from Table 5.3-4 and average terrain height of the Baker Lake area, the maximum and actual precipitable water values can be extracted from Table A.1.1 in Annex 1 of WMO Manual (1986). The average terrain height in the Baker Lake area is approximately 20 m therefore no surface pressure level adjustment is necessary. The highest ratio of maximum to actual precipitable water at 3.52 mm that occurred during August 26, 1985 storm is used to maximize the ten highest storms shown in Table 5.3-3.

Table 5.3-5 Ratio of Maximum to Actual Precipitable Water

Year	Month	Day	Wmax (mm)	Wact (mm)	Wmax/Wact
1975	7	30	33.00	18.70	1.76
1996	9	2	25.60	14.16	1.81
1994	7	22	33.00	27.52	1.20
1999	7	26	33.00	12.70	2.60
2001	8	25	33.00	13.00	2.54
2004	9	20	25.60	10.35	2.47
1985	8	26	33.00	9.38	**3.52**
1956	7	23	33.00	12.50	2.64
1968	9	4	25.60	15.78	1.62
2003	9	10	25.60	19.56	1.31
*Note: Derived from Table A1.1 WMO Manual					

Table 5.3-6 summarizes the maximized ten highest storms during the period of 1953-2009. The storm that occurred on July 30, 1975 yields the highest value of 183.29 mm.

Table 5.3-6 Maximized Storm Calculations

Year	Month	Day	Ract (mm)	Rmax (mm)*
1975	7	30	52.1	**183.29**
1996	9	2	50.8	178.72
1994	7	22	48.6	170.98
1999	7	26	44	154.80
2001	8	25	37.3	131.23
2004	9	20	37	130.17
1985	8	26	36.7	129.12
1956	7	23	35.8	126.02
1968	9	4	35.3	124.23
2003	9	10	35	123.32
*note: 3.52 from Table 5.3-5 x Ract(mm)=Rmax(mm)				

From the analysis and computations, the probable maximum precipitation estimate for Kiggavik project site is **183.29 mm**. This estimate was calculated from a storm that occurred on July 30, 1975. It should be noted that the PMP estimate in this report applies to an area 1 km^2 with 24-hour storm duration.

6 Summary

The Baker Lake A climate station, located approximately 80 km east of the Project, is the closest long-term climate station. The Baker Lake A station meets World Meteorological Organization standards for calculation of climate normals. While small difference in climatic conditions between Baker Lake and the Kiggavik site is apparent for some parameters the use of Baker Lake data is considered generally representative of conditions at the Kiggavik site. Over time, more data will be collected on site to support future planning, thus reducing the need for Baker Lake meteorological data.

Climate data collected at Baker Lake from 1949 to the present include precipitation, temperature, wind speed and direction, and atmospheric pressure. Net radiation had been collected at Baker Lake for the years 1969 to 2003. The mean annual precipitation recorded at Baker Lake A over the period 1949 to 2008 was 344 mm, approximately 49% of which fell as rain (169 mm). Mean air temperatures for the period of record ranged between -32.4°C in January and 11.2°C in July. Extreme temperatures have ranged between -50.6°C in January and 33.6°C in July.

The historical mean monthly wind strength varies between 16.9 km/h in July and 23.9 km/h in January. Maximum mean daily wind speeds range between 22.4 km/h in August and 37.1 km/h in February. Similarly, minimum mean daily wind speeds have ranged between 11.0 km/h in July and 16.7 km/h in October. One hour wind speeds of 78 km/h can be expected to occur once every two years, on average. Wind speeds exceeding 100 km/h are expected to occur only once in 30 years. The most frequent wind direction at the Baker Lake climate station for the years 1953 to 2009 was north-northwest. Similarly, the most frequent wind speed in this direction was of the range 20.5 km/h to 31.7 km/h (5.7 m/s to 8.8 m/s) (EC 2009b, internet site). On a seasonal basis, the wind was predominantly from the north during the second and third quarters of the year, and from the northwest during the first and fourth quarters. Wind speeds greater than 39.6 km/h (11 m/s) were most frequent over the period of January to March. On an annual basis, the wind rarely blows from the southwest or the northeast.

Lake evaporation was estimated for Baker Lake using the Priestley-Taylor equation with historical climate data. Annual lake evaporation was estimated to be 152 mm, which falls within the range of evaporation estimates that have been presented for the region.

The PMP value of 183.29 mm documented in this report is intended to assist in the design for various engineered structures such as tailings management areas and water treatment ponds. The daily 12 hr and monthly maximum persisting dew-point, along with daily precipitation values for a fifty three year period should be adequate for the determination of the PMP for the region. The calculation method used in this assessment has been previously approved for use in Saskatchewan's Uranium mines.

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8 Glossary

Lake evaporation – process that transfers water from land and water bodies to the atmosphere

Evapotranspiration – the combined process that moves water from both land surfaces and plants into the atmosphere

Humidity – amount of water vapour present in the air

Joule (J) – unit of energy, one Newton-metre (Nm)

Net radiation – the difference between solar and terrestrial radiation

Newton (N) – unit of force, one kilogram per metre per second squared ($kg/m.s^2$)

Pascal (Pa) – unit of pressure, one Newton per square metre (N/m^2)

Radiation – direct transfer of energy by means of electromagnetic waves

Relative humidity – amount of water vapour present in the air relative to its carrying capacity, or saturation point

Solar radiation – radiation emitted by the sun

Terrestrial radiation – radiation emitted by the earth and atmosphere

Transpiration – process that moves water from plants into the atmosphere

Watt (W) – unit of power, measures the rate of energy conversion in Joules per second squared (J/s^2)

Attachment I Baker Lake Monthly Adjusted Precipitation, 1949 to 2007

Table I-1 Baker Lake Monthly Adjusted Rainfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1949				0.0	0.9	8.6	5.8	5.8	4.9	1.1	0.0	0.0	
1950	0.0	0.0	0.0	0.0	0.0	5.5	40.1	38.5	23.7	0.6	0.0	0.0	108.4
1951		0.0	0.0	0.0	4.0	34.7	17.8	7.4	33.3	16.4	0.0	0.0	
1952	0.0	0.0	0.0	0.6	18.6	39.2	23.5	67.6	39.5	0.0	0.0	0.0	189.1
1953	0.0	2.3	0.0	2.1	1.9	21.3	54.0	63.9	13.7	7.5	0.0	0.0	166.6
1954	0.0	0.0	0.0	0.0	3.3	18.5	32.0	14.6	50.7	11.5	0.0	0.0	130.6
1955	0.0	0.0	0.0	0.0	18.2	57.8	55.5	61.9	37.1	12.5	0.0	0.0	242.9
1956	0.0	0.0	0.0	0.0	0.3	3.8	70.5	81.7	8.3	0.0	0.0	0.0	164.6
1957	0.0	0.0	0.0	0.0	0.6	9.4	70.0	52.8	12.4	4.8	0.3	0.0	150.4
1958	0.0	0.0	0.0	0.0	3.3	20.8	38.5	46.8	84.8	13.4	0.3	0.0	207.8
1959	0.0	0.0	0.0	0.0	0.9	28.8	51.9	77.7	32.1	0.3	0.9	0.0	192.5
1960	0.0	0.0	0.0	0.0	3.0	6.9	41.9	34.8	51.3	43.6	0.3	0.0	181.8
1961	0.0	0.0	0.0	0.0	1.8	13.6	9.4	59.8	58.2	1.5	0.6	0.0	144.9
1962	0.0	0.0	0.0	0.3	0.6	36.8	42.3	50.0	45.8	16.0	0.0	0.0	191.7
1963	0.0	0.0	0.0	0.6	0.3	3.5	35.0	24.7	10.2	19.7	0.0	0.0	94.0
1964	0.0	0.0	0.0	0.3	0.6	7.0	6.1	15.7	38.6	9.9	0.3	0.0	78.5
1965	0.0	0.0	0.0	0.3	0.9	22.5	24.2	11.0	6.7	4.6	0.3	0.0	70.5
1966	0.0	0.0	0.0	0.3	24.8	18.4	43.0	24.8	17.8	2.5	0.0	0.0	131.6
1967	0.0	0.0	0.0	0.0	2.1	36.9	57.0	35.5	50.7	12.6	0.0	0.0	194.8
1968	0.0	0.0	0.0	0.0	3.0	8.3	45.1	30.4	92.0	11.9	1.2	0.0	191.9
1969	0.0	0.0	0.0	0.5	0.8	5.8	59.1	11.1	16.1	1.9	1.4	0.0	96.7
1970	0.0	0.0	0.0	0.0	0.6	39.8	96.3	44.3	61.4	20.5	0.3	0.0	263.2
1971	0.0	0.0	0.0	1.0	8.9	25.4	49.0	50.2	37.7	20.6	0.0	0.0	192.9
1972	0.0	0.0	0.0	0.3	4.3	10.4	17.7	43.4	31.4	1.3	0.0	0.0	108.9
1973	0.0	0.0	0.0	0.0	10.2	15.4	2.9	65.0	83.9	3.0	0.3	0.0	180.6

Table I-1 Baker Lake Monthly Adjusted Rainfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1974	0.0	0.0	0.0	0.0	1.2	27.1	55.7	22.7	11.9	1.5	0.9	0.0	121.0
1975	0.0	0.0	0.0	0.0	14.1	26.8	74.8	74.5	32.3	10.3	0.0	0.0	232.9
1976	0.0	0.0	0.0	0.0	31.9	30.2	25.5	18.2	42.4	0.3	0.3	0.5	149.4
1977	0.0	0.0	0.0	13.3	21.7	25.5	29.0	46.3	41.1	21.6	0.6	0.0	199.1
1978	0.0	0.0	0.0	0.0	0.9	28.9	76.7	22.9	7.0	7.8	0.0	0.0	144.2
1979	0.0	0.0	0.0	0.7	35.4	29.5	32.3	31.1	8.0			0.0	
1980	0.0	0.3	0.0	1.8	1.8	7.5	59.2	81.1	14.6	2.4	0.6	0.0	169.3
1981	0.6	0.0	0.6	0.0	9.8	24.5	46.0	13.4	28.2	26.9	0.0	0.0	150.1
1982	0.0	0.0	0.0	0.0	4.9	21.4	46.7	23.2	48.2	22.6	0.0	0.0	167.0
1983	0.0	0.0	0.0	0.0	0.6	12.6	9.9	79.6	54.4	5.6	0.9	0.3	163.9
1984	0.0	0.9	0.0	1.5	1.2	18.8	42.3	69.7	25.1	7.0	0.0	0.0	166.5
1985	0.9	0.0	0.0	0.6	5.0	9.0	96.0	84.8	74.2	4.2	0.9	0.6	276.2
1986	0.0	0.0	0.0	0.3	30.2	32.1	9.0	94.9	25.9	5.4	0.0	0.0	197.8
1987	0.0	0.0	0.0	0.9	2.6	32.5	49.0	69.9	32.5	1.2	3.2	0.9	192.7
1988	0.0	0.0	0.0	0.0	1.2	45.6	41.6	46.9	54.3	8.8	0.6	0.0	199.1
1989	0.0	0.0	0.0	0.0	0.3	17.8	62.0	25.7	22.9	2.7	0.0	0.0	131.5
1990	0.0	0.0	0.0	0.3	11.2	15.2	81.4	44.6	33.1	0.9	0.0	0.0	186.6
1991	0.0	0.3	0.0	0.3	7.3	26.7	30.4	40.1	22.1	4.4	0.0	0.6	132.2
1992	0.9	0.0	0.0	0.3	4.6	9.1	12.5	56.9	48.2	1.5	0.0	0.0	134.1
1993	0.0	0.0	0.0	0.3	5.5	21.0	72.7	42.9	9.8	0.3	0.0	0.0	152.4
1994	0.0	0.0	0.0	0.0	0.6	13.2	82.9	44.4	62.0	7.9	1.2	0.0	212.3
1995	0.0	0.0	0.0	0.6	0.6	9.6	20.6	61.2	11.2	11.1	0.0	0.0	114.9
1996	0.0	0.0	0.0	0.0	2.5	25.3	47.9	84.3	89.1	0.6	0.0	0.0	249.6
1997	0.0	0.0	0.0	1.1	5.1	44.5	21.3	22.7	16.0	12.3	0.3	0.3	123.6
1998	0.0	0.0	0.0	0.9	5.4	48.7	56.4	49.1	77.3	7.0	1.2	0.0	245.9
1999	0.0	0.0	0.8	2.6	5.9	56.8	80.1	53.3	43.7	3.3	0.0	0.3	246.8
2000	0.0	0.0	0.0	0.9	13.7	2.5	30.3	39.6	62.0	1.2	0.3	0.0	150.5
2001	0.3	0.0	0.0	0.6	9.5	19.8	25.8	81.9	18.7	11.6	0.0	0.0	168.1
2002	0.0	0.0	0.0	0.0	0.6	20.8	71.4	95.0	20.1	1.5	0.0	0.6	210.0

Table I-1 Baker Lake Monthly Adjusted Rainfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2003	0.3	0.0	0.0	0.0	16.0	18.0	44.3	22.2	44.3	1.5	0.3	0.0	146.8
2004	0.0	0.0	0.0	0.0	0.6	17.7	12.7	25.4	69.8	0.3	0.0	0.0	126.4
2005	0.0	0.0	0.0	0.0	25.1	14.5	65.8	55.8	65.6	8.4	0.0	0.0	235.2
2006	0.0	0.0	0.0	0.3	1.5	16.4	49.4	13.1	18.2	18.1	0.0	0.0	117.0
2007	0.0	0.0	0.0	0.3	4.3	24.6	22.2	67.3	25.9				
Mean	0.1	0.1	0.0	0.6	6.7	21.9	43.6	46.2	37.3	8.0	0.3	0.1	168.9
Max	0.9	2.3	0.8	13.3	35.4	57.8	96.3	95.0	92.0	43.6	3.2	0.9	276.2
Min	0.0	0.0	0.0	0.0	0.0	2.5	2.9	5.8	4.9	0.0	0.0	0.0	70.5

Table I-2 Baker Lake Monthly Adjusted Snowfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1949				5.0	0.6	3.7	0.0	0.6	3.2	17.6	12.1	6.9	
1950	3.8	7.8	8.9	8.7	5.7	15.7	0.0	0.0	0.9	16.5	11.8	10.6	90.3
1951		4.8	8.7	14.7	4.6	1.1	0.0	0.0	5.1	7.0	13.2	12.2	
1952	13.2	3.0	13.9	21.3	2.4	0.7	0.2	0.0	1.7	8.8	8.2	22.1	95.5
1953	7.7	12.5	12.3	10.2	5.3	0.9	0.0	0.0	1.3	19.3	19.0	2.6	91.0
1954	1.3	18.5	5.8	5.9	2.5	0.7	0.0	0.0	1.1	4.6	14.2	10.1	64.8
1955	7.0	2.6	6.8	26.3	8.4	0.2	0.0	0.0	1.9	26.2	32.5	9.5	121.3
1956	6.7	5.4	5.5	9.7	10.0	0.5	0.0	0.2	6.8	8.6	7.3	7.6	68.4
1957	2.3	8.3	9.4	13.5	9.3	6.9	0.0	0.2	11.9	16.5	11.2	4.1	93.6
1958	14.0	2.2	11.3	10.2	7.1	3.6	0.0	0.0	5.8	10.1	16.9	7.4	88.6
1959	13.9	5.3	8.5	7.0	23.0	1.0	0.0	0.0	4.3	31.8	10.2	28.5	133.7
1960	7.7	6.1	9.9	18.9	4.7	0.0	0.0	0.0	4.4	28.6	6.4	7.7	94.4
1961	3.4	17.4	12.9	16.6	5.8	4.2	0.0	0.3	31.7	26.7	32.1	21.7	172.9
1962	4.0	3.6	28.7	13.4	9.6	0.3	0.0	0.2	1.3	45.3	20.6	6.6	133.5
1963	12.9	7.8	6.1	8.4	24.1	0.6	0.0	0.2	25.9	42.1	48.3	5.8	182.2
1964	11.8	7.7	2.9	51.9	14.9	18.3	0.0	0.0	3.6	66.4	15.7	10.3	203.4
1965	36.8	3.6	9.5	48.0	10.0	2.5	0.0	0.0	30.0	35.4	16.7	10.0	202.6
1966	6.9	14.7	17.0	14.0	4.8	0.3	0.0	0.0	4.4	40.0	8.9	8.4	119.4
1967	5.6	4.6	23.2	15.6	11.5	11.0	0.0	0.3	3.8	42.2	49.1	47.9	214.8
1968	23.9	29.1	34.1	23.9	8.8	3.3	0.0	0.4	6.2	39.8	9.4	7.3	186.2
1969	13.4	13.8	8.9	27.4	7.2	2.4	0.0	0.0	2.0	17.0	88.7	24.1	205.1
1970	17.5	11.1	22.7	5.6	9.1	2.2	0.0	0.0	14.5	28.8	21.8	8.2	141.6
1971	16.1	18.0	6.4	19.7	5.2	0.8	0.0	0.6	3.7	35.3	27.8	5.6	139.3
1972	8.2	7.1	14.3	29.9	28.3	3.5	0.0	0.0	11.6	20.0	36.2	3.8	162.8
1973	17.2	8.7	28.1	19.8	7.9	0.2	0.0	0.0	2.0	38.8	10.4	12.9	146.1
1974	29.1	8.5	7.3	14.3	6.5	0.3	0.0	0.9	26.7	80.6	45.6	31.1	250.9
1975	15.7	6.1	6.3	5.0	14.5	2.1	0.0	0.0	14.6	102.7	15.8	14.4	197.1
1976	14.2	8.6	9.3	26.1	9.0	1.3	0.2	0.5	19.6	30.6	25.2	24.3	168.8
1977	33.7	5.8	22.2	41.6	11.2	0.9	0.0	0.0	0.6	53.6	81.1	22.2	272.9

Table I-2 Baker Lake Monthly Adjusted Snowfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1978	18.6	19.1	12.4	30.1	11.5	23.2	0.5	0.5	3.8	54.1	26.0	11.2	210.9
1979	11.3	6.5	10.9	14.6	10.7	34.0	0.0	17.0	15.2			12.6	
1980	6.2	6.6	21.6	32.1	17.3	5.4	0.0	0.0	15.2	15.6	31.5	16.5	167.9
1981	6.5	24.9	20.2	14.5	5.4	15.6	0.0	0.2	0.3	33.8	36.4	12.6	170.3
1982	3.8	12.9	15.1	10.8	18.3	4.8	0.0	24.0	35.9	53.1	22.4	25.4	226.4
1983	22.5	11.4	16.5	16.4	20.1	1.8	0.6	0.0	11.1	67.2	9.1	13.9	190.5
1984	14.4	29.1	16.4	40.1	5.3	0.6	0.0	0.0	13.5	26.0	20.1	6.3	171.9
1985	11.3	17.2	30.7	24.8	13.3	0.7	0.0	10.2	5.0	35.6	20.7	14.9	184.6
1986	18.1	14.3	10.3	26.1	6.9	23.3	0.0	0.2	20.3	50.3	37.9	32.5	240.1
1987	26.6	21.3	46.8	49.2	10.3	3.6	0.0	0.3	1.3	34.4	65.7	50.2	309.7
1988	6.7	8.2	31.6	39.6	53.1	4.0	0.0	0.0	1.0	67.5	43.8	36.8	292.3
1989	18.9	10.7	6.9	31.3	37.7	7.0	0.0	0.0	19.2	28.5	34.2	8.2	202.7
1990	19.5	20.4	58.5	16.7	8.3	1.2	0.0	0.0	3.7	27.7	35.7	21.8	213.5
1991	6.8	7.4	26.5	37.5	10.2	0.2	0.0	0.2	30.4	26.8	26.1	20.4	192.4
1992	15.1	13.8	21.2	19.9	40.4	3.3	0.0	0.6	47.8	45.5	36.2	20.2	264.0
1993	25.9	16.8	24.2	11.3	23.2	0.4	0.0	0.0	10.8	25.6	25.3	28.4	191.9
1994	4.5	5.5	19.2	13.1	5.9	0.6	0.0	0.0	2.8	19.3	22.3	24.5	117.6
1995	12.1	4.6	22.2	9.4	4.6	0.2	0.0	0.0	18.9	34.8	12.9	21.9	141.4
1996	11.3	14.5	9.0	27.3	4.8	0.0	0.0	0.0	2.2	42.8	21.1	9.9	142.8
1997	5.2	18.0	10.3	7.9	18.1	0.0	0.0	0.0	6.1	99.9	17.5	36.9	219.8
1998	5.9	35.4	8.5	11.4	21.2	0.0	0.0	0.0	6.5	7.7	30.5	23.4	150.5
1999	14.9	24.3	20.5	14.8	31.4	9.9	0.0	0.0	9.4	55.3	62.1	30.2	272.9
2000	11.4	19.4	30.6	19.3	9.2	1.0	0.0	0.3	1.8	30.9	26.3	14.0	164.3
2001	22.2	8.7	29.7	5.8	27.1	5.6	0.0	0.0	1.3	46.5	33.4	27.0	207.3
2002	17.3	16.8	11.5	21.2	14.1	7.0	0.0	0.0	26.9	21.1	17.0	15.1	168.1
2003	16.1	20.0	22.0	11.0	16.2	2.6	0.0	0.0	5.0	11.6	52.3	28.1	184.9
2004	7.1	11.1	18.9	3.2	17.5	7.9	0.2	0.0	3.9	26.9	23.4	7.6	127.5
2005	16.2	12.1	32.1	48.4	7.5	0.5	0.0	0.0	38.8	30.2	28.6	19.1	233.4
2006	16.3	12.7	5.0	93.6	18.6	0.3	0.0	0.0	1.3	31.1	32.7	40.0	251.6

Table I-2 Baker Lake Monthly Adjusted Snowfall (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	11.0	9.3	14.1	32.1	25.4	3.2	0.0	0.0	18.1				
Mean	13.2	12.2	17.0	21.5	13.3	4.4	0.0	1.0	10.6	34.9	27.5	17.6	175.5
Max	36.8	35.4	58.5	93.6	53.1	34.0	0.6	24.0	47.8	102.7	88.7	50.2	309.7
Min	1.3	2.2	2.9	3.2	0.6	0.0	0.0	0.0	0.3	4.6	6.4	2.6	64.8

Table I-3 Baker Lake Monthly Adjusted Total Precipitation (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1949				5.0	1.5	12.3	5.8	6.3	8.1	18.7	12.1	6.9	
1950	3.8	7.8	8.9	8.7	5.7	21.2	40.1	38.5	24.6	17.1	11.8	10.6	198.7
1951		4.8	8.7	14.7	8.6	35.8	17.8	7.4	38.4	23.4	13.2	12.2	
1952	13.2	3.0	13.9	21.9	21.0	39.9	23.7	67.6	41.2	8.8	8.2	22.1	284.6
1953	7.7	14.8	12.3	12.3	7.2	22.1	54.0	63.9	15.0	26.8	19.0	2.6	257.5
1954	1.3	18.5	5.8	5.9	5.9	19.2	32.0	14.6	51.9	16.1	14.2	10.1	195.4
1955	7.0	2.6	6.8	26.3	26.5	57.9	55.5	61.9	39.0	38.6	32.5	9.5	364.1
1956	6.7	5.4	5.5	9.7	10.3	4.3	70.5	81.8	15.1	8.6	7.3	7.6	232.9
1957	2.3	8.3	9.4	13.5	9.9	16.3	70.0	53.0	24.3	21.3	11.5	4.1	244.0
1958	14.0	2.2	11.3	10.2	10.4	24.3	38.5	46.8	90.6	23.5	17.2	7.4	296.4
1959	13.9	5.3	8.5	7.0	23.9	29.8	51.9	77.7	36.4	32.1	11.1	28.5	326.2
1960	7.7	6.1	9.9	18.9	7.7	6.9	41.9	34.8	55.7	72.2	6.7	7.7	276.2
1961	3.4	17.4	12.9	16.6	7.6	17.7	9.4	60.1	89.9	28.2	32.7	21.7	317.7
1962	4.0	3.6	28.7	13.7	10.2	37.0	42.3	50.2	47.2	61.2	20.6	6.6	325.2
1963	12.9	7.8	6.1	9.0	24.4	4.1	35.0	24.9	36.1	61.8	48.3	5.8	276.2
1964	11.8	7.7	2.9	52.2	15.5	25.3	6.1	15.7	42.2	76.3	16.0	10.3	281.9
1965	36.8	3.6	9.5	48.3	10.9	25.0	24.2	11.0	36.7	40.0	17.0	10.0	273.0
1966	6.9	14.7	17.0	14.3	29.6	18.7	43.0	24.8	22.2	42.6	8.9	8.4	251.0
1967	5.6	4.6	23.2	15.6	13.6	47.9	57.0	35.8	54.5	54.8	49.1	47.9	409.6
1968	23.9	29.1	34.1	23.9	11.7	11.6	45.1	30.8	98.2	51.7	10.6	7.3	378.1
1969	13.4	13.8	8.9	27.9	8.0	8.2	59.1	11.1	18.1	18.9	90.1	24.1	301.8
1970	17.5	11.1	22.7	5.6	9.7	42.0	96.3	44.3	75.9	49.3	22.1	8.2	404.8
1971	16.1	18.0	6.4	20.7	14.1	26.3	49.0	50.8	41.4	55.9	27.8	5.6	332.1
1972	8.2	7.1	14.3	30.2	32.6	13.9	17.7	43.4	43.0	21.3	36.2	3.8	271.7
1973	17.2	8.7	28.1	19.8	18.1	15.5	2.9	65.0	85.9	41.8	10.7	12.9	326.7
1974	29.1	8.5	7.3	14.3	7.7	27.4	55.7	23.5	38.6	82.1	46.5	31.1	371.9
1975	15.7	6.1	6.3	5.0	28.6	28.9	74.8	74.5	46.9	113.1	15.8	14.4	430.0
1976	14.2	8.6	9.3	26.1	40.9	31.5	25.6	18.7	62.0	30.9	25.5	24.8	318.2
1977	33.7	5.8	22.2	55.0	32.8	26.4	29.0	46.3	41.7	75.2	81.7	22.2	472.0

Table I-3 Baker Lake Monthly Adjusted Total Precipitation (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1978	18.6	19.1	12.4	30.1	12.4	52.1	77.2	23.3	10.8	61.9	26.0	11.2	355.0
1979	11.3	6.5	10.9	15.3	46.2	63.5	32.3	48.2	23.3			12.6	
1980	6.2	6.9	21.6	33.9	19.0	12.9	59.2	81.1	29.7	18.0	32.1	16.5	337.2
1981	7.1	24.9	20.8	14.5	15.2	40.2	46.0	13.6	28.5	60.7	36.4	12.6	320.4
1982	3.8	12.9	15.1	10.8	23.2	26.2	46.7	47.2	84.0	75.6	22.4	25.4	393.4
1983	22.5	11.4	16.5	16.4	20.7	14.4	10.4	79.6	65.5	72.8	10.0	14.2	354.4
1984	14.4	30.0	16.4	41.6	6.5	19.4	42.3	69.7	38.6	33.0	20.1	6.3	338.4
1985	12.2	17.2	30.7	25.4	18.4	9.7	96.0	94.9	79.2	39.8	21.6	15.5	460.7
1986	18.1	14.3	10.3	26.4	37.1	55.4	9.0	95.1	46.2	55.7	37.9	32.5	437.9
1987	26.6	21.3	46.8	50.1	12.9	36.1	49.0	70.2	33.8	35.6	68.9	51.1	502.4
1988	6.7	8.2	31.6	39.6	54.3	49.6	41.6	46.9	55.3	76.3	44.4	36.8	491.4
1989	18.9	10.7	6.9	31.3	38.0	24.8	62.0	25.7	42.2	31.2	34.2	8.2	334.1
1990	19.5	20.4	58.5	17.0	19.5	16.4	81.4	44.6	36.7	28.6	35.7	21.8	400.2
1991	6.8	7.7	26.5	37.8	17.5	26.8	30.4	40.3	52.5	31.2	26.1	21.0	324.6
1992	16.0	13.8	21.2	20.2	45.1	12.3	12.5	57.5	96.0	47.1	36.2	20.2	398.1
1993	25.9	16.8	24.2	11.6	28.6	21.4	72.7	42.9	20.6	25.9	25.3	28.4	344.4
1994	4.5	5.5	19.2	13.1	6.5	13.8	82.9	44.4	64.8	27.2	23.5	24.5	329.9
1995	12.1	4.6	22.2	10.0	5.2	9.7	20.6	61.2	30.1	45.9	12.9	21.9	256.4
1996	11.3	14.5	9.0	27.3	7.2	25.3	47.9	84.3	91.3	43.4	21.1	9.9	392.5
1997	5.2	18.0	10.3	9.0	23.2	44.5	21.3	22.7	22.1	112.2	17.8	37.2	343.4
1998	5.9	35.4	8.5	12.3	26.6	48.7	56.4	49.1	83.8	14.7	31.7	23.4	396.4
1999	14.9	24.3	21.3	17.4	37.3	66.7	80.1	53.3	53.1	58.6	62.1	30.5	519.7
2000	11.4	19.4	30.6	20.2	22.9	3.6	30.3	39.9	63.8	32.1	26.6	14.0	314.8
2001	22.5	8.7	29.7	6.4	36.6	25.4	25.8	81.9	20.0	58.0	33.4	27.0	375.4
2002	17.3	16.8	11.5	21.2	14.7	27.8	71.4	95.0	47.0	22.6	17.0	15.7	378.1
2003	16.4	20.0	22.0	11.0	32.2	20.5	44.3	22.2	49.3	13.1	52.6	28.1	331.6
2004	7.1	11.1	18.9	3.2	18.1	25.6	12.8	25.4	73.7	27.2	23.4	7.6	253.9
2005	16.2	12.1	32.1	48.4	32.5	14.9	65.8	55.8	104.4	38.7	28.6	19.1	468.6
2006	16.3	12.7	5.0	93.9	20.1	16.7	49.4	13.1	19.5	49.3	32.7	40.0	368.7

Table I-3 Baker Lake Monthly Adjusted Total Precipitation (mm), 1949 to 2007

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	11.0	9.3	14.1	32.4	29.6	27.7	22.2	67.3	44.1				
Mean	13.2	12.2	17.0	22.0	20.0	26.3	43.6	47.1	48.0	43.0	27.8	17.7	344.4
Max	36.8	35.4	58.5	93.9	54.3	66.7	96.3	95.1	104.4	113.1	90.1	51.1	519.7
Min	1.3	2.2	2.9	3.2	1.5	3.6	2.9	6.3	8.1	8.6	6.7	2.6	195.4

Attachment II Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
04-Jan-65	32		135	
01-Feb-65	42		150	
15-Feb-65	27		142	
01-Mar-65	39		147	
15-Mar-65	35		152	
15-Apr-65	40		160	
01-May-65	39		163	
15-May-65	35		152	
01-Jun-65	25		127	
15-Jun-65	2		15	
01-Oct-65	11		28	
15-Oct-65	13		25	
01-Nov-65	18		51	
15-Nov-65	18		64	
01-Dec-65	22		61	
15-Dec-65	24		76	
01-Jan-66	30		104	
15-Jan-66	24		81	
01-Feb-66	23		69	
15-Feb-66	26		81	
01-Mar-66	36		107	
15-Mar-66	27		89	
01-Apr-66	35		124	
15-Apr-66	40		132	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-May-66	40		150	
15-May-66	35		132	
01-Jun-66	12		61	
15-Jun-66	0		0	
15-Oct-66	0	T	0	
01-Nov-66	5		13	
15-Nov-66	9		30	
01-Dec-66	10		23	
15-Dec-66	10		28	
01-Jan-67	8		18	
15-Jan-67	14		36	
01-Feb-67	11		23	
15-Feb-67	15		43	
01-Mar-67	9		23	
15-Mar-67	14		36	
01-Apr-67	21		58	
15-Apr-67	19		58	
01-May-67	26		74	
15-May-67	22		74	
01-Jun-67	15		64	
15-Jun-67	0		0	
15-Oct-67	0	T	0	
01-Nov-67	5		18	
15-Nov-67	9		23	
01-Dec-67	11		33	
15-Dec-67	13		36	
01-Jan-68	16		61	
15-Jan-68	27		76	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Feb-68	18		64	
15-Feb-68	16		58	
01-Mar-68	19		71	
15-Mar-68	17		61	
01-Apr-68	22		89	
15-Apr-68	29		112	
01-May-68	33		132	
15-May-68	35		135	
01-Jun-68	17		86	
15-Nov-68	6		18	
01-Dec-68	16		38	
15-Dec-68	17		48	
01-Jan-69	17		53	
15-Jan-69	20		51	
01-Feb-69	11		46	
15-Feb-69	17		53	
01-Mar-69	17		56	
16-Mar-69	18		56	
03-Apr-69	20		76	
16-Apr-69	24		79	
02-May-69	20		76	
15-May-69	24		86	
01-Jul-69	0		0	
16-Nov-69	10		13	
01-Dec-69	15		25	
15-Dec-69	18		51	
01-Jan-70	21		64	
15-Jan-70	23		64	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Feb-70	19		53	
17-Feb-70	19		61	
01-Mar-70	21		74	
15-Mar-70	21		69	
01-Apr-70	19		61	
15-Apr-70	21		76	
01-May-70	19		64	
15-May-70	19		61	
01-Jun-70	0		0	
01-Nov-70	0	T	0	
15-Nov-70	3		8	
01-Dec-70	3		18	
15-Dec-70	7		18	
01-Jan-71	10		33	
15-Jan-71	11		38	
01-Feb-71	11		33	
15-Feb-71	9		30	
01-Mar-71	16		38	
15-Mar-71	15		46	
01-Apr-71	12		36	
15-Apr-71	16		51	
03-May-71	13		46	
15-May-71	11		53	
01-Jun-71	0		0	
01-Nov-71	14		25	
15-Nov-71	18		38	
01-Dec-71	23		51	
01-Jan-72	23		61	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-Jan-72	22		61	
01-Feb-72	21		64	
15-Feb-72	18		56	
01-Mar-72	21		56	
15-Mar-72	25		58	
01-Apr-72	26		74	
17-Apr-72	29		89	
01-May-72	38		91	
15-May-72	35		76	
01-Jun-72	31		99	
01-Nov-72	7		15	
16-Nov-72	17		36	
02-Dec-72	20		74	
15-Dec-72	19		58	
01-Jan-73	20		71	
15-Jan-73	25		86	
01-Feb-73	18		74	
15-Feb-73	16		64	
01-Mar-73	33		114	
15-Mar-73	30		109	
01-Apr-73	24		74	
15-Apr-73	31		99	
01-May-73	35		114	
01-Jun-73	0	T	0	
16-Oct-73	12		25	
01-Nov-73	7		30	
15-Nov-73	11		25	
04-Dec-73	14		36	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-Dec-73	16		46	
01-Jan-74	22		66	
15-Jan-74	20		58	
01-Feb-74	22		71	
15-Feb-74	25		71	
01-Mar-74	22		66	
15-Mar-74	21		64	
01-Apr-74	27		81	
15-Apr-74	27		84	
01-May-74	30		119	
15-May-74	28		97	
01-Jun-74	0	T	0	
15-Oct-74	16		41	
01-Nov-74	18		48	
01-Dec-74	34		119	
17-Dec-74	46		130	
01-Jan-75	53	3	188	
15-Jan-75	44		140	
01-Feb-75	45		147	
18-Feb-75	36		130	
01-Mar-75	37		142	
17-Mar-75	37		163	
01-Apr-75	24		86	
15-Apr-75	30		107	
01-Jun-75	0	T	0	
15-Jun-75	0		0	
01-Nov-75	18		71	
15-Nov-75	23		94	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Dec-75	25		91	
15-Dec-75	28		89	
01-Jan-76	22		104	
15-Jan-76	20		76	
01-Feb-76	25		94	
15-Feb-76	33		140	
01-Mar-76	24		86	
15-Mar-76	26		107	
01-Apr-76	30		114	
15-Apr-76	30		122	
01-May-76	34		137	
15-May-76	30		142	
01-Jun-76	0	T	0	
15-Oct-76	0	T	0	T
01-Nov-76	16		36	
15-Nov-76	18		53	
01-Dec-76	6		15	
15-Dec-76	11		33	
01-Jan-77	11		33	
01-Feb-77	14		51	
15-Feb-77	10		25	
01-Mar-77	14		46	
15-Mar-77	20		56	
01-Apr-77	22		76	
15-Apr-77	12		33	
01-May-77	19		58	
15-May-77	0	P	0	
01-Nov-77	12		25	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
17-Nov-77	19		66	
01-Dec-77	11		33	
15-Dec-77	17		38	
01-Jan-78	12		33	
15-Jan-78	11		36	
01-Feb-78	15		43	
15-Feb-78	13		41	
01-Mar-78	14		36	
15-Mar-78	14		41	
01-Apr-78	12		38	
15-Apr-78	16		51	
01-May-78	19		61	
15-May-78	20		122	
01-Jun-78	14		25	
15-Oct-78	12		18	
01-Nov-78	15		15	
15-Nov-78	17		23	
01-Dec-78	15		46	
15-Dec-78	15		48	
01-Jan-79	15		48	
15-Jan-79	15		48	
01-Feb-79	16		48	
15-Feb-79	14		71	
01-Mar-79	14		53	
15-Mar-79	13		51	
01-Apr-79	16		64	
15-Apr-79	13		56	
01-May-79	15		51	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-May-79	10		84	
15-Oct-79	22		89	
01-Nov-79	18		20	
15-Nov-79	18		36	
01-Dec-79	29		71	
15-Dec-79	28		56	
15-Jan-80	31		66	
01-Feb-80	29		64	
15-Feb-80	26		61	
15-Mar-80	29		74	
01-Apr-80	35		76	
15-Apr-80	27		53	
01-May-80	29		84	
15-May-80	22		71	
01-Jun-80	10		30	
15-Oct-80	7	D		D
01-Nov-80	7	D		D
15-Nov-80	7	D		D
15-Dec-80	7		18	
01-Jan-81	5		11	
15-Jan-81	9		15	
15-Feb-81	10		15	
01-Mar-81	9		18	
15-Mar-81	10		28	
01-Apr-81	8		15	
15-Apr-81	8		15	
01-May-81	7		18	
15-May-81	9		22	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Nov-81	3		13	
15-Nov-81	8		28	
01-Dec-81	7		6	
15-Dec-81	7		9	
01-Jan-82	7		14	
15-Jan-82	7		17	
01-Feb-82	10		7	
15-Feb-82	9		21	
01-Mar-82	9		24	
15-Mar-82	11		46	
01-Apr-82	5		11	
15-Apr-82	7		20	
01-May-82	14		34	
01-Nov-82	15		46	
15-Nov-82	33		25	
01-Dec-82	13		24	
15-Dec-82	17		26	
01-Jan-83	17		23	
15-Jan-83	23		33	
01-Feb-83	19		33	
15-Feb-83	13		25	
01-Mar-83	17		30	
15-Mar-83	20		36	
01-Apr-83	20		46	
15-Apr-83	21		48	
01-May-83	21		79	
15-May-83	17		20	
01-Jun-83	14		39	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Nov-83	11		91	
15-Nov-83	12		84	
01-Dec-83	14		46	
15-Dec-83	12		58	
01-Jan-84	18		53	
16-Jan-84	24		69	
01-Feb-84	9		24	
15-Feb-84	19		49	
01-Mar-84	22		53	
15-Mar-84	19		56	
01-Apr-84	22		56	
15-Apr-84	23		61	
01-May-84	26		86	
15-May-84	19		71	
01-Jun-84	1		5	
01-Nov-84	7		14	
15-Nov-84	9		18	
01-Dec-84	10		21	
15-Dec-84	8		24	
01-Jan-85	10		28	
15-Jan-85	9		24	
01-Feb-85	10		29	
15-Feb-85	10		27	
01-Apr-85	20		58	
15-Apr-85	21		68	
16-Apr-85	21		68	
17-Nov-85	9		1	
02-Dec-85	9		1	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
18-Dec-85	11	D		D
02-Jan-86	10		9	
16-Jan-86	11		13	
01-Feb-86	9		11	
15-Feb-86	9		10	
01-Mar-86	13		14	
15-Mar-86	10		12	
01-Apr-86	11		43	
15-Apr-86	9		30	
01-May-86	7		17	
15-May-86	7		21	
01-Nov-86	2		0	T
15-Nov-86	3			S
02-Dec-86	4		11	
15-Dec-86	4		11	
02-Jan-87	8		21	
15-Jan-87	10		23	
01-Feb-87	10		27	
15-Feb-87	12		28	
01-Mar-87	14		36	
15-Mar-87	13		32	
01-Apr-87	14		36	
15-Apr-87	15		38	
01-May-87	16		45	
15-May-87	15		41	
01-Jun-87	4		17	
15-Nov-87	12		26	
01-Dec-87	11		23	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-Dec-87	15		34	
03-Jan-88	11		26	
15-Jan-88	10		25	
03-Feb-88	11		32	
15-Feb-88	10		28	
01-Mar-88	10		26	
15-Mar-88	15		29	
02-Apr-88	11		27	
14-Apr-88	17		39	
02-May-88	15		35	
16-May-88	12		35	
01-Jun-88	10		30	
01-Nov-88	8		25	
15-Nov-88	16		39	
01-Dec-88	11		32	
15-Dec-88	11		32	
01-Jan-89	10		26	
17-Jan-89	11		31	
03-Feb-89	10		31	
17-Feb-89	9		28	
03-Mar-89	9		33	
16-Mar-89	9		32	
01-Apr-89	8		23	
15-Apr-89	10		34	
01-May-89	10		40	
15-May-89	15			S
01-Jun-89	11		35	
15-Jun-89	0		0	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
01-Nov-89	0	T	0	T
15-Nov-89	6		16	
01-Dec-89	8		20	
15-Dec-89	6		18	
01-Jan-90	8		26	
15-Jan-90	8		25	
01-Feb-90	6		14	
15-Feb-90	6		16	
01-Mar-90	9		17	
15-Mar-90	18		24	
01-Apr-90	9		16	
15-Apr-90	9		25	
02-May-90	20		65	
15-May-90	18		63	
15-Oct-90	0	T	0	T
01-Nov-90	6		11	
15-Nov-90	7		11	
01-Dec-90	7		12	
01-Jan-91	8		11	
15-Jan-91	9		20	
01-Feb-91	8		16	
15-Feb-91	9		19	
01-Mar-91	12		34	
15-Mar-91	16		43	
01-Oct-92	22		21	
15-Oct-92	34		37	
15-Nov-92	10		9	
15-Jan-93	13		38	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-Feb-93	30		102	
01-Dec-93	13		54	
15-Dec-93	18		57	
16-Feb-03	11		29	
01-Mar-03	12		29	
15-Apr-03	11		30	
01-May-03	12		32	
01-Nov-03	7		13	
01-Dec-03	7		19	
01-Jan-04	7		18	
15-Jan-04	7		19	
01-Feb-04	7		19	
15-Feb-04	7		21	
01-Mar-04	7		23	
15-Mar-04	6		21	
01-Apr-04	6		23	
15-Apr-04	6		25	
01-May-04	5		20	
15-May-04	2		8	
01-Nov-04	8		18	
15-Nov-04	8		22	
01-Dec-04	8		20	
15-Dec-04	8		19	
01-Jan-05	8		21	
15-Jan-05	8		21	
01-Feb-05	8		22	
15-Feb-05	7		21	
01-Mar-05	7		22	

Table II-1 Baker Lake Snow Depths and Snow Water Equivalents, 1965 to 2006

Date	Snow Depth (cm)	Snow Depth QC Flag	SWE (mm)	SWE QC Flag
15-Mar-05	7		22	
01-Apr-05	8		24	
15-Apr-05	8		24	
03-Jun-05	0		0	
01-Nov-05	11		30	
15-Nov-05	11		32	
01-Dec-05	10		20	
15-Dec-05	10		21	
01-Jan-06	12		18	
15-Jan-06	8		20	
01-Feb-06	9		20	
15-Feb-06	6		20	
01-Mar-06	10		18	

Attachment III Baker Lake Monthly Mean Air Temperature, 1946 to 2008

Table III-1 Baker Lake Monthly Mean Air Temperature, 1946 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1946			-23.5	-17.4	-7.4	0.6	10.2	10.8	0.5	-10.1	-21.5	-26.4
1947	-32.3		-23.2	-20.5		0.6						
1948												
1949											-20.3	-29.2
1950	-40.8	-33.1	-26.6	-18.8	-7.3	0.4	7.7	8.2	4.1	-9.3	-20.2	-24.6
1951		-36.0	-27.1	-16.7	-4.4	4.2	10.6	10.6	1.8	-7.8	-20.6	-31.1
1952	-34.3	-32.7	-23.6	-11.2	-0.3	5.3	9.9	8.6	1.9	-10.8	-21.9	-23.6
1953	-35.9	-26.4	-24.6	-12.8	-5.8	3.3	10.0	11.3	2.8	-7.7	-16.3	-30.8
1954	-37.4	-30.6	-27.0	-19.1	-5.3	4.0	12.9	13.6	4.1	-5.9	-18.0	-28.4
1955	-31.9	-37.9	-29.7	-12.0	-5.4	6.1	11.4	9.3	2.1	-4.4	-19.0	-28.1
1956	-28.8	-32.9	-28.2	-19.0	-11.5	2.3	11.1	8.7	0.8	-11.6	-21.4	-33.3
1957	-36.8	-32.2	-23.6	-16.7	-7.8	1.5	9.4	8.9	4.0	-6.2	-20.7	-31.9
1958	-28.6	-35.3	-21.7	-20.7	-6.5	2.9	10.1	10.1	4.1	-4.1	-20.4	-29.2
1959	-29.8	-33.1	-27.9	-19.1	-9.3	1.5	10.0	8.0	3.5	-10.0	-20.2	-20.8
1960	-32.4	-31.8	-30.0	-17.0	-2.5	8.0	11.9	11.1	3.5	-7.0	-21.8	-25.3
1961	-34.9	-29.4	-31.9	-16.9	-9.0	4.8	11.4	7.9	-1.2	-12.5	-19.8	-25.5
1962	-37.2	-35.7	-24.3	-19.9	-11.0	2.3	11.4	10.0	3.5	-6.3	-22.4	-29.6
1963	-34.3	-32.3	-34.0	-14.9	-9.7	3.0	10.7	9.6	0.6	-5.4	-16.4	-27.0
1964	-32.9	-32.2	-33.7	-21.0	-5.1	2.5	11.4	11.1	2.6	-6.8	-20.1	-30.2
1965	-31.7	-37.8	-27.0	-16.3	-7.5	2.8	10.6	7.9	-0.3	-9.9	-18.9	-26.1
1966	-36.3	-31.8	-26.1	-20.0	-6.5	4.8	13.4	11.7	4.3	-9.1	-26.0	-27.5
1967	-33.6	-35.6	-28.7	-21.1	-7.7	2.9	10.6	8.8	2.5	-5.3	-22.2	-22.9
1968	-33.0	-31.0	-24.3	-20.1	-8.9	4.5	8.4	8.4	4.7	-3.5	-16.3	-26.7
1969	-33.0	-27.3	-28.7	-16.2	-9.8	1.0	11.0	11.8	2.1	-5.6	-20.7	-21.9
1970	-30.2	-34.4	-25.6	-17.9	-9.9	5.5	11.7	10.4	2.5	-6.1	-19.9	-32.6

Table III-1 Baker Lake Monthly Mean Air Temperature, 1946 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1971	-28.5	-29.0	-27.2	-15.9	-4.7	5.7	11.9	9.6	4.0	-4.2	-22.0	-31.8
1972	-36.7	-37.5	-28.1	-18.9	-7.9	1.1	8.9	7.8	-0.5	-13.2	-21.8	-34.5
1973	-30.8	-34.1	-26.4	-20.4	-2.8	6.6	15.0	11.9	4.3	-4.7	-18.3	-29.9
1974	-37.2	-33.2	-31.1	-22.2	-4.4	8.0	13.2	8.9	-1.3	-11.8	-17.8	-25.9
1975	-37.4	-29.7	-30.6	-13.2	-2.4	7.9	11.3	11.4	3.1	-6.2	-19.3	-31.2
1976	-32.3	-34.1	-31.4	-12.7	-4.7	4.2	12.2	7.6	1.6	-7.3	-20.8	-30.5
1977	-27.9	-31.9	-24.8	-15.2	-4.0	5.3	10.2	8.3	5.1	-5.1	-19.2	-27.8
1978	-29.4	-25.7	-29.9	-19.1	-9.2	0.3	7.5	8.4	1.6	-14.8	-24.7	-24.9
1979	-30.3	-40.3	-30.9	-17.5	-6.1	4.4	11.2	6.7	1.1	-9.0	-20.2	-27.6
1980	-33.0	-27.3	-27.8	-16.2	-2.7	4.8	10.7	12.5	1.0	-9.0	-20.6	-29.0
1981	-24.0	-27.7	-22.7	-21.4	-5.1	4.6	10.6	11.6	3.7	-4.2	-17.5	-27.3
1982	-37.8	-32.5	-29.8	-20.8	-6.2	3.1	11.0	9.4	1.8	-4.8	-25.6	-31.6
1983	-31.0	-34.7	-28.1	-18.7	-11.3	5.1	9.8	9.6	5.0	-6.0	-16.4	-29.1
1984	-34.3	-27.6	-26.5	-14.0	-4.9	5.9	12.3	9.5	0.7	-5.6	-20.2	-32.2
1985	-29.9	-33.9	-30.1	-20.2	-4.0	6.5	11.1	9.0	3.6	-6.0	-20.4	-25.1
1986	-32.1	-30.6	-27.9	-17.8	-4.8	3.1	10.3	8.1	1.4	-11.3	-25.5	-27.7
1987	-29.9	-29.2	-25.6	-17.1	-9.7	1.2	10.3	7.0	4.8	-7.9	-19.9	-21.6
1988	-34.2	-33.5	-25.6	-15.7	-8.4	4.6	11.6	10.6	4.3	-6.4	-22.0	-29.9
1989	-34.4	-30.0	-31.8	-16.3	-8.7	3.6	12.0	9.8	2.5	-9.6	-23.1	-30.5
1990	-34.2	-36.8	-22.5	-18.0	-6.7	3.6	10.4	7.6	2.5	-8.7	-21.9	-33.0
1991	-35.3	-30.3	-29.6	-16.6	-6.5	6.1	11.8	10.9	1.0	-8.9	-21.8	-30.4
1992	-30.9	-31.6	-24.8	-19.5	-7.6	0.5	8.1	8.8	0.6	-8.7	-20.9	-27.4
1993	-29.1	-33.1	-25.4	-20.0	-3.3	6.7	13.3	9.4	0.9	-8.8	-22.9	-29.1
1994	-35.8	-35.0	-25.3	-19.3	-4.9	7.5	12.3	8.5	3.5	-3.7	-17.1	-23.2
1995	-28.7	-31.1	-25.3	-14.1	-7.0	7.0	9.8	10.9	1.2	-5.9	-22.2	-28.5
1996	-33.6	-28.9	-27.3	-17.7	-6.8	7.8	14.8	10.0	6.4	-7.6	-17.7	-27.2
1997	-31.9	-31.6	-27.8	-15.9	-5.9	6.7	12.9	9.9	3.2	-9.0	-16.9	-25.1
1998	-36.8	-30.6	-26.7	-15.6	-4.3	7.0	13.1	11.7	5.8	-2.9	-11.8	-25.0
1999	-30.3	-25.9	-21.7	-12.3	-4.8	5.2	11.3	9.2	3.8	-7.4	-15.9	-24.3

Table III-1 Baker Lake Monthly Mean Air Temperature, 1946 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	-29.9	-28.3	-23.9	-18.3	-5.3	2.3	13.0	11.1	2.3	-7.6	-19.6	-29.1
2001	-30.3	-30.4	-21.7	-16.7	-3.7	5.8	13.1	9.5	5.7	-5.7	-18.4	-21.7
2002	-30.8	-33.8	-28.8	-19.6	-7.7	3.4	11.4	10.5	3.3	-6.8	-19.0	-23.3
2003	-26.3	-35.8	-28.1	-17.8	-3.6	4.2	12.4	10.9	4.2	-5.3	-16.4	-26.0
2004	-38.2	-31.3	-30.0	-20.2	-10.3	3.9	10.4	8.6	3.2	-9.4	-20.8	-31.8
2005	-31.9	-31.9	-24.9	-13.5	-7.0	5.7	10.2	11.0	1.6	-5.3	-16.0	-25.3
2006	-26.7	-27.5	-20.5	-14.4	-4.0	6.6	10.4	11.2	4.5	-2.6	-18.9	-21.4
2007	-28.6	-28.9	-28.5	-15.3	-7.4	3.7	13.7	10.0	1.8	-3.7	-21.9	-26.2
2008	-29.3	-34.2	-31.0	-16.3	-2.9	5.4	13.4	10.2	2.4	-3.5	-17.8	-28.3
Average	-32.5	-32.0	-27.1	-17.4	-6.3	4.3	11.2	9.7	2.7	-7.2	-20.0	-27.7
Max	-24.0	-25.7	-20.5	-11.2	-0.3	8.0	15.0	13.6	6.4	-2.6	-11.8	-20.8
Min	-40.8	-40.3	-34.0	-22.2	-11.5	0.3	7.5	6.7	-1.3	-14.8	-26.0	-34.5

Attachment IV Baker Lake Monthly Mean Wind Speed, 1962 to 2008

Table IV-1 Monthly Mean Wind Speed (km/h (m/s)) at Baker Lake, 1962 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1962											22.0(6.1)	24.9(6.9)	
1963	33.4(9.3)	27.9(7.7)	18.3(5.1)	20.1(5.6)	20.4(5.6)	19.0(5.2)	16.3(4.5)	18.1(5.0)	17.5(4.8)	24.6(6.8)	25.5(7.1)	23.9(6.6)	22.1(6.1)
1964	20.4(5.6)	25.8(7.1)	20.2(5.6)	21.2(5.8)	19.2(5.3)	17.2(4.7)	14.7(4.1)	16.2(4.5)	22.7(6.3)	25.0(6.9)	20.4(5.6)	17.4(4.8)	20.0(5.5)
1965	28.8(8.0)	22.0(6.1)	23.2(6.4)	22.8(6.3)	24.5(6.8)	22.1(6.1)	21.2(5.8)	20.3(5.6)	22.0(6.1)	24.8(6.9)	22.3(6.2)	23.0(6.4)	23.1(6.4)
1966	24.3(6.7)	23.6(6.5)	25.6(7.1)	23.5(6.5)	22.0(6.1)	19.5(5.4)	18.6(5.1)	18.3(5.0)	24.6(6.8)	23.7(6.6)	22.3(6.1)	18.7(5.2)	22.1(6.1)
1967	21.5(5.9)	23.4(6.5)	25.8(7.1)	23.0(6.3)	24.0(6.6)	22.2(6.1)	20.9(5.8)	22.4(6.2)	25.4(7.0)	25.5(7.0)	23.7(6.5)	34(9.4)	24.3(6.7)
1968	24.2(6.7)	31.0(8.6)	29.8(8.2)	24.5(6.8)	23.3(6.4)	18.3(5.0)	23.7(6.6)	22.3(6.2)	20.4(5.6)	22.0(6.1)	24.8(6.8)	23.4(6.5)	24.0(6.6)
1969	24.8(6.9)	20.5(5.7)	26.7(7.4)	25.5(7.1)	30.6(8.5)	29.6(8.2)	19.4(5.3)	16.4(4.5)	20.7(5.7)	23.1(6.4)	29.2(8.1)	22.6(6.2)	24.1(6.7)
1970	30.4(8.4)	37.1(10.)	33.2(9.2)	22.5(6.2)	20.2(5.6)	23.5(6.5)	19.8(5.5)	19.9(5.5)	20.8(5.7)	22.3(6.1)	18.3(5.0)	14.9(4.1)	23.6(6.5)
1971	30.0(8.3)	25.8(7.1)	17.0(4.7)	21.0(5.8)	21.3(5.9)	19.0(5.3)	18.6(5.1)	17.6(4.9)	22.3(6.1)	20.3(5.6)	20.0(5.5)	20.5(5.6)	21.1(5.8)
1972	21.0(5.8)	28.5(7.9)	19.0(5.2)	22.3(6.2)	20.3(5.6)	20.2(5.6)	21.1(5.8)	16.8(4.6)	22.2(6.1)	21.5(5.9)	19.5(5.4)	16.3(4.5)	20.7(5.7)
1973	20.8(5.7)	21.7(6.0)	25.4(7.0)	20.5(5.7)	21.7(6.0)	17.9(4.9)	14.7(4.1)	20.4(5.6)	22.8(6.3)	20.4(5.6)	19.6(5.4)	14.5(4.0)	20.0(5.5)
1974	12.2(3.3)	17.6(4.8)	17.4(4.8)	17.0(4.7)	16.2(4.5)	14.4(4.0)	13.6(3.8)	12.2(3.4)		24.8(6.8)	19.3(5.3)	17.7(4.9)	
1975	19.5(5.4)	27.3(7.5)	23.1(6.4)	15.9(4.4)	18.2(5.0)	13.2(3.6)	18.5(5.1)	17.3(4.8)	19.2(5.3)	22.2(6.1)	26.3(7.3)	21.3(5.9)	20.2(5.6)
1976	28.2(7.8)	22.1(6.1)	19.6(5.4)	19.8(5.5)	19.8(5.5)	13.4(3.7)	16.4(4.5)	21.5(5.9)	23.1(6.4)	18.7(5.2)	26.5(7.3)	25.0(6.9)	21.2(5.8)
1977	29.1(8.0)	19.4(5.4)	25.3(7.0)	23.5(6.5)	23.4(6.5)	16.7(4.6)	19.1(5.3)	18.4(5.1)	13.4(3.7)	19.5(5.4)	26.7(7.4)	26.8(7.4)	21.8(6.0)
1978	31.7(8.8)	19.2(5.3)	22.1(6.1)	22.9(6.3)	16.6(4.6)	20.3(5.6)	22.0(6.1)	17.0(4.7)	13.1(3.6)	20.5(5.6)	21.8(6.0)	24.7(6.8)	21.0(5.8)
1979	26.2(7.2)	11.8(3.2)	23.5(6.5)	23.3(6.4)	14.4(4.0)	20.3(5.6)	18.8(5.2)	20.4(5.6)	21.8(6.0)			19.0(5.2)	
1980	21.9(6.0)	25.3(7.0)	22.5(6.2)	21.9(6.1)	19.0(5.2)	16.1(4.4)	19.1(5.3)	17.8(4.9)	16.7(4.6)	21.3(5.9)	23.4(6.5)	30.2(8.4)	21.3(5.9)
1981	25.5(7.0)	26.0(7.2)	19.0(5.2)	17.0(4.7)	20.1(5.5)	16.2(4.5)	18.4(5.1)	16.6(4.6)	18.2(5.0)	25.1(6.9)	22.9(6.3)	18.3(5.0)	20.3(5.6)
1982	19.3(5.3)	22.3(6.1)	21.8(6.0)	19.2(5.3)	14.8(4.1)	15.7(4.3)	17.3(4.8)	14.9(4.1)	16.0(4.4)	18.2(5.0)	18.2(5.0)	17.3(4.8)	17.9(4.9)
1983	21.9(6.0)	18.2(5.0)	14.6(4.0)	18.9(5.2)	16.4(4.5)	15.6(4.3)	13.8(3.8)	13.1(3.6)	20.0(5.5)	22.7(6.3)	15.4(4.2)	25.7(7.1)	18.0(5.0)
1984		17.9(4.9)	21.7(6.0)	20.9(5.8)	14.4(4.0)	13.5(3.7)	13.9(3.8)	18.6(5.1)	19.0(5.2)	20.7(5.7)	19.9(5.5)	22.2(6.1)	
1985	21.8(6.0)	16.3(4.5)	18.1(5.0)	21.1(5.8)	16.2(4.5)	16.7(4.6)	16.9(4.7)	20.0(5.5)	19.7(5.4)	22.2(6.1)		29.3(8.1)	
1986	26.1(7.2)	21.9(6.0)	25.2(7.0)	21.4(5.9)	17.2(4.8)	19.2(5.3)	14.4(4.0)	19.6(5.4)	16.8(4.6)	18.1(5.0)	22.2(6.1)	22.9(6.3)	20.4(5.6)
1987	18.7(5.2)	13.5(3.7)	18.8(5.2)	18.6(5.1)	21.5(5.9)	22.7(6.3)	18.0(5.0)	16.7(4.6)	17.0(4.7)	19.3(5.3)		17.8(4.9)	
1988	25.0(6.9)		18.1(5.0)	19.1(5.3)	22.8(6.3)	15.0(4.1)	13.1(3.6)	15.3(4.2)	17.2(4.8)				
1989		27.5(7.6)				13.2(3.6)		17.2(4.8)	20.9(5.8)	19.8(5.5)	22.5(6.2)		

Table IV-1 Monthly Mean Wind Speed (km/h (m/s)) at Baker Lake, 1962 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1990				23.4(6.5)	19.8(5.5)	17.4(4.8)	19.2(5.3)	17.3(4.8)	21.3(5.9)	19.9(5.5)			
1991	25.2(7.0)	30(8.3)	15.5(4.3)	16.3(4.5)	14.4(4.0)	13.8(3.8)	12.2(3.3)	14.5(4.0)	20.5(5.7)	21.9(6.1)	24.8(6.8)	22.2(6.1)	19.3(5.3)
1992	28.4(7.9)	27.4(7.6)		19.3(5.3)	20.0(5.5)	16.1(4.4)	13.0(3.6)		21.4(5.9)	24.9(6.9)	18.4(5.1)	27.2(7.5)	
1993		23.9(6.6)		15.3(4.2)	24.4(6.7)	17.3(4.8)	11.0(3.0)	18.4(5.1)	22.1(6.1)	27.6(7.6)	21.4(5.9)	24.1(6.7)	
1994	26.5(7.3)		20.5(5.7)	25.0(6.9)	20.7(5.7)	19.1(5.3)			21.7(6.0)	20.7(5.7)	23.8(6.6)		
1995	18.4(5.1)	26.5(7.3)			20.8(5.7)		20.4(5.6)		20.6(5.7)				
1996		25.3(7.0)					13.3(3.6)						
1997				21.0(5.8)	22.9(6.3)	18.4(5.1)	15.4(4.2)				21.6(6.0)	21.9(6.0)	
1998									19.1(5.3)				
1999		17.7(4.9)	17.2(4.7)	22.1(6.1)		16.3(4.5)							
2000								18.2(5.0)					
2001								18.6(5.1)	18.4(5.1)				
2002			23.2(6.4)			13.9(3.8)	16.0(4.4)	17.4(4.8)		20.9(5.8)	26.4(7.3)		
2003				18.9(5.2)	20.5(5.7)	17.1(4.7)	15.2(4.2)	18.5(5.1)	18.9(5.2)	20.2(5.6)	25.5(7.0)		
2004	16.6(4.6)	17.9(4.9)	20.1(5.6)		21.6(6.0)		16.0(4.4)	17.8(4.9)	19.7(5.4)	25.8(7.1)	21.7(6.0)		
2005				21.3(5.9)	19.8(5.5)	16.0(4.4)	15.2(4.2)	17.8(4.9)	18.0(5.0)	16.7(4.6)			
2006		22.7(6.3)	11.4(3.1)	20.1(5.6)	16.0(4.4)	17.5(4.8)	18.0(5.0)	16.3(4.5)		18.8(5.2)			
2007	19.1(5.3)		19.9(5.5)				15.7(4.3)	16.5(4.5)	16.6(4.6)		17.7(4.9)		
2008		17.6(4.8)		16.0(4.4)	18.4(5.1)		11.7(3.2)	14.2(3.9)	16.9(4.7)	16.6(4.6)	16.7(4.6)		
Mean	23.9(6.6)	22.9(6.3)	21.3(5.9)	20.7(5.7)	19.9(5.5)	17.7(4.9)	16.9(4.6)	17.7(4.9)	19.7(5.4)	21.7(6.0)	22.1(6.1)	22.3(6.1)	21.3(5.9)
Max	33.4(9.3)	37.1(10.)	33.2(9.2)	25.5(7.1)	30.6(8.5)	29.6(8.2)	23.7(6.6)	22.4(6.2)	25.4(7.0)	27.6(7.6)	29.2(8.1)	34(9.4)	24.3(6.7)
Min	12.2(3.3)	11.8(3.2)	11.4(3.1)	15.3(4.2)	14.4(4.0)	13.2(3.6)	11.0(3.0)	12.2(3.4)	13.1(3.6)	16.6(4.6)	15.4(4.2)	14.5(4.0)	17.9(4.9)

Attachment V Baker Lake Monthly Mean Relative Humidity, 1953 to 2008

Table V-1 Baker Lake Monthly Mean Relative Humidity, 1962 to 2008 (%)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1962											83.8	
1963				81.6	82.6	79.0	78.7	80.0	81.9	88.0	76.2	68.7
1964					88.3	82.4	71.1	73.9	82.0	86.6	82.2	
1965				82.0	86.1	81.6	71.3	72.3	80.4	88.2	84.0	
1966				78.0	85.4	77.7	68.8	73.1	81.7	80.9		69.0
1967				80.0	84.5	78.6	76.7	79.7	84.4	87.1	77.9	
1968				80.7	84.5	81.0	76.3	81.9	87.3	88.7	81.7	
1969				82.0	80.3	82.8	77.5	81.1	83.3	81.9	77.9	
1970			66.6	74.1	81.8	76.9	75.1	81.5	84.4	88.5	81.8	
1971				79.9	82.7	80.5	73.1	78.4	88.7	84.4	64.2	
1972				68.6	80.5	81.3	71.6	76.7	78.3	72.4	68.1	
1973				62.5	72.5	66.1	57.9	74.8	72.8	73.6	73.1	
1974				63.4	76.8		72.9	75.4		82.2	76.2	66.5
1975				71.0	82.3	74.7	66.6	72.2	75.2	79.3	68.7	
1976				67.2	71.3	72.9	60.6	65.4	80.8	83.6	69.6	
1977			61.0	71.0	83.7	76.7	73.8	77.1	85.3	84.8	71.9	62.3
1978				65.3	82.3	81.9	75.4	71.5	78.5	76.9	67.8	
1979				73.5	82.5	77.2	72.5	77.3	80.3			
1980				70.3	78.0	69.6	74.2	77.7	78.8	84.3	73.6	
1981			66.7	68.1	81.9	78.4	75.6	74.5	82.7	89.7	79.8	
1982			61.6	68.8	81.3	76.5	72.4	74.8	82.8	85.2	66.7	
1983			61.0	70.4	79.5	78.3	72.2		81.5			
1984				74.5	82.2	72.1	69.7	80.5	81.6		74.6	64.7
1985				73.5		72.5	75.9	76.8	83.6			66.9
1986	62.9		62.7	69.1	78.7	72.3	68.6	72.6	82.1	79.3	64.5	63.7

Table V-1 Baker Lake Monthly Mean Relative Humidity, 1962 to 2008 (%)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1987	64.0	63.3	62.7	71.9	79.3	82.3	74.8	82.2	84.7	83.8		75.4
1988			66.0	77.4	85.8	78.4	68.6		85.3			
1989						78.3			84.1	87.0	72.4	
1990				73.0			72.4	79.8	83.6	79.7		
1991	64.0	63.8	64.5	77.8	84.7	75.5	72.6	78.2	85.9	86.4	72.8	
1992	82.9			85.9	88.1	86.6	75.7		85.1	89.8	73.8	68.2
1993		66.9		72.1	90.3	70.9	75.8	79.4	83.8	86.9	72.3	69.3
1994			68.4	75.3	88.5	75.0			84.1	87.5	79.7	
1995	66.9	62.9			82.4	72.8	71.1		79.0			
1996	66.2	67.2					65.4					
1997		66.3		77.3	80.7	71.9	72.4				77.3	70.0
1998									82.6			
1999		63.9	72.8	83.6		78.9						
2000								77.9				
2001								70.4				
2002			62.2			81.2	72.6	81.2		86.6	74.3	
2003			65.0	73.7	83.1	75.4	74.7	77.1	82.7	88.2	81.4	70.1
2004	69.3	67.1	66.8		86.1		67.5	75.2	82.7	81.5	68.3	
2005				73.9	78.0	69.2	67.8	68.6	78.7	92.1		66.9
2006		66.9	72.7	79.9	89.6	74.9	74.2	73.5		87.9		
2007	64.3		63.6				68.0	80.3	83.3		64.8	
2008		63.0			87.6		70.7	82.5	84.2	86.2	77.7	
Mean	67.6	65.4	65.3	74.2	82.5	76.8	71.8	76.4	82.3	84.5	74.2	67.8
Max	82.9	67.2	72.8	85.9	90.3	86.6	78.7	82.2	88.7	92.1	84.0	75.4
Min	62.9	62.9	61.0	62.5	71.3	66.1	57.9	65.4	72.8	72.4	64.2	62.3

Attachment VI Baker Lake Monthly Mean Atmospheric pressure, 1953 to 2008

Table VI-1 Baker Lake Monthly Mean Atmospheric pressure, 1962 to 2008 (kPa)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1962											101.3	101.5	
1963	101.1	101.7	101.8	102.0	101.6	101.6	101.0	101.2	101.5	100.7	101.3	101.7	101.4
1964	101.4	101.0	101.8	101.8	102.1	101.0	101.2	101.4	101.1	101.1	101.5	101.2	101.4
1965	101.4	101.4	102.4	101.6	101.4	101.5	101.2	101.0	101.1	101.0	101.6	101.3	101.4
1966	102.8	101.4	102.3	102.5	102.0	101.2	101.0	101.3	101.0	101.1	101.4	102.3	101.7
1967	101.6	101.6	101.5	102.0	101.5	101.2	101.0	100.8	100.7	101.2	101.3	101.4	101.3
1968	102.2	102.3	101.5	101.5	102.3	101.4	100.9	101.2	101.1	101.4	101.4	102.2	101.6
1969	102.3	102.3	102.3	102.0	101.6	101.2	101.1	101.1	101.9	101.4	101.2	101.8	101.7
1970	101.5	101.4	102.3	102.2	102.1	101.1	100.8	100.8	100.8	101.6	101.5	102.3	101.5
1971	101.4	101.5	102.0	102.1	101.5	101.6	101.0	101.0	101.0	100.9	102.0	101.7	101.5
1972	100.9	101.7	101.8	101.9	101.9	101.5	101.3	101.1	101.0	101.1	101.5	101.7	101.5
1973	101.3	102.0	101.8	102.7	101.9	101.5	101.1	100.9	101.0	101.1	102.1	102.1	101.6
1974	101.1	101.8	101.8	101.9	102.0	101.2	101.2	101.2		101.3	101.4	101.6	
1975	101.3	101.4	102.2	102.7	101.7	101.5	100.7	101.2	101.3	100.9	101.3	101.8	101.5
1976	101.5	100.9	101.3	102.0	101.8	101.4	101.1	101.2	101.1	101.6	101.5	101.4	101.4
1977	101.3	102.0	101.4	101.1	101.7	101.1	100.9	100.9	101.5	100.7	100.9	101.5	101.2
1978	101.9	102.3	101.7	102.2	102.0	100.8	100.7	100.9	101.7	101.1	101.2	101.4	101.5
1979	101.6	102.6	101.8	102.2	101.9	101.0	100.9	100.7	101.2			100.8	
1980	101.7	101.6		101.6	101.8	101.5	100.6	100.8	101.3	101.8	101.0	101.5	
1981	101.5		102.0			100.9		101.1	101.2	101.2	101.3	101.6	
1982	101.6	101.3	101.4	101.6	102.1	101.5	100.8	101.2	101.3	100.9	101.2	101.4	101.4
1983	101.5	102.0	102.3	102.4	101.7	101.1	100.9	100.7	101.0	100.9	101.8	101.1	101.5
1984		101.6	102.2	101.9	101.8	101.2	100.8	100.4	101.3	100.8	101.5	100.6	
1985	101.7	102.1	101.5	101.6	101.6	101.3	100.6	100.9	100.8	100.9		101.0	
1986	101.3	101.5	101.3	102.1	101.5	100.9	101.1	100.8	101.5	101.2	101.1	100.8	101.3

Table VI-1 Baker Lake Monthly Mean Atmospheric pressure, 1962 to 2008 (kPa)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1987	100.9	102.4	102.2	101.6	101.3	101.0	100.8	100.6	101.1	101.5		101.5	
1988	101.4		102.0	102.1	101.4	101.4		100.5	101.1				
1989						101.5		101.3	100.9	101.3	100.9		
1990				101.6	101.3	100.9	100.8	100.8	100.8	101.4			
1991	100.9	100.9	101.1	101.9	101.6	101.4	100.8	101.0	101.0	101.1	101.2	100.9	101.2
1992	100.7	101.5		102.0	101.4	101.7	101.1		100.7	100.8	101.5	100.7	
1993		101.6		102.0	101.7	101.3	101.1	101.0	100.6	100.9	100.8	101.2	
1994	101.8		101.5		101.7	100.7			100.9	101.0	100.9		
1995	101.8	101.4	102.0		101.7	101.4	100.5		101.0				
1996	100.9	101.3					101.2						
1997		101.2		102.1	101.9	101.0	100.9				101.0	100.8	
1998									100.8				
1999		101.6	102.1	101.8		100.9							
2000								100.9					
2001								100.7	101.0				
2002			101.7			101.0	100.8	100.8		101.2	100.8		
2003			101.4	102.2	101.2	101.0	101.0	101.0	101.0	101.0	100.3	101.2	
2004	102.2	102.0	101.6		101.5		100.9	101.1	100.8	100.7	100.9		
2005				101.9	101.8	101.1	100.5	100.8	101.0	101.1		101.6	
2006		101.5	102.7	101.3	101.9	101.1	100.6	100.9	101.1	101.1	101.6		
2007	101.2		101.8				100.7	100.4	101.2		101.4		
2008		101.5		101.7	101.6		100.8	100.5	100.8	101.1	101.7		
2009													
Average	101.5	101.7	101.8	101.9	101.7	101.2	100.9	100.9	101.1	101.1	101.3	101.4	101.4
Max	102.8	102.6	102.7	102.7	102.3	101.7	101.3	101.4	101.9	101.8	102.1	102.3	102.1
Min	100.7	100.9	101.1	101.1	101.2	100.7	100.5	100.4	100.6	100.7	100.3	100.6	100.7

Attachment VII Baker Lake Monthly Mean Net Radiation, 1969 to 2003

Table VII-1 Baker Lake Monthly Mean Net Radiation, 1969 to 2003 (MJ/m^2)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1969											-67.5	
1970		-113.3		-80.2		490.8	351.3					
1971		-55.3	-97.1	28.4	402.7		399.5	237.9			-86.1	
1972		-60.3	-51.1		60.5						-46.7	
1973							420.1	200.1	87.2			
1974	-58.2								116.0		-48.0	
1975							400.3		107.5			
1976			-38.6					267.4			-95.2	
1977			-3.6				383.1		105.0			
1978							382.2					
1979							368.9		92.6			
1980	-82.9											
1981											-70.8	-48.7
1982		-98.6		-3.3					108.3			
1983										-33.9		
1984	-106.2	-59.8										
1985						498.6	421.1					
1986												
1987			-51.9			201.0	479.3					
1988									96.0			
1989		-69.7	-56.8									
1990										-56.2	-69.5	-56.8
1991	-39.6	-74.4	-62.8			550.7		285.1	118.0	-28.0		
1992												
1993	-112.7	-122.0			106.1			294.1	145.4			

Table VII-1 Baker Lake Monthly Mean Net Radiation, 1969 to 2003 (MJ/m^2)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1994	-98.8	-100.9										
1998					84.0	498.7	430.9	251.1				
1999					141.0			266.8	103.6	-34.2	-76.2	
2000						464.7	585.7	312.6	108.9			-58.6
2001			-58.7	-32.0	251.0	622.8	459.1			-2.0	-98.2	-80.2
2002			-84.0	-27.6	61.8	444.5	453.2	290.7	112.8	-58.5	-84.0	
2003			-57.6	-4.6								
Mean	-83.1	-83.8	-56.2	-19.9	158.2	471.5	425.7	267.3	108.4	-35.5	-74.2	-61.0
Max	-39.6	-55.3	-3.6	28.4	402.7	622.8	585.7	312.6	145.4	-2.0	-46.7	-48.7
Min	-112.7	-122.0	-97.1	-80.2	60.5	201.0	351.3	200.1	87.2	-58.5	-98.2	-80.2

Attachment VIII Kiggavik Daily Climate Data (2009 and 2010)

Table VIII-1 Kiggavik Daily Rainfall, May to December 2009 (mm)

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-	0	0	0	6.2	4	0	0
2	-	0	0	0	-	0	0	0
3	-	0	0	0	-	0.2	0	0
4	-	0	0.8	0	-	0.2	0	0
5	-	0	0	0	-	0	0	0
6	0	0	0	0	-	0	0	0
7	0	0	2.6	37.4	-	0	0	0
8	0	0	0.6	0.6	-	0	0	0
9	0	0	2	0	-	0	0	0
10	0	0	0	0	-	0	0	0
11	0	0	0	0	-	0	0	0
12	0	0.8	0	0.8	-	0	0	0
13	0	8.4	0	0	-	0	0	0
14	0	0	0	0	-	0	0	0
15	0	0.4	0	0	-	0	0	0
16	0	0	0	0	-	0	0	0
17	0	0	1	0	-	0	0	0
18	0	0	0	9.8	-	0	0	0
19	0	0	0	12.8	-	0	0	0
20	0	4.8	4	0.2	-	0	0	0
21	0	0	0	5.2	-	0	0	0
22	0	0	0	0	-	0	0	0
23	0	0	0.6	0	-	0	0	0
24	0	0	0	0	-	0	0	0
25	0	0	0.2	0	-	0	0	0

Table VIII-1 Kiggavik Daily Rainfall, May to December 2009 (mm)

Day	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
26	0	0	11.8	0	-	0	0	0
27	0	0	0	0	-	0	0	0
28	0	0	0	0	-	0	0	0
29	0	0	0	0	-	0	0	0
30	0	0	0	0	-	0	0	0
31	0	-	0	12	-	0	-	0
Total	0	14.4	23.6	78.8	6.2	4.4	0	0

Table VIII-2 Kiggavik Daily Rainfall, January to August 2010 (mm)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	0	0	0	0	0	0	2.4	0
2	0	0	0	0	0	0	0	0.6
3	0	0	0	0	0	0	2.2	1.8
4	0	0	0	0	0	0	18.6	0.6
5	0	0	0	0	0	0	3.6	0
6	0	0	0	0	0	0.4	4	0
7	0	0	0	0	0	0	12.6	0
8	0	0	0	0	0	0	1.6	0
9	0	0	0	0	0	0.2	0	0
10	0	0	0	0	0	0.2	0	0
11	0	0	0	0	0	0	0.4	0
12	0	0	0	0	0	0	1.6	0
13	0	0	0	0	0	0	1.8	0
14	0	0	0	1	0	2.4	0	0
15	0	0	0	0.2	0	0	0	0
16	0	0	0	0.2	0	0	0	0
17	0	0	0	0	0	12	0	0.6
18	0	0	0	0	0	0	0	1.2
19	0	0	0	0	0	1.2	3	1.8
20	0	0	0	0	0	0.6	0	0.8
21	0	0	0	0	0	0.6	0	0.4
22	0	0	0	0	0	1.2	0	1.8
23	0	0	0	0	0	0.2	0	0
24	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	1	-
26	0	0	0	0	0	0	2.8	-
27	0	0	0	0	0	0	0	-
28	0	0	0	0	0	0	0	-
29	0	-	0	0	0	0	0	-

Table VIII-2 Kiggavik Daily Rainfall, January to August 2010 (mm)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
30	0	-	0	0	0.2	4.4	0	-
31	0	-	0	-	0.2	-	0.4	-
Total	0	0	0	1.4	0.4	23.4	56	9.6

Table VIII-3 Kiggavik Mean, Maximum, and Minimum Daily Temperature, May to August 2009 (°C)

Day	Mean				Maximum				Minimum			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	-	-3.0	14.6	7.7	-	-2.9	14.8	7.8	-	-3.1	14.4	7.6
2	-	-1.6	14.8	12.0	-	-1.5	14.9	12.1	-	-1.8	14.6	11.9
3	-	-0.8	15.7	13.5	-	-0.8	15.9	13.6	-	-0.8	15.5	13.4
4	-	0.6	14.9	10.0	-	0.6	15.0	10.1	-	0.6	14.7	9.8
5	-	0.8	15.6	10.9	-	0.8	15.8	11.0	-	0.7	15.5	10.8
6	-	-0.4	11.3	11.4	-	-0.3	11.4	11.5	-	-0.5	11.1	11.2
7	-15.9	2.2	11.2	9.5	-15.8	2.3	11.3	9.5	-16.0	2.1	11.0	9.4
8	-13.8	1.8	12.0	9.3	-13.7	1.9	12.2	9.4	-13.9	1.7	11.9	9.2
9	-11.0	5.0	5.9	6.5	-10.9	5.1	6.0	6.6	-11.1	4.9	5.8	6.4
10	-8.4	4.0	7.1	9.9	-8.4	4.1	7.2	10.0	-8.5	3.8	7.0	9.8
11	-12.7	0.4	9.0	6.9	-12.7	0.5	9.1	7.0	-12.8	0.3	8.9	6.7
12	-14.7	2.6	7.8	7.3	-14.6	2.7	7.9	7.4	-14.8	2.5	7.6	7.1
13	-13.6	1.9	6.9	6.2	-13.6	2.0	7.0	6.3	-13.7	1.9	6.7	6.1
14	-12.7	3.1	7.7	7.2	-12.6	3.2	7.8	7.3	-12.8	3.0	7.5	7.1
15	-11.6	3.3	10.7	10.6	-11.5	3.4	10.9	10.7	-11.7	3.2	10.6	10.4
16	-12.9	3.2	13.5	12.9	-12.7	3.3	13.7	13.0	-13.0	3.1	13.3	12.7
17	-12.3	3.6	12.1	15.2	-12.3	3.7	12.2	15.4	-12.4	3.5	12.0	15.1
18	-12.6	6.7	14.3	10.7	-12.6	6.9	14.5	10.8	-12.6	6.6	14.2	10.7
19	-10.2	7.0	13.0	9.4	-10.1	7.1	13.1	9.4	-10.2	6.9	12.8	9.4
20	-7.7	2.0	11.0	9.4	-7.6	2.1	11.0	9.4	-7.7	2.0	10.9	9.3
21	-6.3	4.1	12.8	7.0	-6.2	4.2	12.9	7.1	-6.3	4.0	12.6	6.9
22	-3.7	8.1	11.2	4.0	-3.6	8.2	11.3	4.1	-3.7	7.9	11.1	3.9
23	-4.8	8.6	11.5	5.2	-4.7	8.8	11.5	5.3	-4.9	8.5	11.4	5.0
24	-8.4	4.6	15.9	7.6	-8.4	4.7	16.0	7.8	-8.5	4.5	15.7	7.4
25	-8.8	10.1	15.8	8.5	-8.8	10.3	15.9	8.6	-8.9	10.0	15.8	8.3
26	-8.3	9.0	14.5	9.0	-8.3	9.1	14.6	9.1	-8.3	8.8	14.4	8.8
27	-7.4	7.0	12.7	10.8	-7.4	7.1	12.7	10.9	-7.5	6.9	12.6	10.6

Table VIII-3 Kiggavik Mean, Maximum, and Minimum Daily Temperature, May to August 2009 (°C)

Day	Mean				Maximum				Minimum			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug	May	Jun	Jul	Aug
28	-5.8	11.9	11.8	13.6	-5.7	12.0	11.8	13.8	-5.8	11.7	11.7	13.5
29	-5.4	15.4	9.1	12.3	-5.3	15.5	9.1	12.4	-5.5	15.2	9.0	12.1
30	-3.2	15.1	7.7	13.7	-3.2	15.3	7.8	13.9	-3.3	15.0	7.6	13.6
31	-4.2	-	8.3	13.2	-4.1	-	8.4	13.4	-4.2	-	8.2	13.1
Mean	-9.5	4.5	11.6	9.7	-9.4	4.6	11.7	9.8	-9.5	4.4	11.5	9.6

Table VIII-4 Kiggavik Mean, Maximum, and Minimum Daily Temperature, September to December 2009 (°C)

Day	Mean				Maximum				Minimum			
	Sep	Oct	Nov	Dec	Sep	Oct	Nov	Dec	Sep	Oct	Nov	Dec
1	6.4	1.3	-21.8	-17.8	11.5	2.3	-20.3	-17.4	3.7	-1.4	-23.3	-19.1
2	-	-1.4	-19.0	-14.5	-	0	-15.6	-12.1	-	-3	-22.9	-17
3	-	1.0	-15.1	-19.0	-	1.9	-13.5	-15.4	-	0.3	-16.8	-20.9
4	-	0.5	-19.7	-23.3	-	1.6	-16.8	-22.1	-	-0.1	-21.8	-24.7
5	-	-0.7	-23.2	-16.7	-	-0.1	-21.8	-13.7	-	-1.6	-24.2	-22.8
6	-	-1.2	-18.7	-24.9	-	-0.7	-14.2	-20.8	-	-1.7	-24.1	-27.3
7	-	-2.1	-14.7	-28.5	-	-1.3	-13.1	-25.2	-	-3.4	-18.6	-30.3
8	-	-1.1	-19.3	-28.2	-	0.4	-17.7	-24.1	-	-2.3	-20.6	-31.1
9	-	-2.5	-11.2	-29.4	-	-0.2	-9.1	-28.7	-	-3.9	-15.7	-30.6
10	-	-4.9	-14.0	-33.9	-	-4.4	-9.6	-32.6	-	-5.4	-17.8	-34.6
11	-	-6.3	-14.1	-20.7	-	-5.4	-8.4	-16.4	-	-7.2	-17.6	-29.9
12	-	-9.0	-7.1	-26.3	-	-7.7	-6.5	-24.4	-	-9.6	-7.8	-27.1
13	-	-9.4	-11.4	-26.7	-	-8.4	-10.3	-25.9	-	-10.5	-14.5	-27.2
14	-	-4.4	-14.1	-23.6	-	-2	-7.4	-20.7	-	-8.1	-18.2	-27.1
15	-	-3.9	-13.8	-22.6	-	-2.4	-7.2	-21.6	-	-5.4	-19.9	-24.4
16	-	-2.1	-12.4	-26.1	-	-0.9	-7.2	-23.6	-	-3.7	-17.1	-27.9
17	-	-6.4	-18.8	-26.3	-	-2.5	-15.9	-24.9	-	-11.9	-21.3	-27
18	-	-11.0	-18.4	-23.7	-	-10.1	-12.7	-23.3	-	-12.9	-20.8	-24.2
19	-	-12.4	-8.2	-24.9	-	-11.6	-5.2	-23.4	-	-14.1	-17.1	-26.8
20	-	-10.3	-21.0	-20.3	-	-8	-19.2	-14.3	-	-12.4	-22.5	-23.7
21	-	-10.8	-22.9	-13.9	-	-8.4	-21.9	-8.1	-	-13.4	-23.9	-20
22	-	-12.9	-17.0	-21.9	-	-10.6	-13.3	-20.9	-	-14.4	-21.2	-22.7
23	-	-14.1	-14.2	-24.2	-	-12.8	-12.8	-21.2	-	-15.3	-16.2	-26.3
24	-	-14.2	-15.3	-24.5	-	-13.5	-14.2	-22.7	-	-15.4	-16.1	-26.7
25	-	-16.6	-18.5	-23.7	-	-15.1	-14.7	-15.2	-	-17.7	-23.3	-28.5
26	-	-11.1	-15.8	-19.3	-	-5.2	-11.3	-15.4	-	-17.2	-19.5	-21.1
27	-	-3.8	-12.6	-22.4	-	-2.9	-11.8	-20	-	-6.9	-13.2	-23.9

Table VIII-4 Kiggavik Mean, Maximum, and Minimum Daily Temperature, September to December 2009 (°C)

Day	Mean				Maximum				Minimum			
	Sep	Oct	Nov	Dec	Sep	Oct	Nov	Dec	Sep	Oct	Nov	Dec
28	-	-17.5	-13.5	-22.6	-	-12.9	-12.8	-18.9	-	-19.7	-14.5	-25
29	-	-20.5	-12.3	-24.2	-	-19.4	-11.7	-22.4	-	-21.2	-12.9	-26.5
30	-	-13.9	-15.6	-23.6	-	-12.2	-11.9	-20.6	-	-17.4	-19.3	-26.1
31	-	-19.4	-	-27.4	-	-14.1	-	-26.7	-	-23.9		-28.3
Mean	-	-7.8	-15.8	-23.4	-	-6.0	-12.9	-20.7	-	-9.7	-18.8	-25.8

Table VIII-5 Kiggavik Mean, Maximum, and Minimum Daily Temperature, January - April 2010(°C)

Day	Mean				Maximum				Minimum			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
1	-25.8	-23.2	-18.2	-9.1	-25.1	-20.3	-13.9	-8.2	-26.7	-26.7	-23.9	-10.2
2	-24.8	-24.6	-22.3	-11.1	-19.7	-22.9	-17.4	-10.0	-29.6	-26.2	-26.1	-12.4
3	-28.3	-28.6	-12.8	-12.0	-22.7	-26.7	-10.8	-10.6	-29.8	-30.2	-15.8	-13.0
4	-29.4	-30.1	-8.7	-11.9	-26.8	-29.1	-7.6	-10.4	-31.7	-30.9	-10.4	-13.9
5	-31.1	-29.6	-10.5	-11.3	-28.7	-28.1	-9.4	-9.7	-33.7	-31.4	-13.0	-12.7
6	-29.3	-29.6	-12.4	-11.5	-26.9	-27.8	-10.5	-8.3	-32.8	-31.4	-16.7	-14.9
7	-24.7	-22.3	-18.9	-10.9	-20.8	-17.9	-16.3	-4.8	-28.3	-28.1	-23.7	-17.2
8	-21.5	-23.6	-17.5	-7.6	-19.9	-21.0	-13.1	-4.7	-24.0	-25.2	-23.5	-11.4
9	-22.8	-24.4	-10.3	-6.2	-20.1	-22.8	-7.9	-5.0	-28.8	-26.2	-13.2	-7.4
10	-32.0	-25.2	-11.2	-10.7	-30.2	-22.6	-7.4	-8.3	-33.3	-26.8	-16.6	-14.4
11	-30.9	-22.7	-9.1	-14.8	-28.8	-22.0	-7.1	-9.9	-33.9	-24.2	-11.2	-19.4
12	-26.0	-22.6	-14.1	-10.3	-24.8	-19.0	-12.1	-5.7	-28.3	-24.4	-15.3	-13.9
13	-24.5	-14.7	-8.3	-3.3	-23.0	-11.8	-5.8	0.2	-26.1	-18.8	-12.9	-7.3
14	-25.7	-15.1	-7.7	-1.5	-23.1	-12.6	-6.7	0.6	-28.7	-16.7	-8.6	-5.4
15	-31.2	-18.0	-10.6	-2.5	-30.1	-16.9	-8.7	0.1	-32.6	-19.8	-12.8	-4.2
16	-25.6	-20.8	-12.0	-4.8	-18.7	-19.6	-11.3	-3.8	-33.3	-21.6	-12.7	-5.6
17	-22.1	-19.6	-21.2	-4.9	-16.8	-16.4	-14.3	-3.4	-26.1	-22.4	-24.0	-7.6
18	-16.1	-15.5	-23.1	-12.3	-8.3	-14.4	-21.4	-9.4	-20.5	-16.6	-25.5	-15.3
19	-23.5	-21.3	-22.6	-9.8	-13.7	-15.1	-18.9	-6.7	-26.7	-24.4	-25.4	-14.1
20	-25.3	-23.6	-27.7	-7.1	-24.4	-22.4	-24.6	-3.2	-26.4	-27.2	-29.6	-11.7
21	-24.9	-28.1	-26.5	-9.2	-18.9	-26.4	-25.0	-6.6	-27.8	-31.9	-27.8	-10.9
22	-16.9	-35.9	-27.7	-9.6	-15.4	-33.5	-25.2	-5.3	-18.7	-37.8	-30.6	-14.9
23	-14.2	-35.7	-29.5	-5.8	-13.1	-32.7	-27.3	-4.4	-15.3	-38.4	-31.9	-7.7
24	-21.6	-37.4	-28.0	-4.8	-13.7	-35.4	-24.6	-3.6	-28.6	-39.1	-30.4	-6.4
25	-22.2	-33.6	-26.3	-5.2	-19.5	-29.3	-22.9	-2.9	-28.2	-37.2	-29.4	-7.8
26	-25.6	-28.7	-26.3	-4.0	-24.2	-26.8	-23.5	-1.2	-26.4	-30.4	-29.1	-5.9
27	-24.6	-29.3	-27.2	-6.2	-22.8	-26.7	-24.7	-4.6	-25.3	-31.3	-29.9	-8.3

Table VIII-5 Kiggavik Mean, Maximum, and Minimum Daily Temperature, January - April 2010(°C)

Day	Mean				Maximum				Minimum			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
28	-25.5	-20.4	-25.4	-5.3	-22.2	-14.6	-22.2	-4.4	-28.0	-26.3	-28.4	-6.0
29	-28.9	-	-22.7	-5.5	-27.1	-	-13.9	-4.1	-30.7	-	-28.6	-7.4
30	-31.4	-	-12.8	-7.8	-28.7	-	-11.8	-5.6	-33.8	-	-14.1	-9.8
31	-25.3	-	-12.0	-	-24.1	-	-9.6	-	-26.9	-	-13.2	-
Mean	-25.2	-25.1	-18.2	-7.9	-22.0	-22.7	-15.4	-5.5	-28.1	-27.6	-21.1	-10.6

Table VIII-6 Kiggavik Mean, Maximum, and Minimum Daily Temperature, May to August 2010 (°C)

Day	Mean				Maximum				Minimum			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	-5.9	-1.5	8.8	15.6	-2.7	0.9	14.6	19.3	-9.9	-4.9	5.2	12.1
2	-14.1	-1.0	7.0	11.3	-12.2	0.9	8.6	15.2	-17.1	-4.2	5.3	7.9
3	-12.7	-0.3	7.0	11.2	-10.8	0.6	10.0	15.4	-15.1	-5.4	5.0	6.7
4	-10.9	-0.4	4.8	5.6	-9.1	1.3	5.8	10.0	-12.7	-2.6	4.1	2.7
5	-7.9	0.3	4.9	6.1	-5.9	1.9	6.4	10.8	-9.7	-1.8	3.5	2.0
6	-8.4	-1.1	5.6	11.1	-6.9	1.3	7.8	17.3	-9.9	-3.5	4.0	4.8
7	-8.1	0.2	7.6	13.1	-5.8	1.8	10.0	18.3	-10.3	-2.1	4.9	6.5
8	-9.3	-0.1	11.9	14.4	-7.1	1.4	16.2	20.3	-11.7	-1.9	9.0	5.8
9	-9.7	0.3	14.3	15.7	-5.9	2.2	18.4	21.8	-14.0	-1.4	8.6	6.8
10	-7.6	1.1	14.7	15.2	-6.4	2.7	19.7	20.8	-10.1	-0.4	9.0	9.4
11	-9.9	4.8	8.7	14.8	-7.6	9.3	13.4	19.5	-13.0	-0.5	5.0	10.4
12	-7.9	1.8	10.4	15.0	-5.7	4.9	17.7	20.3	-10.4	-1.1	2.7	10.5
13	-11.6	3.4	14.4	8.7	-9.1	6.3	20.3	12.9	-14.6	0.5	7.9	6.1
14	-9.5	7.8	17.0	6.3	-7.7	15.0	21.8	9.6	-12.7	1.8	11.6	3.5
15	-8.0	9.9	18.6	7.7	-4.9	16.1	23.7	12.8	-11.2	3.1	13.7	2.8
16	-5.2	5.7	17.5	4.8	-4.4	8.5	23.3	7.1	-7.0	3.3	11.3	3.1
17	-7.6	4.2	15.7	4.9	-6.0	5.4	20.4	8.3	-10.9	2.4	9.8	1.6
18	-6.2	3.0	16.1	6.1	-2.9	4.6	22.0	9.3	-10.7	1.1	8.5	3.7
19	-4.3	5.5	17.6	7.2	-3.2	9.3	23.4	10.4	-6.1	1.8	10.1	4.8
20	-8.8	6.3	15.9	10.7	-7.7	10.4	20.3	13.2	-10.4	1.8	10.4	8.3
21	-9.3	4.9	17.4	9.9	-7.7	7.3	23.8	11.3	-10.9	2.7	11.3	8.4
22	-10.1	3.8	13.5	11.2	-7.8	5.5	16.3	15.6	-12.9	2.4	9.6	8.3
23	-8.9	5.7	12.3	12.6	-7.3	9.5	17.1	17.9	-10.1	2.3	6.4	6.6
24	-6.5	5.9	16.5	9.9	-3.8	10.2	22.6	14.1	-9.2	2.7	8.0	7.2
25	-3.5	8.3	16.1	-	-1.8	13.4	19.8	-	-5.2	2.0	12.3	-
26	-2.7	10.8	15.6	-	-2.0	15.5	20.4	-	-3.8	4.3	12.1	-
27	-4.9	11.6	14.7	-	-4.1	15.7	18.9	-	-5.5	6.0	9.9	-

Table VIII-6 Kiggavik Mean, Maximum, and Minimum Daily Temperature, May to August 2010 (°C)

Day	Mean				Maximum				Minimum			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug	May	Jun	Jul	Aug
28	-6.7	10.0	13.3	-	-5.1	13.4	18.1	-	-8.5	5.4	7.8	-
29	-4.8	11.9	12.4	-	-2.6	18.7	16.1	-	-8.2	4.6	7.9	-
30	-3.4	9.5	14.1	-	-1.9	12.3	19.7	-	-5.3	6.3	7.1	-
31	-2.8	-	14.6	-	-1.2	-	17.9	-	-5.2	-	12.2	-
Mean	-7.7	4.4	12.9	10.4	-5.7	7.5	17.2	14.6	-10.1	0.8	8.2	6.3

Table VIII-7 Kiggavik Daily Mean and Maximum Wind Speeds, May to August 2009 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	-	40.1	9.8	19.0	-	61.2	27.4	27.4
2	-	8.9	9.8	18.3	-	27.4	24.1	33.8
3	-	10.0	7.8	35.6	-	20.9	14.5	45.1
4	-	24.8	11.4	31.0	-	35.4	38.6	41.8
5	-	33.1	15.6	19.7	-	45.1	33.8	32.2
6	1.1	24.0	21.5	11.1	4.8	41.8	45.1	24.1
7	1.4	8.5	11.6	35.1	6.4	20.9	22.5	57.9
8	5.3	7.4	17.5	29.7	16.1	19.3	40.2	46.7
9	12.6	8.1	26.8	16.8	20.9	20.9	45.1	33.8
10	31.4	19.3	21.3	14.0	49.9	40.2	30.6	33.8
11	25.7	19.1	22.3	27.0	37.0	29.0	38.6	40.2
12	21.7	16.9	21.6	30.9	27.4	29.0	37.0	43.5
13	12.9	23.7	28.8	30.2	29.0	48.3	40.2	38.6
14	4.8	15.0	24.1	15.6	17.7	25.7	35.4	38.6
15	25.3	22.3	19.8	11.8	45.1	37.0	32.2	30.6
16	21.1	22.7	21.1	9.5	41.8	33.8	51.5	29.0
17	47.6	21.3	20.9	22.2	57.9	32.2	33.8	46.7
18	45.6	10.6	13.1	28.5	53.1	20.9	24.1	37.0
19	39.6	18.5	17.7	26.7	53.1	38.6	32.2	33.8
20	23.7	18.3	21.1	21.4	37.0	29.0	33.8	32.2
21	29.7	31.8	16.6	16.7	43.5	54.7	32.2	41.8
22	29.9	11.6	21.0	20.7	43.5	27.4	33.8	38.6
23	34.1	16.3	8.0	13.7	48.3	32.2	16.1	20.9
24	19.2	20.6	14.2	6.0	29.0	38.6	25.7	11.3
25	21.9	16.4	15.0	8.6	33.8	37.0	32.2	17.7
26	13.1	16.4	13.0	8.3	20.9	37.0	24.1	14.5
27	23.4	24.7	29.5	6.3	38.6	38.6	40.2	20.9
28	25.0	10.1	24.2	7.7	38.6	24.1	35.4	19.3

Table VIII-7 Kiggavik Daily Mean and Maximum Wind Speeds, May to August 2009 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
29	22.6	8.3	26.1	7.2	48.3	22.5	38.6	17.7
30	40.1	12.7	27.6	8.3	54.7	29.0	43.5	19.3
31	32.4	-	32.6	11.3	56.3	-	46.7	32.2
Mean	23.5	18.0	19.1	18.3	36.6	33.3	33.8	32.3

Table VIII-8 Kiggavik Daily Mean and Maximum Wind Speeds, September to December 2009 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	Sept	Oct	Nov	Dec	Sept	Oct	Nov	Dec
1	49.8	24.1	14.5	0.0	64.4	37.0	17.7	0.0
2	-	24.1	18.9	0.0	-	35.4	30.6	0.0
3	-	7.6	34.8	0.0	-	12.9	43.5	0.0
4	-	5.2	24.0	0.0	-	9.7	32.2	0.0
5	-	14.3	19.6	0.4	-	27.4	33.8	4.8
6	-	23.1	28.2	50.0	-	25.7	35.4	66.0
7	-	14.6	32.6	27.6	-	20.9	35.4	37.0
8	-	26.0	27.4	30.7	-	30.6	32.2	45.1
9	-	44.5	33.5	4.8	-	54.7	45.1	14.5
10	-	40.6	10.2	16.0	-	45.1	17.7	30.6
11	-	29.1	12.6	36.0	-	37.0	22.5	41.8
12	-	27.9	27.2	52.5	-	32.2	35.4	66.0
13	-	28.2	9.4	48.4	-	35.4	17.7	61.2
14	-	29.8	0.0	42.2	-	37.0	0.0	46.7
15	-	24.9	0.0	46.7	-	35.4	0.0	61.2
16	-	17.7	1.9	22.1	-	25.7	4.8	33.8
17	-	24.1	7.3	12.0	-	46.7	11.3	27.4
18	-	22.1	13.6	11.5	-	35.4	30.6	27.4
19	-	12.0	12.3	3.1	-	17.7	24.1	6.4
20	-	15.9	20.3	33.8	-	27.4	35.4	64.4
21	-	25.9	29.4	20.2	-	35.4	45.1	30.6
22	-	28.8	31.8	0.3	-	33.8	37.0	3.2
23	-	4.2	28.7	0.0	-	14.5	41.8	0.0
24	-	9.7	2.8	0.0	-	16.1	6.4	0.0
25	-	8.8	0.0	2.3	-	16.1	0.0	25.7
26	-	19.3	9.2	26.9	-	33.8	17.7	33.8
27	-	13.9	18.7	50.9	-	33.8	19.3	56.3

Table VIII-8 Kiggavik Daily Mean and Maximum Wind Speeds, September to December 2009 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	Sept	Oct	Nov	Dec	Sept	Oct	Nov	Dec
28	-	33.7	11.4	57.0	-	48.3	17.7	66.0
29	-	15.7	4.5	58.8	-	22.5	8.0	67.6
30	-	6.3	1.5	56.2	-	8.0	6.4	70.8
31	-	22.7		51.2	-	49.9	-	78.9
Mean	49.8	20.8	16.2	24.6	64.4	30.4	23.5	34.4

Table VIII-9 Kiggavik Daily Mean and Maximum Wind Speeds, Jan to April 2010 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
1	17.0	55.2	23.9	38.0	24.1	67.6	38.6	45.1
2	20.5	32.0	14.0	36.3	37.0	45.1	30.6	40.2
3	22.7	25.9	25.4	26.3	38.6	32.2	29.0	38.6
4	26.9	23.6	12.1	32.5	40.2	33.8	29.0	43.5
5	9.0	1.9	7.9	42.6	25.7	6.4	12.9	48.3
6	16.3	2.6	26.8	9.2	29.0	3.2	51.5	32.2
7	9.2	6.6	8.9	4.5	20.9	12.9	17.7	11.3
8	8.9	6.9	25.6	12.4	17.7	9.7	38.6	27.4
9	25.7	5.0	25.2	14.4	46.7	14.5	35.4	27.4
10	35.4	5.1	12.9	46.2	38.6	12.9	17.7	53.1
11	19.2	5.1	16.5	19.4	30.6	8.0	27.4	53.1
12	23.4	2.3	8.6	23.1	30.6	4.8	17.7	38.6
13	19.2	16.7	5.0	15.1	27.4	30.6	12.9	33.8
14	35.0	5.4	11.3	19.3	46.7	9.7	17.7	32.2
15	13.3	5.8	24.3	29.0	33.8	8.0	41.8	41.8
16	26.5	5.2	23.4	22.8	48.3	9.7	29.0	43.5
17	14.3	2.6	40.2	53.0	25.7	6.4	70.8	75.6
18	13.2	18.3	45.8	34.8	29.0	37.0	59.5	53.1
19	37.0	40.5	22.1	5.8	48.3	61.2	46.7	12.9
20	15.4	4.2	36.7	5.3	24.1	9.7	43.5	12.9
21	10.7	13.7	31.0	19.0	14.5	37.0	41.8	29.0
22	6.4	41.0	14.5	19.5	14.5	49.9	19.3	29.0
23	13.0	23.0	22.7	21.0	19.3	37.0	32.2	24.1
24	47.7	5.7	34.7	23.5	59.5	11.3	40.2	30.6
25	43.9	2.3	15.6	18.0	48.3	8.0	27.4	30.6
26	49.7	15.2	14.5	4.7	64.4	32.2	27.4	16.1
27	45.8	12.4	18.9	15.4	61.2	27.4	32.2	22.5
28	23.4	13.5	19.6	20.0	37.0	20.9	29.0	27.4

Table VIII-9 Kiggavik Daily Mean and Maximum Wind Speeds, Jan to April 2010 (km/h)

Day	Mean Wind Speed				Maximum Wind Speed			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
29	44.6	-	23.7	14.8	49.9	-	46.7	27.4
30	37.7	-	47.6	11.4	57.9	-	54.7	24.1
31	60.6	-	38.3	-	67.6	-	41.8	-
Mean	25.5	14.2	22.5	21.9	37.3	23.1	34.2	34.2

Table VIII-11 Kiggavik Daily Mean and Maximum Wind Speeds, May to August 2010 (km/h)

Day	Mean Wind Speed				Max Wind Speed			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	27.6	12.5	20.7	10.9	48.3	17.7	30.6	19.3
2	27.8	7.9	17.6	23.1	37.0	16.1	24.1	38.6
3	12.2	19.2	22.7	22.7	14.5	32.2	33.8	38.6
4	17.7	12.8	41.3	49.4	22.5	25.7	48.3	61.2
5	12.3	8.9	22.5	33.6	16.1	29.0	37.0	51.5
6	14.4	29.7	16.0	10.3	19.3	51.5	22.5	20.9
7	14.3	14.3	18.2	10.6	24.1	20.9	30.6	22.5
8	5.9	26.6	15.5	6.9	12.9	38.6	25.7	16.1
9	15.4	22.7	14.4	11.8	32.2	37.0	27.4	30.6
10	18.7	21.8	12.3	14.4	29.0	32.2	32.2	33.8
11	9.5	28.1	24.2	18.4	20.9	40.2	38.6	33.8
12	29.3	7.7	12.5	12.5	61.2	27.4	22.5	22.5
13	49.7	20.9	13.7	38.8	62.8	35.4	22.5	53.1
14	38.9	12.2	16.3	33.4	45.1	24.1	25.7	43.5
15	25.6	13.5	14.4	27.9	32.2	32.2	27.4	40.2
16	27.1	19.4	14.6	30.7	37.0	33.8	25.7	38.6
17	6.6	18.0	17.7	34.9	19.3	46.7	32.2	48.3
18	21.5	26.6	10.7	43.1	25.7	37.0	24.1	64.4
19	30.1	9.5	12.5	25.7	38.6	19.3	33.8	48.3
20	19.9	17.5	19.3	8.2	27.4	30.6	32.2	19.3
21	25.6	16.2	18.9	11.0	30.6	22.5	33.8	17.7
22	20.3	21.4	16.4	21.7	25.7	29.0	30.6	43.5
23	13.2	31.8	10.6	14.0	25.7	38.6	22.5	20.9
24	15.4	25.7	12.7	15.6	24.1	43.5	29.0	22.5
25	6.4	10.0	16.1	-	11.3	24.1	29.0	-
26	20.9	18.3	22.8	-	41.8	32.2	40.2	-
27	55.6	12.9	14.8	-	62.8	22.5	25.7	-
28	55.9	16.7	17.7	-	64.4	29.0	27.4	-

29	22.5	17.6	16.4	-	35.4	40.2	25.7	-
30	3.1	15.0	11.5	-	8.0	27.4	24.1	-
31	15.8	-	19.0	-	27.4		40.2	-
Mean	21.9	18.3	17.2	22.2	64.4	51.5	48.3	64.4

Table VIII-12 Kiggavik Daily Mean Relative Humidity, May to December 2009 (%)

Day	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	-	90.6	59.7	84.6	89.7	96.9	85.4	88.1
2	-	87.1	54.9	80.0	-	95.5	87.4	89.9
3	-	91.0	44.6	72.8	-	97.9	89.4	86.6
4	-	92.0	58.9	77.0	-	94.5	85.1	84.5
5	-	92.9	58.4	73.2	-	89.5	83.6	88.2
6	86.0	92.0	65.5	71.6	-	96.1	87.5	83.5
7	85.3	79.3	67.3	93.8	-	96.2	89.0	81.5
8	86.0	85.6	78.7	83.3	-	96.6	85.7	81.5
9	85.9	82.3	73.4	78.4	-	95.2	91.9	80.7
10	86.0	83.7	63.3	72.2	-	94.3	89.5	77.7
11	82.1	84.1	59.6	83.4	-	92.5	90.1	85.9
12	80.7	82.0	62.7	86.1	-	88.8	94.0	82.7
13	78.7	89.7	64.7	87.0	-	88.9	91.3	82.5
14	76.8	78.2	63.9	78.8	-	91.9	90.4	84.6
15	85.7	78.3	61.0	70.2	-	93.7	90.0	84.9
16	85.5	80.5	60.4	76.4	-	93.7	90.7	82.5
17	88.6	82.9	76.8	71.1	-	91.8	86.8	82.9
18	88.8	70.5	56.9	90.0	-	88.9	87.6	84.0
19	90.1	75.4	72.4	97.7	-	90.3	92.8	83.6
20	90.2	90.2	84.6	90.0	-	90.9	85.8	86.4
21	91.2	88.9	76.0	89.2	-	88.0	84.9	89.6
22	92.2	77.2	85.7	84.0	-	88.2	88.7	85.5
23	91.3	79.9	93.4	79.8	-	88.5	90.0	83.7
24	86.7	73.9	83.7	68.5	-	89.7	89.6	83.5
25	88.2	69.6	87.9	66.4	-	88.6	87.0	84.5
26	90.5	82.5	89.9	66.1	-	92.2	89.3	86.7
27	89.3	77.5	88.0	64.2	-	95.9	91.2	85.0
28	90.1	61.9	80.1	73.0	-	87.2	90.7	84.9
29	91.5	59.4	88.4	84.2	-	86.6	91.3	84.0

Table VIII-12 Kiggavik Daily Mean Relative Humidity, May to December 2009 (%)

Day	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
30	92.3	52.1	86.5	79.4	-	90.2	88.8	84.3
31	92.8	-	76.5	89.5	-	86.8	-	82.0
Mean	87.4	80.4	71.7	79.4	89.7	91.8	88.9	84.4

Table VIII-13 Kiggavik Daily Mean Relative Humidity, January to August 2010 (%)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	78.9	78.8	81.5	83.5	83.9	52.0	44.4	45.2
2	78.6	79.1	80.5	84.3	80.9	49.0	45.2	47.1
3	79.2	78.5	82.2	84.3	81.2	46.6	45.5	48.3
4	78.0	77.7	84.4	84.4	81.8	45.5	42.6	43.0
5	77.0	77.3	84.5	84.4	82.9	44.1	41.7	38.5
6	77.0	77.3	84.0	85.3	83.0	38.2	44.5	38.3
7	77.8	78.6	82.8	85.5	83.0	37.8	47.5	38.2
8	79.8	80.1	82.3	85.7	82.8	37.4	53.5	36.5
9	80.0	79.8	84.2	86.0	81.8	36.6	44.6	38.3
10	78.1	79.5	84.6	84.9	82.4	37.2	43.7	40.5
11	76.5	80.0	85.6	83.3	82.0	37.3	49.0	47.4
12	77.6	80.0	84.6	83.9	81.4	37.1	41.0	44.5
13	78.9	81.4	85.0	85.5	79.5	36.8	45.1	47.2
14	79.0	82.4	86.0	86.9	80.5	40.8	52.8	38.0
15	77.6	82.2	85.2	86.8	81.7	41.6	49.6	35.1
16	77.0	81.6	85.0	86.8	83.1	44.1	51.7	35.8
17	79.9	81.3	82.8	85.9	83.9	44.1	45.2	40.6
18	80.5	82.0	81.1	83.8	83.2	41.1	46.1	44.4
19	81.2	81.5	81.1	84.7	83.6	41.2	46.2	51.4
20	79.1	80.4	80.5	85.5	83.4	41.3	42.8	47.6
21	79.0	79.2	79.4	84.9	82.5	39.6	43.7	46.8
22	80.6	76.1	79.5	83.6	81.8	42.9	43.9	47.5
23	82.3	75.3	79.2	84.5	82.5	43.9	47.2	45.1
24	81.9	75.0	78.5	85.4	82.5	42.0	41.8	45.0
25	79.5	75.6	79.1	85.4	84.5	37.5	53.4	-
26	79.5	77.3	79.6	86.2	83.7	37.5	50.7	-
27	79.0	77.5	79.5	85.2	82.0	35.6	46.0	-
28	79.0	78.8	79.5	84.5	82.0	37.6	38.1	-
29	78.3	-	78.8	84.7	64.3	37.9	40.7	-

Table VIII-13 Kiggavik Daily Mean Relative Humidity, January to August 2010 (%)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
30	77.1	-	81.1	84.9	60.5	41.8	41.6	-
31	78.2	-	82.3	-	59.3	-	52.8	-
Mean	78.9	79.1	82.1	85.0	80.4	40.9	45.9	42.9

Table VIII-14 Kiggavik Mean Daily Atmospheric Pressure, May to December 2009 (kPa)

Day	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	-	101.7	102.5	100.7	98.8	101.5	101.4	101.4
2	-	101.6	102.3	100.9	-	102.8	100.9	102.3
3	-	102.0	102.2	101.0	-	102.8	100.5	102.0
4	-	102.2	101.8	101.2	-	102.6	100.6	101.5
5	-	102.4	101.4	100.8	-	101.9	100.9	101.8
6	102.1	102.3	101.4	100.1	-	100.6	99.6	102.6
7	102.2	102.3	101.3	99.3	-	100.6	99.0	102.1
8	101.8	101.9	100.4	100.2	-	100.6	100.1	100.8
9	101.6	101.1	100.9	100.6	-	101.4	100.0	99.8
10	101.1	100.6	100.9	100.4	-	101.9	100.6	100.5
11	100.9	100.9	100.7	100.1	-	102.0	100.0	100.9
12	101.3	100.8	101.2	100.4	-	102.1	99.1	100.2
13	101.6	100.2	101.6	101.0	-	102.0	99.3	99.8
14	101.5	100.6	101.2	101.3	-	100.8	99.8	99.6
15	101.4	100.5	101.0	101.1	-	100.8	99.8	99.9
16	101.4	100.9	101.1	100.8	-	100.3	100.1	100.9
17	101.6	101.1	101.3	100.2	-	99.9	100.9	102.3
18	101.4	101.2	101.5	99.6	-	101.0	100.8	102.8
19	101.1	100.7	101.3	100.1	-	101.3	100.0	102.3
20	101.6	100.0	101.4	100.9	-	101.4	100.3	101.4
21	101.6	100.4	101.6	101.6	-	101.6	101.2	101.3
22	101.0	101.2	101.4	101.7	-	101.8	100.4	102.0
23	101.4	100.8	101.0	101.8	-	101.7	100.8	102.1
24	102.0	100.8	101.0	101.9	-	101.4	101.8	102.4
25	102.2	100.7	100.9	101.9	-	101.6	102.5	102.0
26	102.1	100.4	100.7	102.0	-	100.9	102.0	101.5
27	101.8	101.2	101.1	101.7	-	100.7	101.5	101.8
28	101.0	101.4	101.4	101.6	-	102.3	101.3	101.6
29	101.0	101.5	101.0	101.2	-	102.5	101.0	100.5

Table VIII-14 Kiggavik Mean Daily Atmospheric Pressure, May to December 2009 (kPa)

Day	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
30	101.4	102.1	100.7	100.3	-	101.6	100.8	99.8
31	101.6	-	100.6	99.4	-	101.1	-	100.9
Mean	101.5	101.2	101.2	100.8	98.8	101.5	100.6	101.3

Table VIII-15 Kiggavik Mean Daily Atmospheric Pressure, January to August 2010 (kPa)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	101.7	101.1	101.4	99.7	101.1	101.0	100.6	99.9
2	101.8	100.9	101.6	100.6	101.2	101.0	100.5	99.7
3	102.8	101.3	100.1	101.0	101.4	100.9	100.7	99.8
4	103.4	102.2	99.2	100.6	101.8	100.9	100.1	100.2
5	103.9	103.2	100.2	100.5	102.2	101.0	99.7	100.4
6	103.6	103.4	99.8	101.1	102.4	101.1	100.2	100.4
7	102.2	102.7	100.9	100.7	102.2	101.4	100.2	100.7
8	100.3	102.1	100.6	100.4	102.0	101.2	100.3	100.8
9	100.2	101.7	100.3	100.7	101.5	101.0	100.0	101.1
10	101.8	101.7	100.3	102.2	101.6	101.2	100.0	101.2
11	102.4	101.9	100.2	103.3	101.9	101.1	100.1	100.8
12	101.4	102.1	100.4	102.1	100.8	101.2	100.1	100.5
13	100.8	102.3	100.4	101.9	100.8	101.0	100.2	101.0
14	100.5	102.2	101.2	101.0	101.0	100.2	100.8	101.4
15	101.4	102.1	101.2	100.7	101.4	100.0	100.8	101.4
16	100.3	101.8	100.5	101.6	101.8	100.6	100.9	101.4
17	100.2	101.6	101.7	100.6	102.1	100.2	101.1	100.9
18	99.2	101.2	101.3	102.5	102.1	100.7	100.9	100.1
19	100.2	102.0	100.5	102.9	102.2	100.8	100.6	99.7
20	101.7	101.8	100.3	102.0	102.1	100.8	100.9	99.7
21	101.9	101.1	100.5	101.7	102.0	100.6	100.6	100.2
22	101.4	101.0	101.0	102.2	102.0	100.8	100.7	100.6
23	101.0	100.6	101.6	103.0	101.9	101.1	101.0	101.3
24	101.5	101.0	101.8	103.0	101.7	101.1	100.7	101.2
25	100.8	101.5	101.8	102.4	102.4	101.1	100.1	-
26	100.1	101.8	101.4	101.9	102.5	101.1	100.1	-
27	101.0	102.7	101.2	101.5	102.2	101.7	100.7	-
28	101.6	101.8	100.4	101.3	102.1	102.1	100.9	-
29	102.6	-	99.7	101.3	102.0	101.9	100.9	-

Table VIII-15 Kiggavik Mean Daily Atmospheric Pressure, January to August 2010 (kPa)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
30	102.6	-	99.7	101.7	101.5	101.4	100.7	-
31	101.4	-	99.9	-	100.8	-	99.9	-
Mean	101.5	101.8	100.7	101.5	101.8	101.0	100.5	100.6

Table VIII-16 Kiggavik Daily Mean and Maximum Solar Radiation, May to August 2009 (W/m^2)

Day	Mean				Max			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	-	345.4	311.3	150.3	-	834.0	881.0	446.0
2	-	341.3	321.2	169.4	-	846.0	786.0	624.0
3	-	242.3	323.3	254.0	-	684.0	843.0	821.0
4	-	224.1	189.1	224.3	-	785.0	619.0	862.0
5	-	323.1	326.9	184.4	-	834.0	790.0	738.0
6	127.3	333.4	271.2	230.0	483.0	814.0	800.0	686.0
7	265.7	350.7	121.1	46.7	726.0	818.0	466.0	139.0
8	264.5	349.5	238.1	156.4	679.0	805.0	982.0	590.0
9	278.3	340.3	233.6	206.8	758.0	799.0	782.0	790.0
10	241.5	176.2	259.9	189.4	917.0	724.0	864.0	802.0
11	265.8	235.3	321.5	199.7	831.0	730.0	848.0	743.0
12	250.8	232.9	317.5	151.2	708.0	955.0	911.0	744.0
13	240.4	219.9	266.3	113.7	689.0	853.0	920.0	543.0
14	235.8	223.9	325.9	208.5	626.0	791.0	810.0	651.0
15	275.9	307.7	318.3	214.8	748.0	834.0	765.0	685.0
16	298.1	313.9	165.5	190.6	779.0	957.0	707.0	714.0
17	290.3	345.0	125.8	168.0	828.0	809.0	537.0	656.0
18	243.8	348.1	303.4	26.1	719.0	803.0	800.0	100.0
19	261.5	190.9	238.2	34.4	923.0	778.0	806.0	131.0
20	294.2	70.5	106.2	97.5	861.0	255.0	321.0	318.0
21	249.8	206.1	167.4	118.5	758.0	781.0	642.0	686.0
22	272.0	292.8	163.6	191.5	718.0	794.0	734.0	672.0
23	268.7	220.5	134.9	221.8	864.0	922.0	609.0	688.0
24	258.7	325.2	213.2	222.8	685.0	804.0	821.0	619.0
25	270.3	271.1	108.2	216.5	780.0	795.0	431.0	607.0
26	291.2	223.9	139.4	214.2	790.0	871.0	667.0	601.0
27	260.2	302.6	259.2	189.2	651.0	1042.0	722.0	657.0

Table VIII-16 Kiggavik Daily Mean and Maximum Solar Radiation, May to August 2009 (W/m^2)

Day	Mean				Max			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
28	248.0	341.6	257.2	169.8	700.0	788.0	798.0	727.0
29	282.2	353.0	155.5	151.7	838.0	881.0	833.0	632.0
30	348.0	334.9	213.9	193.0	821.0	809.0	852.0	558.0
31	266.0	-	273.3	64.1	828.0	-	840.0	331.0
Mean	**267.0**	**279.6**	**231.3**	**166.8**	758.0	806.5	748.0	598.7

Table VIII-17 Kiggavik Daily Mean and Maximum Solar Radiation, September to December 2009 (W/m^2)

Day	Mean				Max			
	Sept	Oct	Nov	Dec	Sept	Oct	Nov	Dec
1	61.9	40.2	28.4	1.6	343.0	147.0	153.0	11.0
2	-	45.7	24.5	2.4	-	147.0	123.0	15.0
3	-	33.1	18.7	4.5	-	100.0	107.0	30.0
4	-	54.7	25.1	3.6	-	224.0	113.0	27.0
5	-	59.6	29.3	3.3	-	202.0	142.0	24.0
6	-	36.3	15.1	4.1	-	122.0	69.0	27.0
7	-	56.5	16.2	4.1	-	200.0	84.0	29.0
8	-	56.6	15.3	3.9	-	214.0	77.0	26.0
9	-	52.2	14.5	2.9	-	202.0	63.0	19.0
10	-	49.6	14.8	3.0	-	186.0	74.0	21.0
11	-	47.0	10.9	2.1	-	189.0	57.0	15.0
12	-	51.6	12.5	4.4	-	191.0	61.0	33.0
13	-	59.7	12.1	2.9	-	230.0	63.0	20.0
14	-	45.4	5.5	2.1	-	166.0	30.0	16.0
15	-	35.2	10.3	3.9	-	134.0	60.0	27.0
16	-	39.0	11.5	2.7	-	151.0	59.0	17.0
17	-	41.7	7.4	2.6	-	182.0	39.0	17.0
18	-	37.2	5.2	2.6	-	148.0	30.0	17.0
19	-	46.1	4.7	2.2	-	217.0	24.0	15.0
20	-	49.4	5.5	1.5	-	219.0	31.0	11.0
21	-	46.7	5.6	3.2	-	197.0	33.0	22.0
22	-	43.1	4.6	1.4	-	211.0	28.0	12.0
23	-	28.7	5.4	1.3	-	122.0	29.0	10.0
24	-	27.0	5.1	2.1	-	101.0	31.0	15.0
25	-	45.0	6.9	1.1	-	173.0	39.0	9.0
26	-	21.7	2.9	1.8	-	96.0	19.0	14.0
27	-	20.6	2.3	2.6	-	78.0	16.0	20.0

Table VIII-17 Kiggavik Daily Mean and Maximum Solar Radiation, September to December 2009 (W/m^2)

Day	Mean				Max			
	Sept	Oct	Nov	Dec	Sept	Oct	Nov	Dec
28	-	37.7	2.5	2.4	-	162.0	16.0	15.0
29	-	28.4	2.2	2.9	-	126.0	14.0	18.0
30	-	21.7	4.1	2.6	-	95.0	24.0	17.0
31	-	25.3	-	4.0	-	103.0	-	24.0
Mean	61.9	41.4	11.0	2.8	343.0	162.4	56.9	19.1

Table VIII-18 Kiggavik Daily Mean and Maximum Solar Radiation, January t o April 2010 (W/m^2)

Day	Mean				Max			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
1	2.5	20.1	74.5	110.2	16.0	103.0	280.0	316.0
2	2.9	20.2	51.4	147.1	19.0	89.0	175.0	470.0
3	3.5	20.5	56.2	143.4	22.0	98.0	209.0	429.0
4	3.5	24.3	69.1	171.4	22.0	114.0	245.0	478.0
5	4.0	28.0	59.4	171.8	25.0	136.0	197.0	531.0
6	4.5	28.6	73.1	214.4	26.0	139.0	227.0	581.0
7	2.9	26.6	73.5	185.9	19.0	118.0	254.0	539.0
8	4.5	31.1	69.4	171.4	30.0	142.0	231.0	448.0
9	2.5	28.5	79.4	165.9	16.0	123.0	278.0	487.0
10	6.2	32.7	108.4	166.4	35.0	139.0	370.0	421.0
11	3.6	17.7	105.0	208.8	24.0	76.0	337.0	583.0
12	6.5	20.9	87.7	199.5	39.0	94.0	265.0	553.0
13	3.5	21.0	75.5	185.0	20.0	90.0	242.0	444.0
14	6.9	32.1	73.5	138.8	40.0	134.0	239.0	390.0
15	7.5	47.4	123.1	221.3	44.0	188.0	406.0	577.0
16	4.6	57.1	75.9	198.3	24.0	220.0	250.0	579.0
17	9.2	29.3	131.4	205.9	60.0	108.0	409.0	613.0
18	6.3	27.5	116.5	258.6	40.0	96.0	379.0	650.0
19	6.4	44.9	127.0	257.8	32.0	160.0	405.0	642.0
20	10.9	50.4	135.9	247.9	61.0	211.0	441.0	602.0
21	9.0	53.5	141.0	267.4	45.0	202.0	437.0	665.0
22	6.6	49.5	135.5	219.6	35.0	191.0	393.0	654.0
23	8.7	69.5	145.2	220.6	43.0	276.0	434.0	616.0
24	9.2	71.6	153.0	214.1	44.0	283.0	467.0	604.0
25	9.3	73.6	156.5	271.6	49.0	293.0	453.0	674.0
26	13.3	73.6	160.5	211.6	71.0	272.0	466.0	515.0
27	15.0	80.5	170.4	266.0	87.0	310.0	496.0	656.0

Table VIII-18 Kiggavik Daily Mean and Maximum Solar Radiation, January t o April 2010 (W/m^2)

Day	Mean				Max			
	Jan	Feb	Mar	Apr	Jan	Feb	Mar	Apr
28	13.5	48.7	175.7	213.8	63.0	184.0	506.0	570.0
29	18.0	-	135.9	221.2	89.0	-	452.0	571.0
30	15.6	-	123.5	284.8	75.0	-	409.0	689.0
31	17.6	-	87.0	-	89.0	-	244.0	-
Mean	7.7	40.3	108.1	205.4	42.1	163.9	341.8	551.6

Table VIII-19 Kiggavik Daily Mean and Maximum Solar Radiation, May to August 2010 (W/m^2)

Day	Mean				Max			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	219.7	383.5	112.8	201.4	531.0	802.0	643.0	772.0
2	290.4	381.5	77.7	163.1	710.0	807.0	303.0	978.0
3	252.5	447.3	48.3	148.0	641.0	840.0	243.0	860.0
4	255.1	349.4	31.4	229.0	636.0	809.0	135.0	893.0
5	282.5	264.5	59.6	254.6	652.0	760.0	196.0	735.0
6	289.6	296.7	55.6	195.8	724.0	891.0	200.0	790.0
7	287.7	289.3	60.3	274.5	655.0	871.0	163.0	691.0
8	304.9	238.8	122.3	274.5	740.0	676.0	531.0	689.0
9	272.7	250.1	321.5	271.1	607.0	773.0	830.0	686.0
10	311.9	222.3	281.8	263.0	714.0	655.0	859.0	669.0
11	299.5	346.7	258.7	159.4	721.0	830.0	812.0	613.0
12	231.2	298.5	236.7	208.7	620.0	906.0	904.0	826.0
13	301.5	299.2	301.3	152.4	734.0	834.0	753.0	791.0
14	325.5	254.3	319.9	191.3	803.0	840.0	751.0	689.0
15	280.0	309.8	241.5	237.8	699.0	776.0	629.0	774.0
16	300.7	230.1	242.6	119.5	758.0	749.0	639.0	504.0
17	358.5	63.6	287.8	139.2	781.0	184.0	701.0	616.0
18	300.3	131.9	317.7	111.7	736.0	361.0	758.0	570.0
19	284.5	170.3	225.2	59.8	694.0	782.0	751.0	248.0
20	320.6	221.1	314.4	111.9	724.0	755.0	770.0	496.0
21	356.5	235.3	271.7	76.5	787.0	891.0	837.0	450.0
22	327.4	133.5	237.1	135.7	746.0	386.0	961.0	709.0
23	308.6	177.8	230.8	218.9	746.0	741.0	863.0	616.0
24	286.3	270.3	303.2	91.5	634.0	923.0	728.0	447.0
25	304.1	358.1	210.8	-	759.0	810.0	648.0	-
26	267.5	324.5	208.1	-	589.0	874.0	805.0	-
27	323.5	354.0	281.2	-	717.0	814.0	759.0	-

Table VIII-19 Kiggavik Daily Mean and Maximum Solar Radiation, May to August 2010 (W/m^2)

Day	Mean				Max			
	May	Jun	Jul	Aug	May	Jun	Jul	Aug
28	374.8	355.2	267.6	-	796.0	802.0	780.0	-
29	307.6	338.3	287.8	-	697.0	796.0	934.0	-
30	320.9	80.5	262.7	-	742.0	455.0	758.0	-
31	228.3	-	156.9	-	473.0	-	752.0	-
Mean	296.0	269.2	214.0	178.7	695.7	746.4	657.9	671.3

Attachment IX Annual Monthly Maximum Persisting Dew-Point, 1953-2009

Table IX-1 Annual Monthly Maximum Persisting Dew-Point

Year/Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1953	-20	-10	-11.7	0.6	1.1	6.1	13.9	15	8.9	1.7	-1.1	-16.7
1954	-28.3	-17.8	-13.3	-10.6	1.7	10	14.4	14.4	8.9	1.7	-3.9	-14.4
1955	-22.8	-22.8	-10	-3.9	1.7	10.6	15	11.7	5.6	1.7	-2.8	-18.3
1956	-19.4	-23.9	-15.6	-6.1	-1.7	6.1	12.2	9.4	3.3	-2.8	-2.8	-21.7
1957	-22.8	-20.6	-15	-12.2	-0.6	2.8	12.8	9.4	9.4	0.6	-8.9	-25
1958	-18.3	-23.3	-8.3	-12.2	0	5.6	10	10	7.2	1.1	-4.4	-20.6
1959	-17.8	-24.4	-20.6	-9.4	-2.2	3.3	8.9	8.9	7.2	-3.9	-5	-12.8
1960	-18.9	-23.3	-24.4	-5	0.6	6.7	11.7	12.2	7.8	0.6	-5.6	-17.2
1961	-26.1	-18.9	-24.4	-6.1	-0.6	7.8	10	11.1	1.7	-3.3	-4.4	-17.2
1962	-19.4	-27.2	-16.7	-9.4	-4.4	4.4	13.3	9.4	8.3	4.4	-11.7	-11.7
1963	-23.3	-22.2	-28.3	-5	0	5.6	9.4	10	5.6	0	-0.6	-11.1
1964	-27.8	-16.1	-28.3	-3.3	-0.6	5.6	10.6	11.1	6.7	0	-4.4	-13.3
1965	-21.1	-31.1	-14.4	-7.2	-0.6	3.3	10	6.1	1.7	0.6	-6.1	-14.4
1966	-27.8	-14.4	-13.3	-7.8	0	6.7	12.8	12.2	7.8	1.1	-16.1	-18.9
1967	-24.4	-20	-14.4	-13.3	-0.6	5	10.6	11.1	8.3	0.6	-10	-8.9
1968	-17.8	-19.4	-7.8	-10	-1.7	7.2	7.2	9.4	7.2	0.6	-3.9	-13.3
1969	-15.6	-15	-24.4	-2.2	-3.3	1.7	9.4	11.7	5.6	0.6	-2.2	-11.7
1970	-16.7	-32.2	-15	-6.1	0	7.2	12.2	11.1	7.2	0.6	-5	-17.2
1971	-18.9	-21.7	-16.1	-5	0.6	5.6	9.4	13.3	12.2	2.8	-9.4	-19.4
1972	-30	-30	-17.2	-5	-1.1	5	7.8	7.2	5	0	-13.3	-18.3
1973	-22.8	-25	-20	-19.4	1.7	6.1	11.7	13.3	8.3	0	-13.3	-15.6
1974	-32.8	-22.8	-27.2	-12.8	1.1	6.7	12.2	12.2	6.7	0	-5	-13.9
1975	-23.9	-17.8	-27.2	-1.7	0.6	6.1	11.7	11.1	8.3	-0.6	-6.7	-18.3
1976	-23.3	-28.9	-20.6	-6.7	-1.1	7.8	10	11.7	4.4	0	-6.7	-6.7
1977	-15.2	-24.1	-12.7	-1.6	0.9	8	9.3	6.7	7.1	2.2	-4.1	-15.5

Table IX-1 Annual Monthly Maximum Persisting Dew-Point

Year/Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1978	-24.8	-17.6	-24.2	-10.9	-1.9	2.9	7.3	9.2	4.3	1.6	-4.7	-12.9
1979	-20	-37.5	-13.3	-6.5	1.8	5	11.6	8.7	3.2	-0.4	-4.1	-13.3
1980	-19.4	-16.3	-12.6	-1.6	-0.8	7.6	8.9	11.6	7.3	-1.1	-7	-20.3
1981	-10	-18.9	-9.5	-4.2	0.1	7.9	11.6	11.7	6.1	3	-5.3	-16.8
1982	-36.2	-21.2	-16.7	-10	0.4	5.9	11.3	12.6	6. 7	0.7	-3.5	-14.1
1983	-23.1	-21.1	-18.1	-9.6	0	7	9.6	10.8	10	0.1	-0.3	-10.7
1984	-19.2	-14	-9.8	-1.6	0.4	7.4	10.8	11.2	3.7	2.4	-10.4	-24
1985	-16.2	-24	-15.5	-6.8	0.3	11	10.2	9.3	7.4	0.8	-5.3	-11.3
1986	-18.5	-15.2	-19	-10.9	0.6	7.2	8.9	10.5	5.3	-2.3	-19.2	-16.3
1987	-11.9	-20.7	-12.1	-3	-0.6	4.1	11.5	8	8.3	0.5	-6.4	-6.6
1988	-26.9	-28.7	-17.7	-2.7	-0.9	6.5	9.2	12.3	11.5	4	-5.4	-20.3
1989	-26.1	-17.7	-22.1	-6.9	-2.9	3.9	11.8	9.1	8.3	-0.9	-6	-26.4
1990	-22.3	-19.5	-14.4	-8.1	2.4	2.6	11.3	8.8	7.3	-0.5	-11	-16.4
1991	-29.2	-12.6	-20.4	-7.6	0.6	7.3	13.1	14.4	7	0.5	-8.4	-12.3
1992	-10.7	-17.4	-14.7	-7.3	0.2	5.1	9.3	12.5	4.9	-0.1	-3.6	-9.6
1993	-18.6	-21.1	-7.1	-9.3	2.1	7.7	12.4	12.3	1.9	-2.7	-9.2	-15.5
1994	-33.4	-30.7	-17.4	-6.9	0.1	8.1	12	10	8.7	1.6	-1.1	-12
1995	-20.2	-22.6	-8.5	0.5	-0.9	7.7	10.6	10.4	5.6	1.9	-13.2	-16.8
1996	-19.5	-18.8	-18	-5.6	2.4	8	13.8	12.3	10	-1.5	-4.8	-9.6
1997	-19.7	-21.5	-21	-1.9	4.2	5.2	12.7	11.8	9.9	2.6	-5.7	-13.5
1998	-25.9	-16.6	-20.4	-3.3	0.1	6.7	11.5	12.4	9.4	3.8	-5.5	-15
1999	-18.2	-19.2	-7.4	-0.2	0.1	6.8	8.4	9	7.7	0.7	-4.7	-11.5
2000	-14	-16.6	-5.9	-2.7	0.3	4.5	14	13.4	8.6	-1.3	-6.8	-16.6
2001	-14.4	-20.6	-11.6	-5.1	0.1	4.9	11.3	9.4	7.3	0.6	-5.9	-8.6
2002	-20.1	-22.2	-13.4	-7.3	-0.5	6.9	10.5	11.6	6.2	-0.6	-5.4	-7.8
2003	-19.9	-31.1	-14.4	-6.3	1.8	4.1	12.8	12.9	10.4	2.1	-7.5	-12.8
2004	-33.1	-21.2	-12.3	-10.4	0.1	4.3	9.8	9.3	4.9	-1	-5.9	-26.1
2005	-27.2	-27.9	-10.6	-6.7	0	4.4	10.7	10.4	6	0.6	-2.7	-14.2
2006	-15.8	-11.6	-10.6	-1.1	0	7.7	10.5	13	8.6	0.7	-6.3	-7.8

Table IX-1 Annual Monthly Maximum Persisting Dew-Point

Year/Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	-20.7	-21	-9.1	-4.8	-1.1	6.4	11.3	11.6	5.9	0.7	-16.1	-22.3
2008	-18.4	-30.3	-22	-2.5	0.2	6.2	11.9	12.9	5	3.7	-9.5	-20.5
2009	-13.5	-25	-18	-7.1	-4.9	4.4	10.4	11.6	8.9	2	-7.1	-11.4

Attachment X Annual Maximum Precipitation, 1953-2009

Table X-1 Annual Maximum Precipitation

Year	Month	Day	Maximum Daily Precipitation (mm)
1953	8	23	14.7
1954	9	2	24.4
1955	7	28	31
1956	7	23	35.8
1957	7	16	33.8
1958	9	19	21.6
1959	8	13	17
1960	10	4	32
1961	8	13	16.3
1962	7	3	21.6
1963	10	14	13.2
1964	4	24	16
1965	4	2	17.5
1966	8	23	15.7
1967	9	28	21.6
1968	9	4	35.3
1969	7	30	32.5
1970	7	13	25.4
1971	8	5	25.9
1972	8	16	9.4
1973	9	9	31.8
1974	6	25	15
1975	7	30	52.1
1976	5	12	18.5
1977	11	1	30.3

Table X-1 Annual Maximum Precipitation

Year	Month	Day	Maximum Daily Precipitation (mm)
1978	7	5	24.4
1979	5	28	25.2
1980	8	22	25.1
1981	7	9	32.7
1982	9	11	30.2
1983	8	13	30.8
1984	9	17	19.7
1985	8	26	36.7
1986	8	30	34.6
1987	8	5	17.4
1988	9	16	17.8
1989	7	23	23.6
1990	7	28	24.1
1991	7	6	14.4
1992	8	30	27
1993	8	20	14
1994	7	22	48.6
1995	8	5	20.6
1996	9	2	50.8
1997	10	14	26
1998	9	14	21
1999	7	26	44
2000	9	9	22.2
2001	8	25	37.3
2002	7	6	25.6
2003	9	10	35
2004	9	20	37
2005	9	4	21.4

Table X-1 Annual Maximum Precipitation

Year	Month	Day	Maximum Daily Precipitation (mm)
2006	4	22	20.6
2007	8	23	23.4
2008	8	27	31.6
2009	8	7	30.2