NOAA Data Report ERL CMDL-11

BARROW, ALASKA, SURFACE RADIATION AND METEOROLOGICAL MEASUREMENTS: JANUARY 1992 TO DECEMBER 1994

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Barrow, Alaska, Surface Radiation and Meteorological Measurements: January 1992 to December 1994

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Abstract. Measured surface radiation budget (or balance) components with daily and monthly time resolution are presented for the Barrow, Alaska, Observatory (BRW) operated by the Climate Monitoring and Diagnostics Laboratory (CMDL) of NOAA. CMDL's monitoring program and the data reduction and summary procedures are described. Tables and corresponding plots are presented showing annual cycles of several measured and derived radiation variables for three years, 1992, 1993, and 1994. In addition, ancillary meteorological data are included, which are useful for interpreting the radiation measurements and how they vary on time scales of days to years.

It is found that each year there is a net gain of surface radiation at BRW from the end of April until mid-September, which peaks during July. Once snow covers the tundra in the autumn, the net surface radiation balance becomes negative until solar gain again exceeds the net loss of terrestrial radiation the following spring. Net radiative loss is greatest during November, December, or January, depending on the response to changing meteorological conditions. Transitory events can influence the record quite dramatically on short time scales. Possible trends in cloudiness and/or in sea ice concentration in the Arctic Ocean may be affecting the radiation regime of BRW on longer time scales. Preliminary analysis suggests that the year-to-year variability of parameters that characterize BRW's climate is significant.

Radiation and meteorological observations continue to be made at BRW in an effort to establish a long-term, comprehensive data set. Continuous monitoring will provide opportunities to detect climate change in this region of the Arctic, to validate remotely sensed geophysical parameters, and to improve parameterization schemes used in models to simulate the climate of this region.

1. INTRODUCTION

It is well known that the polar regions play a special role in the global energy balance by acting as a "cold sink" (Rossow, 1992), maintaining the north-south temperature gradients that drive Earth's oceanic and atmospheric circulations. Few long-term measurements of Arctic surface radiation balance components have been made, however, because of the region's remoteness and adverse conditions. Radiation measurements have been made at NOAA's Barrow Observatory (BRW) since June 1974. Analyses of these data provide an insight into the Arctic energy budget. Perturbations in climate detected at BRW may reflect changes that may have occurred elsewhere in the high northern latitudes. Direct observations of surface radiative

properties are necessary to provide "ground truth" for validating remotely sensed data (Wielicki et al., 1995; Key and Stone, 1996) and to improve parameterizations used in climate models (e.g., Key et al., 1996). Also, the higher time resolution of surface data enable important analyses that will lead to a better physical understanding of the unique climate feedback mechanisms that occur in polar regions. These processes, in turn, influence global climate.

Several previous studies have discussed various aspects of the surface radiation balance in the vicinity of Barrow. These include reports and articles dating back to the 1950's (e.g., Thornthwaite and Mather, 1958; Kelley et al., 1964; Maykut and Church, 1973; Weller and Holmgren, 1974; Klein and Goldberg, 1978; Wendler et al., 1981; Dutton et al., 1985; Dutton and Endres, 1991). Useful discussions on how synoptic-scale systems influence the Barrow climate are given in Halter and Peterson (1981), Halter and Harris (1983), and Harris and Kahl (1994).

The data presented in this report include the four basic components that constitute the net surface radiation balance, these being the upward and downward solar (or shortwave) and the upward and downward thermal infrared (or longwave) irradiances. In addition, measurements of direct-beam irradiance and surface albedo, derived from the ratio of the reflected solar radiation to the downwelling global irradiance, are presented. Coincident meteorological information is given to provide a broader climatological context for evaluating the radiation balance at BRW. As such, this may be the most comprehensive report of its type for an Arctic site. Statistical summaries of the measured and derived surface variables deemed most important for the detection of climate change are presented in both tabular and graphical format.

Our measurements show a dramatic increase in net radiation each spring commencing at the end of May or first of June, coincident with maximum daily solar gain ($\approx$330-360 W m^{-2}) at the surface. Snow melt follows soon after in mid-June. Monthly mean net radiation does not peak until July each year ($\approx$120-130 W m^{-2}), which tends to be the least cloudy of summer months. Asymmetric to the peak in downward shortwave radiation, the downwelling thermal irradiance reaches a maximum on average during August ($\approx$300-310 W m^{-2}), which tends to be the cloudiest summer month. Year-to-year variations in the net radiation balance at BRW appear to be greatest during the winter months when the longwave components dominate, although incomplete data for these months, especially during 1992 and 1993, makes this inconclusive. In any case, the day-to-day variability during winter is seen to correlate with transient events characterized by increased cloudiness, relatively warm temperatures, westerly winds, and a weakening of the surface-based temperature inversion. Positive cloud radiative forcing is evident during these events, and at times a slight positive net irradiance is observed at the surface. Clear periods during winter are coldest and are usually associated with the outflow of air from a quasi-persistent polar anticyclone, calm winds, and strong surface-based temperature inversions. January and February are the coldest months and are typically the least cloudy. Despite extremes in temperature minima during clear periods, wintertime surface emissions greatly exceed downwelling emissions from the clear atmosphere, resulting in net losses exceeding 65 W m^{-2} on some days. Links between conditions at BRW and those at sea, such as ice distributions in the Beaufort and Chukchi Seas and/or the frequency of cyclones in the central Arctic (e.g., Serreze et al., 1995; Maslanik et al., 1996) may well be established.

Other observations made on the basis of the results presented here could be discussed, but detailed analyses are beyond the scope of this report. Preliminary analysis (Stone, 1996),

however, suggests that BRW is sensitive to processes that occur throughout the region and is therefore an excellent location to continue NOAA's monitoring efforts as part of the Baseline Surface Radiation Network (BSRN) (Wielicki et al., 1995). Furthermore, BRW appears to be a prime location for a (north slope) Cloud and Radiation Test Bed (CART) now under construction by the Department of Energy (DOE) as part of its Atmospheric Radiation Measurement (ARM) Program (Wielicki et al., 1995; Stokes and Schwartz, 1994). The addition of remote sensing apparatus in the vicinity of BRW will greatly enhance our ability to assess the unique radiative properties of the Arctic atmosphere and thus improve parameterizations needed for model studies. Situated near BRW, the new CART facility should augment efforts of the BSRN very nicely.

2. BARROW OBSERVATORY

BRW has been maintained by NOAA's Climate Monitoring and Diagnostics Laboratory (CMDL) [formerly the Geophysical Monitoring for Climatic Change (GMCC)] since 1973. It is the site of numerous atmospheric observational programs that emphasize how variations in atmospheric composition have an impact on climate through interactions with solar and terrestrial radiation. BRW is located at 71.32° N latitude, 156.61° W longitude at an elevation of 8 m above mean sea level. It is the northernmost U.S. permanent weather and climate monitoring site. The observatory is located so that it receives minimal influence from anthropogenic effects. It is about 8 km northeast of the village of Barrow and has a prevailing east-northeast wind off the Beaufort Sea. The observatory is attended at least 5 days a week for routine inspection and maintenance of the instrumentation, and to supplement automated monitoring with manual and visual observations. In addition, the National Weather Service (NWS) maintains a weather observing facility in Barrow. From coincident NWS records we have assimilated observations of total sky cover (SC) into our data set. SC observations are of considerable interest and add significantly to our interpretation of how the radiation balance in the vicinity of Barrow varies. Other than snow cover, the prevalence of stratiform clouds has the most dramatic influence on the region's radiation regime (Weller and Holmgren, 1974).

In most instances the data sampling rate is 1 Hz; however, edited data are archived as 1-h averages. Here, we present the data as daily and monthly means, resolved sufficiently for climate studies or process studies on time scales exceeding a day. Although the measurements are made over open tundra, there are large lagoons and a number of lakes in the vicinity, and the Arctic Ocean is less than 3 km northwest of the site. Because of its proximity to these bodies of water and the fact that the prevailing winds are off the Beaufort Sea, BRW is perhaps best characterized as having an Arctic maritime climate affected by variations of weather and sea ice conditions in the Central Arctic. Its representativeness is probably greatest during the snow-covered part of each year, which lasts typically from mid-September until the middle of June (Dutton and Endres, 1991). During the short summer, however, the radiation regime differs markedly from that of the open sea, owing to obvious differences between the albedo of tundra and either sea ice or water. Figure 1 is a map of the Point Barrow area showing the relative positions of the NOAA/CMDL Observatory, Barrow, the lagoons, and the Arctic Ocean.

Results from observational programs conducted at BRW over the years appear in numerous publications. The history of NOAA's BRW activities and significant results are

summarized in a series of GMCC and CMDL Annual Reports, most recently, Peterson and Rosson (1994).

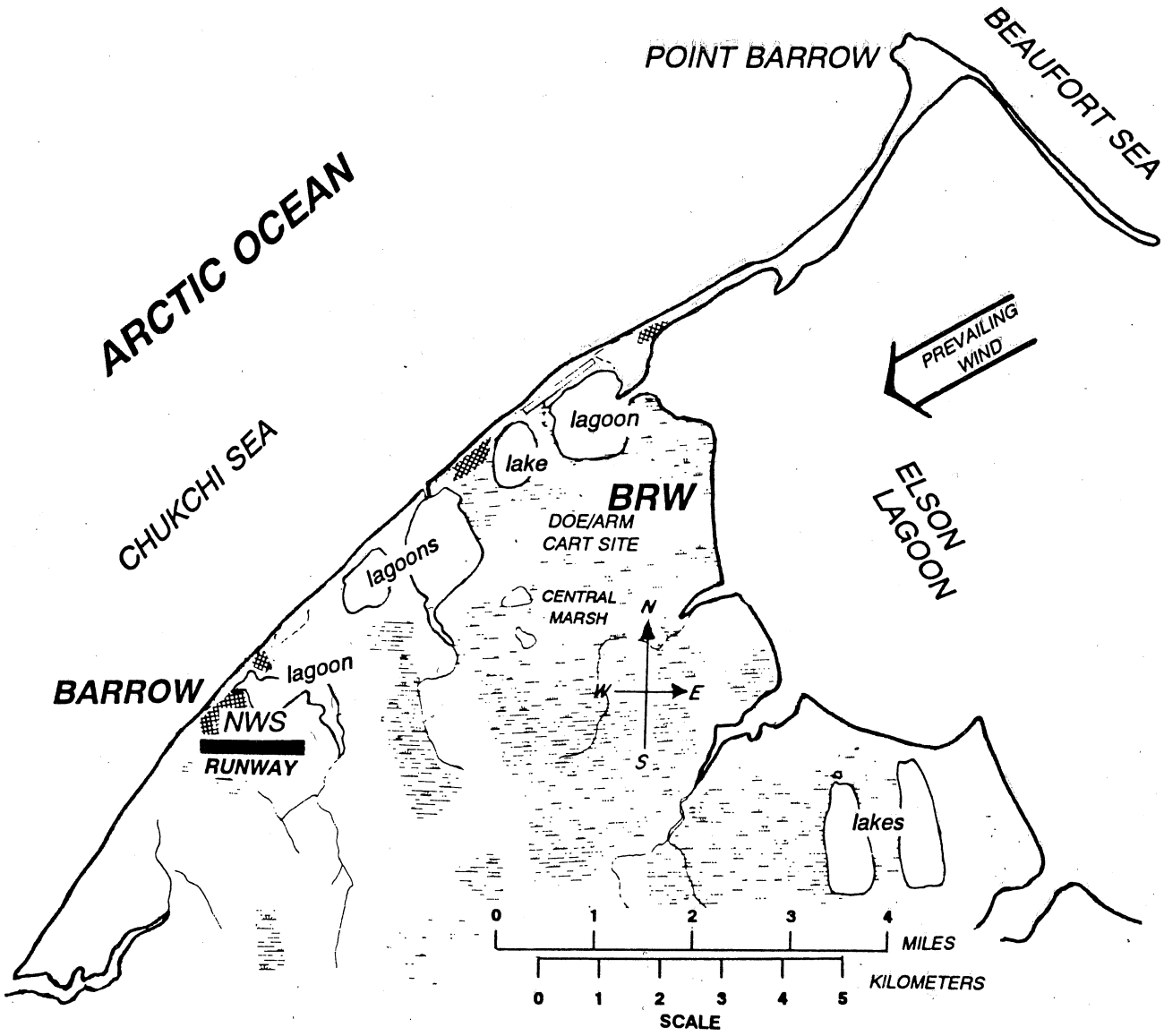

Figure 1. Map of the Point Barrow area showing the relative positions of the NOAA Barrow Observatory (BRW), the town of Barrow, the National Weather Service (NWS) facility, and various geographical landmarks.

3. BRW RADIATION MONITORING PROGRAM

3.1 Radiometry

Commercially available instruments to measure irradiance are used at BRW. The instruments are calibrated routinely at the Solar Radiation Calibration Facility (SRCF) at NOAA/CMDL in Boulder, Colorado (Nelson, 1996). Downwelling and upwelling broadband shortwave (SWD and SWU) irradiances are measured using pyranometers, and downwelling and upwelling longwave (LWD and LWU) irradiances are measured using pyrgeometers. All solar irradiance measurements are "broadband" and have a nominal spectral width of 0.30 to 2.8 μm. The longwave measurements are made over a waveband of 3.5 to 50 μm. Solar irradiance is obtained from each pyranometer by multiplying its output voltage by a constant determined by the linear sensitivity of the instrument's detector during calibration. No adjustments have been made for variations caused by slight nighttime zero offsets, detector cosine response, or temperature sensitivity. The accuracy of these radiometers is discussed in section 3.3.

The upward-facing instruments are mounted on the roof of the observatory, and the downward-facing instruments are supported about 2 m above the surface by a minimal structure, an "albedo rack," situated about 100 m southeast of the observatory. There are no unnatural influences at ground level in the vicinity of the albedo rack to interfere with the downward-facing radiometers' 2π-steradian field of view. The upward-facing instruments' filter domes are ventilated continuously to minimize any interference from precipitation, frost, and/or condensation.

Direct-beam solar irradiance (DIR) is measured using a sun-tracking pyrheliometer also mounted on the roof of the observatory. This is used primarily as a supporting measurement because of its sensitivity to clouds and to some extent atmospheric aerosols. Tracker operation is monitored carefully but is, unfortunately, prone to periodic failure due to icing resulting in loss of data.

In addition to these primary measurements we also compute four derived radiative quantities, surface albedo (ALB = (SWU/SWD) * 100) expressed in percent, net shortwave and net longwave irradiance NETSW = (SWD – SWU) and NETLW = (LWD – LWU), respectively, and an all-wave net irradiance NET = (NETSW + NETLW), which is an estimate of the net surface radiation balance.

3.2 Radiometer Calibrations

NOAA pyranometers are calibrated by comparison to standard instruments maintained at the SRCF in Boulder. These, in turn, are referenced directly to the cavity radiometers that constitute the World Radiation Reference (WRR) maintained at the World Radiation Center in Davos, Switzerland. The WRR is accurate to within 0.2%. Details of these calibration procedures are given in Nelson (1996).

The pyrgeometers are calibrated using a blackbody cell provided by Prof. S. Cox of Colorado State University. The procedure forces the pyrgeometer output to agree with the computed blackbody radiation emitted by the cell regressed over a wide range of temperatures. During calibration, dome temperature is also varied relative to pyrgeometer case temperature to

permit determination of a dome correction factor that is applied when scaling raw data.

3.3 Accuracy of Irradiance Measurements

The pyranometers used at BRW have been certified by NOAA SRCF to agree to within 2% of standard reference instruments at moderately high signal levels. This results in errors of <7 W m^{-2} for irradiances >200 W m^{-2}. Relative uncertainties increase, however, at low signal levels, and especially for large zenith angles (≥80°) when the sky is clear. This is because each detector has a "cosine response" and calibrations are normalized to a single zenith angle (usually 50°). But even when zenith angles are large and the sky is clear, absolute errors are <10 W m^{-2} and tend to be manifest as negative biases of 7-9%. Because BRW is such a cloudy location, however, such a bias does not significantly affect calculations of average net radiation.

Routine pyrgeometer calibrations produce irradiance values to within 1% of the blackbody reference cell used in the laboratory following the procedures outlined in Albrecht and Cox (1976). Furthermore, pyrgeometers have been shown to produce average results from field measurements to within 0.5% of modeled irradiances under clear-sky conditions (Dutton, 1993). We expect similar results for overcast or partly cloudy conditions because the stratiform clouds that are so prevalent in this region of the Arctic tend to have emissivities approaching 1.0, and thus act similarly to the blackbody cell used during calibration. A detailed account of pyranometer and pyrheliometer errors at GMCC sites is given by Dutton et al. (1985). Uncertainties in pyrgeometer measurements are further discussed in Albrecht and Cox (1976). Table 1 lists the radiometers used at BRW from 1992 through 1994.

Table 1. BRW Radiometer Deployment January 1992-December 1994.

Instrument type	Serial number	Quantity measured*	Cal. const. μV-Wm^{-2}	In-service dates
Pyrheliometer	13156	DIR	6.96	1/1/92 - present
Pyranometer	12263	SWD	8.47	1/1/92 - present
Pyranometer	12618	SWU	7.30	1/1/92 - present
Pyrgeometer	27407	LWD	3.58	1/1/92 - 5/10/94
Pyrgeometer	23216	LWD	4.17	5/11/94 - present
Pyrgeometer	24328	LWU	4.05	1/1/92 -5/21/94
Pyrgeometer	27454	LWU	3.34	5/22/94 - present

* DIR is direct solar, SWD and SWU denote downwelling and upwelling shortwave, respectively, and LWD and LWU denote downwelling and upwelling longwave, respectively.

Note that varying field conditions can result in much greater uncertainties than discussed above. These include obstructions, condensate accumulation, interference due to routine maintenance, and other inadvertent interferences. The magnitude of errors that result cannot be estimated. However, the data presented in this report have been edited with great care. Most erroneous data has been identified, flagged, and disregarded in producing final results.

4. BRW METEOROLOGY PROGRAM

The meteorological data presented in this report, near-surface and elevated (tower) air temperatures, dewpoint temperature, wind speed and direction, and surface pressure, were acquired by CMDL coincident with the radiation data. The aspirated temperature sensors are mounted on arms at heights of 2.2 m (2.5 m prior to April 15, 1994) and at 16.3 m (14.7 m prior to April 15, 1994) on a sampling tower. The wind direction and speed sensors are mounted on another arm near the top of the tower. A pressure transducer is mounted at an elevation of 9.5 m above mean sea level. Wind direction (WD) is measured in degrees while the wind speed (WS) is measured in meters per second. WD is calibrated by using a Keithley Metrabyte voltage module. WS is calibrated similarly, but a frequency module is used instead of a voltage module. The pressure transducer records in millibars, and all thermistor resistance measurements are converted to temperatures in degrees Celsius. The pressure transducer was calibrated using a mercury barometer as a standard. The aspirated resistance thermometers (RTDs) were each calibrated using an ice bath of distilled water/ice. The CMDL meteorological project is described in more detail by Herbert et al. (1986), and routine updates are given in subsequent Annual Reports of GMCC and CMDL (e.g., Peterson and Rosson, 1993, 1994). Figure 2 is a site plan of the Barrow Observatory showing the positions of various measuring platforms relative to the central facility. The meteorological sensors at BRW and their specifications are given in Tables 2 and 3 for the periods before and after April 15, 1994, respectively.

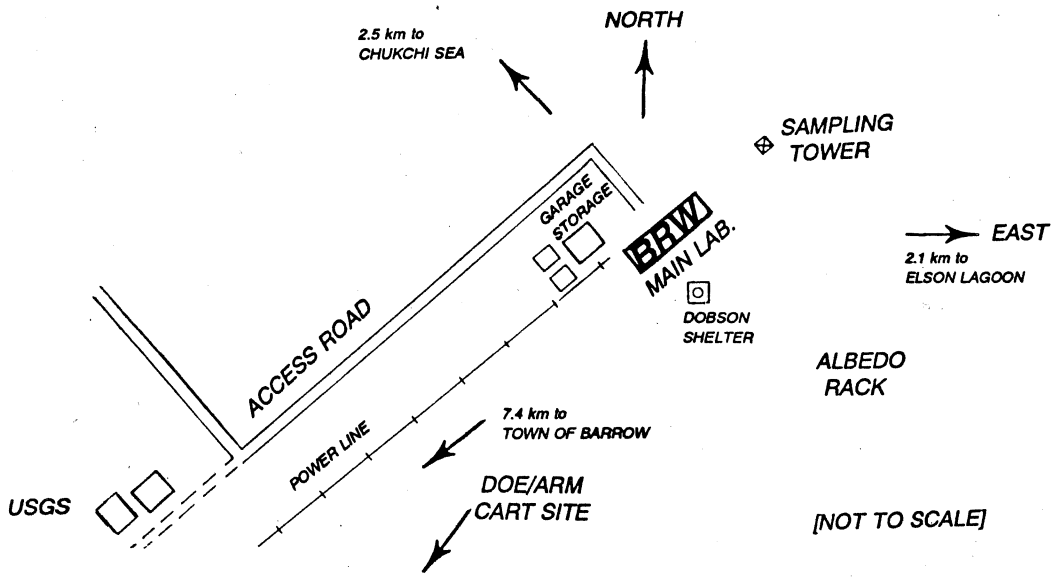

Figure 2. Site plan of BRW showing the relative positions of the observatory, the meteorological sampling tower, albedo rack, and the proposed DOE/ARM CART facility. (NOT TO SCALE).

Table 2. CMDL Meteorological Sensors at BRW Prior to April 15, 1994.

Sensor (Instrument type)	Serial number (Model)	Ht. (m) above surface	Measurement (Units)	Accuracy
Anemometer (Bendix Aerovane)	576 (120)	16.5	Wind speed ($m\ s^{-1}$)	$\pm$ 0.25 with 0.5 $m\ s^{-1}$ threshold **
			Wind direction (degrees)	$\pm$ 2°
Pressure transducer (Rosemount)	2366 (1201F1b)	9.5*	Surface pressure (mb)	$\pm$ 0.1% full scale
Thermistor A (YSI)	8801 (44212)	2.5	Air temperature (°C)	$\pm$ 0.1°C (-40 to 0°C) $\pm$ 0.05°C (> 0 °C)
Thermistor B (YSI)	8802 (44212)	14.7	Air temperature (°C)	$\pm$ 0.1°C (-40 to 0°C) $\pm$ 0.05°C (> 0°C)
Hygrothermometer (TSL)	G0008 (1063)	3.2	Dewpoint temperature (°C)	Variable with conditions < 2° RMS worst case $\pm$ 0.5°C (> 0°C)

Table 3. CMDL Meteorological Sensors at BRW as of April 15, 1994.

Sensor (Instrument type)	Serial number (Model)	Ht. (m) above surface	Measurement (Units)	Accuracy
Wind monitor (R. M. Young)	14584 (05103)	10.5	Wind speed ($m\ s^{-1}$)	$\pm$ 2% with 1 $m\ s^{-1}$ threshold
			Wind direction (degrees)	$\pm$ 5° at 1.5 $m\ s^{-1}$
Pressure transducer (Setra)	274199 (270)	9.5*	Surface pressure (mb)	$\pm$ 0.05% full scale
Temperature probe A (RTD)	4106 (4150)	2.2	Air temperature (°C)	$\pm$ 0.1°C (-85 to 50°C)
Temperature probe B (RTD)	4107 (4150)	16.3	Air temperature (°C)	$\pm$ 0.1°C (-85 to 50°C)
Hygrothermometer (TSL)	G0001 (1063)	3.2	Dewpoint temperature (°C)	Variable with conditions < 2° RMS worst case $\pm$ 0.5°C (> 0°C)

*** Elevation above mean sea level** **** Seldom achieved under Arctic conditions**

Values of relative humidity are derived from ambient and dewpoint temperatures as a function of the coincident air pressure. In addition, we compute the difference between the tower and the near-surface temperatures (T16 – T2) to give an indication of boundary layer stability. This near-surface temperature gradient gives a good measure of the intensity of the surface-based temperature inversion that is a common feature at BRW, especially when the surface is snowcovered. Positive differences result when the inversion is strong, and negative values result when surface heating occurs during the snowfree summer months. Wintertime inversion intensities are known to weaken significantly with increased cloudiness (e.g., Kahl, 1990) in response to "greenhouse" emissions from the cloud layers.

An important observation not made at BRW but made at the NWS station nearby (Fig. 1) is total sky cover (SC) in tenths. The NWS three-hourly SC observations have been extracted from monthly Local Climatological Data summaries (LCDs), averaged, and collated with the BRW radiation and meteorology data. Although not exactly coincident in space, the proximity of the two sites suggests that the NWS SC climatology represents BRW reasonably well. Because clouds can dramatically perturb the surface radiation balance of the region, especially the downwelling solar and infrared components, we consider SC to be a valuable, if not an essential, complement to this report (e.g., Wielicki et al., 1995).

BRW meteorological data were edited and processed in a manner similar to that of the radiation data to ensure accurate collation of data sets on daily and monthly time scales. Processing of all data reported here commenced using edited 1-h-average data. The meteorological data are intended to aid in the interpretation and analysis of the BRW radiation measurements but may stand alone as climatological summaries of 1992, 1993, and 1994. Other aspects of the BRW radiation and meteorological programs for 1992 and 1993 are discussed in Peterson and Rosson (1993 and 1994, respectively).

5. DATA ACQUISITION AND QUALITY CONTROL

5.1 Radiation Measurements

Radiometer output voltages and resistances are measured with the use of commercial data logging hardware. One-hertz samples integrated over a portion of each power cycle are averaged for successive 3-min intervals and recorded digitally. The datalogger utilizes auto-zeroing to further increase the accuracy of the raw voltage measurements. Resistance measurements are made by passing a known voltage through a known resistance, generating a current that is directed through the unknown resistance to determine the resulting voltage drop. The signal cables are shielded and grounded to minimize radio frequency interference or other induced voltages. The data are viewed by field personnel on nearly a daily basis to detect abnormalities and correct any problems that may arise. Logs are kept to document mechanical or electrical failures, environmental contamination such as icing, and any other problems that may require subsequent editing.

5.2 Meteorological Measurements

Wind direction and wind speed are sampled once per second. Every minute, direction and

speed are vector averaged. Pressure and temperatures are sampled four times per minute and then averaged arithmetically. Field personnel monitor the data daily to verify that the acquisition system and instruments are operating properly, documenting any problems that arise to facilitate editing. Precipitation is measured only during the summer at BRW and is not reported here. NWS does, however, report "water equivalent" precipitation year round. Precipitation peaks in late summer in association with enhanced cloudiness. The NWS totals for 1992, 1993, and 1994 were 68.6, 135.4, and 108.7 mm, respectively.

The Control and Monitoring System (CAMS) was used to collect the meteorological data from August 10, 1982, until April 14, 1994, when a PC-based data acquisition system was installed. Table 2 lists the instrumentation that was used during the CAMS period, and Table 3 lists the instrumentation used since the new PC-based installation was completed.

6. DATA PROCESSING

6.1 Radiation Data

Irradiance values from the pyranometers or pyrheliometer are obtained by multiplying each instrument's output voltage by the appropriate calibration factor. Calibration factors are instrument sensitivity constants determined by comparisons with standard radiometers maintained at the NOAA SRCF in Boulder (see section 3).

The thermal irradiance incident on a pyrgeometer is determined from its electrical outputs following the technique of Albrecht and Cox (1976). This procedure uses the instrument's output voltage, which is proportional to the net thermal irradiance received by the detector scaled by a calibration factor. Because the net signal results from both incident irradiance and internal emissions, it must be adjusted to obtain only the incident irradiance. The detector is assumed to be in thermal equilibrium with the instrument's case, which is monitored using an embedded thermistor. Internal emission is then estimated using the Stefan-Boltzmann relationship, assuming a detector emissivity of 0.98 and a detector temperature derived from the case resistance measurement; thus the incident irradiance is determined. In addition, the temperature difference between a pyrgeometer's filter dome and its detector surface is accounted for. We monitor each pyrgeometer's dome temperature and routinely make this correction, although this dome temperature correction is often insignificant.

6.1.1 Editing radiation data

Data from the datalogger are sent daily to a PC at CMDL in Boulder via a phone link. These raw data are uploaded to a DEC ALPHA computer that is used for all subsequent processing. Archived data are stored on a Sun workstation. (Previewing near-realtime CMDL radiation data is possible via Internet connection through the World Wide Web at http://www.cmdl.noaa.gov; CMDL's homepage describes how the archive may be accessed.)

The 3-min, averaged data are scaled to engineering units and viewed using an interactive graphical editor. At this stage, erroneous data points, data that appear to be contaminated as a result of various obstructions, power failures, etc. are flagged. Pyrheliometer data are especially prone to errors because of occasional failures of the tracker. However, lost data, once the result

of adverse weather conditions such as blowing snow, frost, and condensation, have been minimized in recent years by the use of specially designed blowers that continuously ventilate the radiometers' filter domes. In rare instances the datalogger produces spurious data that are also flagged as bad or missing in this stage of processing. The edited 3-min data are then archived. From this primary data set, all higher level data sets are derived. Hourly averages that form the basis of the results presented in this report are computed from the 20 3-min readings for each hour. If all 20 readings are not available, that hour's average is not computed; instead the data point is filled using a flag so that it can be identified and disregarded in subsequent steps.

Next, the hourly data are edited using objective criteria related to the internal consistency of the measured irradiances or by performing physical limits tests. At this stage the data are checked for unreasonable values that may have escaped manual editing. The albedo is checked for reasonable values and temporal variation. The snow surface or "skin" temperature is also estimated using the upward thermal irradiance (by inverting the Stefan-Boltzmann relationship) to compare with coincident air temperature for consistency. If differences of greater than 5°C are detected, the upward irradiances are flagged as erroneous. We know from previous analyses that during winter this difference seldom exceeds 2-3°C and rarely 4°C, depending on the intensity of the surface-based temperature inversion. But when the tundra is free of snow and the absorption of solar energy is large, this difference is of opposite sign and may be even more significant; therefore this test is not performed when the albedo reaches a low threshold value. These and other automated data-editing techniques, as well as the merging of various data sets, are accomplished using a suite of computer programs designed specifically to process the BRW data. These may be adapted for other sites providing that climatological data exist that can be used to define appropriate limits tests, etc. The processing described here was, in fact, adapted from a prototype procedure developed earlier for processing data acquired at the NOAA South Pole Observatory (Dutton et al., 1989).

As a last step before daily averages are computed, data gaps of up to 2 hours are filled by linear interpolation. We feel this is warranted because many physical processes occur on time scales of only a few hours and it is better to "fill" short gaps with data that may capture such temporal variation than to produce 24-h means from sparse data, some of which is not likely to be autocorrelated. This is also true when data gaps occur at crucial times during a diurnal cycle when signals are changing rapidly.

6.1.2 Averaging radiation data

If there are at least 20 hours of valid data for a given day, a daily average is calculated. Note that even solar quantities are reported here as 24-h averages even though shortwave irradiances are zero throughout the night. This makes it convenient to compute the daily net energy received at the surface. However, in computing average daily albedos, only valid ratios of hourly SWU to SWD are used, i.e., for the period each day when the sun is above the horizon. On the basis of a limits test, out-of-range values are flagged and disregarded.

Finally, monthly averages and standard deviations are computed using (valid) daily means. The standard deviations give some indication of day-to-day variability of each measured or derived quantity, but may be misleading. This is especially true for the solar variables during

spring and autumn transition months because most of the variability during these times is due to changing day length and solar intensity as the sun's zenith angle varies. Similarly, large standard deviations of albedo are observed for June and September because of rapid snow melt or accumulation, respectively.

In addition to computing means and standard deviations, maxima and minima of daily means are reported for each month. We also keep track of the number and percentage of valid daily means per month for each variable, thus providing some measure of how reliable a monthly result is. This is discussed further in the data sections.

6.2 Meteorological Data

Raw meteorological data are transferred daily to Boulder via the Internet. A Sun workstation is used to scale the data and compute hourly averages. Hourly values are formed by averaging only the valid 1-min data within any given hour; fewer than 60 points may be used. Similar to editing the radiation data, manual and objective filtering techniques are employed to detect and flag bad or missing meteorological data. As is done in the case of producing mean hourly wind data, both daily and monthly wind speed and direction are vector averaged at successive time resolutions, i.e., hours to days and days to months. Fortunately, meteorological data are more straightforward to collect and process than are solar and infrared irradiance data, and therefore no interpolation of the meteorological data was undertaken.

7. RESULTS

The procedures outlined in section 6 were conducted separately for the radiation and the meteorological data. However, parallel steps were taken to ensure that a high-quality collated data set resulted. Master files of hourly and daily values were produced and merged for each year, from which the monthly statistics were computed. The results are presented in the form of monthly summary tables and listings of daily means. In addition, yearly time series of daily and monthly means are plotted to facilitate analyses. These are multiple plots of composite information designed for cross-correlating time series visually. Because vector wind data are difficult to compute statistics for, we also include yearly and multiyear sets of wind roses that are useful for evaluating how surface winds at BRW vary from month to month and year to year. These various presentations are described in the respective data sections.

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meteorological data acquisition system at BRW. Finally, we acknowledge Gary Herbert and Bernard Mendonca (both now retired) for their many years of dedication to the BRW meteorology program.

9. REFERENCES

Albrecht, B., and S.K. Cox, 1976. Pyrgeometer data reduction and calibration procedures. Atmospheric Science Paper 251, Colorado State University, Fort Collins, CO, 48 pp.

Dutton, E.G., 1993. An extended comparison between LOWTRAN7 computed and observed broadband thermal irradiances: Global extreme and intermediate surface conditions. *J. Atmos. Oceanic Technol., 10(3),* 326-336.

Dutton, E.G., and D.J. Endres, 1991. Date of snowmelt at Barrow, Alaska, U.S.A. *Arc. Alp. Res., 23(1),* 115-119.

Dutton, E.G., R.S. Stone, and J.J. DeLuisi, 1989. South Pole surface radiation balance measurements, April 1986 to February 1988. NOAA Data Rep. ERL ARL-17, NOAA/ERL, Air Resources Laboratory, Silver Spring, Md, 49 pp.

Dutton, E.G., J.J. DeLuisi, and D.J. Endres, 1985. Solar radiation at the Barrow, AK, GMCC baseline observatory 1976-1978. NOAA Data Rep. ERL ARL-6, NOAA/ERL Air Resources Laboratory, Boulder, CO, 112 pp.

Halter, B.C., and J.M. Harris, 1983. On the variability of atmospheric carbon dioxide concentration at Barrow, Alaska during winter. *J. Geophys. Res., 88,* 6858-6864.

Halter, B.C., and J.T. Peterson, 1981. On the variability of atmospheric carbon dioxide concentration at Barrow, Alaska during winter. *Atmos. Environ., 15,* 1391-1399.

Harris, J.M., and J.D.W. Kahl, 1994. Analysis of 10-day isentropic flow patterns for Barrow, Alaska: 1985-1992. *J. Geophys. Res., 99(D12),* 25,845-25,855.

Herbert, G.A., E.R. Green, G.L. Koenig, and K.W. Thaut, 1986. Monitoring instrumentation for the continuous measurement and quality assurance of meteorological observations. NOAA Tech. Memo. ERL ARL-148, NOAA/ERL Air Resources Laboratory, Boulder, CO, 44 pp.

Johannessen, O.M., M. Miles, and E. Bjorgo, 1995. The Arctic's shrinking sea ice. *Nature, 376,* 126-127.

Kahl, J.D., 1990. Characteristics of the low-level temperature inversion along the Alaskan Arctic coast. *Int. J. Climatol., 10,* 537-548.

Kelly, J.J., D.T. Baily, and B.J. Lieske, 1964. Radiative energy exchange over Arctic land and sea. Data 1962 Sci. Rep., Dept. Atmos. Sci., Univ. of Washington, Seattle, 205 pp.

Key, J.R., and R.S. Stone, 1996. Estimating high latitude surface radiative fluxes with satellite-derived surface and cloud parameters. Unpublished manuscript, Dept. of Geography, Boston Univ., Boston, MA.

Key J.R., R.A. Silcox, and R.S. Stone, 1996. Evaluation of surface radiative flux parameterizations for use in sea ice models. *J. Geophys. Res.* (in press).

Klein, W.H., and B. Goldberg, 1978. Solar radiation measurements, 1968-1977. Reports, Smithson. Rad. Bio. Lab., Rockville, MD.

Maslanik, J.A., M.C. Serreze, and R.G. Barry, 1996. Recent decreases in summer Arctic ice cover and linkages to anomalies in atmospheric circulation. *Geophys. Res. Lett.* (submitted).

Maykut, G.A., and P.E. Church, 1973. Radiation climate of Barrow, Alaska, 1962-66. *J. Appl. Meteorol., 12,* 620-628.

Nelson, D., 1996. NOAA Solar Radiation Calibration Facility, 1985-1996. Unpublished manuscript, NOAA/ERL Climate Monitoring and Diagnostics Laboratory, Boulder, CO.

Peterson, J.T., and R.M. Rosson, 1993. Climate Monitoring and Diagnostics Laboratory No. 21, Summary Report 1992. NOAA/ERL, Boulder, CO, 131 pp.

Peterson, J.T., and R.M. Rosson, 1994. Climate Monitoring and Diagnostics Laboratory No. 22, Summary Report 1993. NOAA/ERL, Boulder, CO, 152 pp.

Rossow, W.B., 1992. Polar cloudiness: Some results from ISCCP and other cloud climatologies. Preprints, Third Conf. on Polar Meteorology and Oceanography, 29 Sept-2 Oct. 1992, Portland, Oregon. American Meteorology Society, Boston, 218 pp.

Serreze, M.C., J.A. Maslanik, J.R. Key, R.F. Kokaly, and D.A. Robinson, 1995. Diagnosis of record minimum in Arctic sea ice area during 1990 and associated snow cover extremes. *Geophys. Res. Lett., 22(16),* 2183-2186.

Stokes, G.M., and S.E. Schwartz, 1994. The Atmospheric Radiation Measurement (ARM) Program: Programmatic background and design of the cloud and radiation test bed. *Bull. Amer. Meteorol. Soc., 75,* 1201-1221.

Stone, R.S., 1996. A radiation climatology for Barrow, Alaska, 1992-1994: Relationships to surface and atmospheric conditions. *IRS '96,* International Radiation Symposium, 19-24 August 1996, Fairbanks, Alaska. (submitted).

Thornthwaite, C., and J. Mather, 1958. Microclimatic investigations at Point Barrow, Alaska, 1957-1958. Publications in Climatology, 11(2), Drexel Institute of Technology, Laboratory of Climatology, Centerton, NJ, 237 pp.

Weller, G., and B. Holmgren, 1974. The microclimates of the Arctic tundra. *J. Appl. Meteorol., 13,* 854-862.

Wendler, G., F.D. Eaton, and T. Ohtake, 1981. Multiple reflection effects on irradiance in the presence of arctic stratus clouds. *J. Geophys. Res., 83,* 2049-2057.

Wielicki, B.A., R.D. Cess, M.D. King, D.A. Randall, and E.F. Harrison, 1995. Mission to Planet Earth: Role of clouds and radiation in climate. *Bull. Amer. Meteorol. Soc., 76 (11),* 2125-2153.

Monthly Statistical Summaries

Tables 4-39 are individual monthly statistical summaries for a 3-year record beginning January 1992. Each of these tables consists of three panels: the top panel is a monthly summary of statistical information for a collated set of radiation and meteorological variables that characterize the surface climatology at BRW; the middle panel is a radiative energy balance summary for that month; and the bottom panel lists the daily means of each variable that was used in computing that month's statistics. Note that all tabular irradiance data are given to the nearest integer value although interim processing carried more significant figures. Therefore, the few minor inconsistencies that appear are very likely the result of round-off errors.

Each monthly summary (top panel) is divided into two fields, the left constituting the radiation data set and the right the meteorological data set. We list the monthly mean, standard deviation, maximum and minimum for each measured or derived quantity, wind data being an exception for which only the mean vector wind is given and the standard deviation of vector wind speed. Entries are followed by the number and percentage of days of "valid" data used to compute the statistics. A valid 24-h mean is listed (in the third panel) only if 20 or more hours of data passed all criteria of editing described above; otherwise it is flagged as missing or bad using obviously large or small numbers involving 9's.

Although the criteria selected for defining valid data are somewhat arbitrary, they were imposed in an attempt to maintain a sufficiently large data base for meaningful statistical analyses without degrading the critical features of the time series. Although data gaps are unavoidable, it is seen that a large percentage (>80%) of the data are retained in most instances and >95% of the data are retained in many. Furthermore, interpolation across short time gaps (≤2 hours) prior to calculating daily means was considered to be more reasonable than computing means from a more sparse data set, which effectively assigns that mean value to all missing data points. We know that the data are autocorrelated temporally on short time scales. In most cases such interpolation increases sampling while preserving the physical characteristic of the data stream. On the other hand, this does not hold true on a daily time scale, and no interpolation was attempted. Instead, we report the number (#) and percentage (%) of days making up each monthly average and leave the assessment of how valid a given statistic is up to the user. When the percentage of valid data is low for a month, it may or may not yield a reasonable statistic depending on whether the data are well distributed temporally. If missing days are biased toward cloudy versus clear, warm versus cold or in other ways, the distribution may not represent a true mean. Looking at other valid data that are known to correlate with the missing variable(s) may be useful in making an assessment. Inspection of the daily listings and corresponding plots, which in the case of radiation data indicate missing days, will also be helpful for evaluating gaps in the time series. Caution is advised when assessing transition months when the solar irradiance and temperature are changing rapidly.

The middle panel of each table summarizes the components and total radiative energy balance (in units of MJ m^{-2} mo^{-1}) derived from the appropriate monthly mean irradiance values. The sign convention used in both this and the monthly summary (top panel) is as follows: when net values are referred to, positive numbers indicate a gain and negative values a loss of energy to the surface. Upward and downward components are reported as absolute quantities. All net quantities are defined as the difference between the downward and the upward components

(downward – upward). Again, use caution in evaluating any derived quantities because they are sometimes computed from incomplete (<100%) irradiance data as is indicated in the top panel of each table.

The bottom panel of each table lists the daily means of the measured and derived quantities. The units are the same as indicated in the top panel. Again, missing data are flagged with obvious "9" numbers such as -999 (for irradiances), -9.99 (for albedo), 999.9 (for temperatures), etc., numbers recognized easily as having no possible physical significance.

It is important to note that any derived quantity is formed from two or more variables that were measured separately and can therefore not be computed if one or another of the measurements is missing. For instance, NET = NETSW + NETLW = (SWD – SWU) + (LWD – LWU). If any one of the four components is missing then the NET cannot be determined; similarly, NETSW and NETLW cannot be calculated if one of their respective components is missing. At each level of averaging (hours to days, days to months) then, a derived quantity results from the average of all valid elements contained in the day or month of interest. In the above example, the daily mean NET is the average of the hourly NET values and not the sum of the daily means of NETSW and NETLW. This must be done to avoid combining data that are not autocorrelated in time. Combining mismatched monthly values very likely will result in errors. As a consequence of this, there are instances in the table listings where the mean of a derived quantity does not equal the component sum, difference, or ratio of the relevant monthly components. This, of course, is also true for the energy conversions given in the middle panel of each table. Beware of these apparent problems by examining the percentage of valid data. Any apparent inconsistencies are most likely artifacts of incomplete data. Finally, all data processing is based on Greenwich mean time (GMT), where local standard time at Barrow is equal to GMT – 9.

Table 4. January 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	-99	0	0	0	0	188	199	-11	-11	-28.4	-27.2	-31.3	1.2	75.9	66	5.9	1015.6	4.2
SDEV	-99	0	1	0	1	19	16	13	13	4.6	3.4	4.8	1.4	2.9		3.9	8.3	3.2
MAX.	-99	0	2	0	2	226	228	6	6	-20.8	-20.6	-23.8	4.8	80.1			1030.6	10.0
MIN.	-99	0	0	0	0	146	164	-41	-41	-39.3	-34.6	-42.8	-0.2	68.7			1002.7	0.0
# Days	31	31	31	31	31	20	20	20	20	29	29	29	29	29	29	29	29	31
% Days	100	100	100	100	100	65	65	65	65	94	94	94	94	94	94	94	94	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.00	0.43	0.00	0.43	504.74	534.07	-29.33	-28.93

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
1	-9.99	0	0	0	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	7.9
2	-9.99	0	0	0	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	1.8
3	-9.99	0	0	0	-99	-99	-999	-28.3	-28.0	-31.3	0.4	75.8	64	8.4	1005.9	4.5
4	-9.99	0	0	0	-99	-99	-999	-26.7	-26.5	-29.6	0.2	75.9	77	9.7	1009.4	6.6
5	-9.99	0	0	0	-99	-99	-999	-24.4	-24.5	-27.2	-0.2	77.2	74	9.1	1010.7	9.0
6	-9.99	0	0	0	-99	-99	-999	-25.7	-25.5	-28.9	0.2	74.5	70	10.8	1012.8	1.8
7	-9.99	0	0	0	-99	-99	-999	-25.0	-25.0	-28.2	0.1	74.7	68	13.9	1009.8	4.4
8	-9.99	0	0	0	-99	-99	-999	-23.7	-23.8	-26.9	-0.1	75.0	66	13.1	1003.6	7.3
9	-9.99	0	0	0	-99	-99	-999	-25.3	-25.2	-28.1	0.1	77.3	67	8.6	1002.7	5.1
10	-9.99	0	0	0	-99	-99	-999	-27.2	-27.1	-30.4	0.1	74.3	69	9.7	1004.5	4.3
11	-9.99	0	0	0	226	221	5	-23.0	-23.1	-25.4	-0.1	80.0	97	10.6	1008.7	10.0
12	-9.99	0	0	0	203	211	-8	-24.7	-23.5	-27.1	1.2	79.9	178	4.3	1017.5	6.3
13	-9.99	0	0	0	205	212	-7	-24.3	-23.8	-26.8	0.5	79.7	278	5.2	1023.3	7.4
14	-9.99	0	0	0	191	196	-5	-29.1	-28.0	-32.0	1.1	76.4	348	5.8	1028.2	0.3
15	-9.99	0	0	0	174	192	-18	-30.9	-30.0	-33.9	0.9	74.7	42	6.7	1030.1	0.4
16	-9.99	0	0	0	191	197	-6	-30.4	-30.0	-33.6	0.4	73.6	56	10.1	1028.6	1.5
17	-9.99	0	0	0	211	219	-8	-23.6	-23.5	-26.2	0.1	79.1	65	14.2	1012.9	7.7
18	-9.99	0	0	0	192	228	-36	-20.8	-20.6	-23.8	0.2	76.6	58	13.0	1009.6	5.1
19	-9.99	0	0	0	168	209	-41	-25.7	-25.4	-28.6	0.3	76.1	51	10.0	1012.0	7.6
20	-9.99	0	0	0	192	206	-14	-26.8	-26.3	-29.6	0.4	76.8	51	9.4	1014.8	5.7
21	-9.99	0	0	0	202	196	6	-28.6	-26.3	-31.2	2.3	78.5	56	5.4	1023.6	0.1
22	-9.99	0	0	0	197	192	5	-30.5	-28.9	-33.2	1.5	76.5	88	3.4	1030.6	0.0
23	-9.99	0	0	0	168	192	-24	-31.4	-29.4	-34.0	1.9	77.4	80	5.6	1028.3	0.4
24	-9.99	0	0	0	163	187	-24	-33.8	-31.8	-37.1	2.0	72.1	146	3.6	1023.1	2.6
25	-9.99	0	0	0	214	211	3	-25.9	-24.6	-28.3	1.3	80.1	122	0.7	1017.0	9.3
26	-9.99	0	0	0	189	204	-15	-28.8	-27.9	-31.6	0.9	77.2	31	4.2	1015.9	6.1
27	-9.99	0	0	0	186	191	-5	-31.5	-29.2	-34.2	2.3	77.3	21	4.2	1018.6	0.6
28	-9.99	0	0	0	175	185	-10	-32.7	-31.0	-35.6	1.7	75.4	43	3.6	1015.7	0.3
29	-9.99	0	1	0	176	175	2	-36.6	-32.2	-39.9	4.4	71.4	188	1.5	1012.4	2.8
30	-9.99	0	2	0	-99	-99	-999	-38.5	-33.7	-42.2	4.8	68.7	193	3.3	1010.4	3.8
31	-9.99	0	2	0	146	164	-16	-39.3	-34.6	-42.8	4.7	69.4	174	1.9	1011.2	0.3

Table 5. February 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	85	1	12	10	2	181	196	-14	-12	-29.2	-28.0	-32.0	1.2	76.5	67	3.4	1021.5	3.7
SDEV	4	4	9	8	1	23	16	12	12	4.1	4.1	4.4	0.8	3.3		2.1	10.6	3.2
MAX.	91	19	28	24	5	237	231	6	7	-20.2	-20.1	-22.4	2.6	82.3			1044.0	10.0
MIN.	78	0	0	0	0	135	170	-37	-35	-36.7	-35.9	-40.0	-0.1	71.3			997.8	0.0
# Days	22	19	27	27	27	23	23	23	23	28	28	28	28	28	26	26	28	29
% Days	76	66	93	93	93	79	79	79	79	97	97	97	97	97	90	90	97	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	2.51	29.79	24.40	5.39	454.39	489.89	-35.50	-29.74

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
32	-9.99	0	2	0	135	170	-33	-36.7	-35.9	-40.0	0.8	71.3	-99	-9.9	1015.7	0.5
33	-9.99	0	2	0	151	174	-21	-35.3	-34.7	-38.5	0.6	72.5	-99	-9.9	1018.8	5.3
34	-9.99	0	2	0	147	175	-26	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	2.8
35	-9.99	0	3	0	179	184	-2	-33.6	-32.3	-36.7	1.3	73.7	359	3.6	1022.1	4.5
36	-9.99	0	0	0	181	181	0	-33.7	-32.0	-36.8	1.7	73.4	355	4.6	1029.9	3.0
37	0.91	0	5	5	178	175	3	-35.0	-33.4	-38.1	1.6	73.2	75	3.3	1038.1	0.0
38	0.89	-99	6	5	170	183	-12	-34.0	-33.4	-37.4	0.6	71.4	89	6.4	1032.5	5.2
39	0.81	-99	5	4	165	193	-27	-31.6	-31.4	-35.0	0.3	72.3	98	8.4	1022.9	0.6
40	0.90	-99	4	3	237	231	7	-20.2	-20.1	-22.4	0.1	82.3	123	7.9	1009.9	10.0
41	0.86	-99	7	6	-99	-99	-999	-24.0	-22.6	-26.3	1.4	80.9	268	6.9	1020.7	2.4
42	0.81	-99	5	4	210	208	3	-25.9	-23.6	-28.2	2.2	80.5	93	1.8	1021.2	3.8
43	0.84	-99	6	5	206	225	-18	-21.6	-21.5	-24.1	0.1	80.4	68	10.0	1014.4	10.0
44	0.80	-99	10	8	163	200	-35	-28.4	-28.0	-31.5	0.4	74.8	53	7.1	1021.3	6.4
45	0.82	-99	3	2	-99	-99	-999	-30.6	-28.9	-33.5	1.7	76.1	48	6.2	1021.3	1.9
46	0.90	0	11	10	-99	-99	-999	-29.5	-26.9	-32.1	2.6	78.1	40	4.6	1024.2	0.0
47	-9.99	-99	-99	-99	-99	-99	-999	-29.6	-27.3	-32.2	2.2	77.6	59	3.0	1030.9	0.0
48	-9.99	-99	-99	-99	-99	-99	-999	-33.0	-31.4	-36.1	1.6	73.6	120	3.8	1040.8	0.0
49	0.86	0	13	11	-99	-99	-999	-30.5	-30.0	-33.7	0.5	73.5	113	6.9	1044.0	1.1
50	0.86	0	18	15	176	199	-20	-28.7	-28.5	-31.8	0.2	74.4	115	8.1	1035.4	3.2
51	0.81	0	19	16	171	199	-25	-28.2	-27.6	-31.1	0.5	76.0	111	6.2	1025.3	1.1
52	0.78	0	21	16	182	200	-13	-25.7	-23.3	-27.9	2.4	81.3	324	3.1	1019.7	1.0
53	0.85	0	19	16	177	186	-6	-30.2	-28.3	-32.9	1.9	77.3	36	3.5	1012.1	2.6
54	0.88	0	22	19	203	206	0	-25.8	-24.5	-28.3	1.3	79.5	15	4.8	1012.4	7.6
55	0.88	0	23	20	190	203	-10	-26.7	-25.0	-29.1	1.7	79.8	355	5.2	1016.6	2.1
56	0.81	0	22	18	197	203	-2	-26.7	-25.7	-29.1	1.0	79.7	63	2.3	1018.7	9.3
57	0.91	0	24	21	168	189	-18	-29.9	-28.0	-32.7	1.9	77.0	44	4.8	1017.3	2.5
58	0.85	0	21	18	181	195	-11	-29.0	-27.4	-31.8	1.6	76.9	30	4.7	1014.9	3.1
59	0.87	0	20	17	215	216	2	-23.8	-23.9	-26.4	-0.1	79.2	49	6.7	1004.1	10.0
60	0.86	19	28	24	189	202	-9	-28.6	-27.2	-31.5	1.4	76.4	150	3.6	997.8	5.8

Table 6. March 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	84	22	64	54	11	202	220	-17	-7	-23.3	-22.5	-25.8	0.7	79.5	81	1.9	1013.5	7.1
SDEV	3	23	22	18	5	32	24	12	11	6.5	5.8	7.0	1.1	5.2		2.1	10.6	3.0
MAX.	91	71	113	90	23	246	250	4	11	-14.1	-12.4	-15.6	3.9	88.3			1032.2	10.0
MIN.	80	0	32	27	4	143	164	-44	-34	-39.1	-36.4	-43.0	-0.3	66.2			989.9	0.0
# Days	31	20	31	31	31	30	31	30	30	31	31	31	31	31	31	31	31	31
% Days	100	65	100	100	100	97	100	97	97	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	59.59	172.70	144.02	28.69	540.50	587.96	-46.34	-17.60

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
61	0.85	23	32	27	159	184	-20	-32.7	-30.7	-36.0	2.0	72.0	222	5.4	1011.2	4.6
62	0.89	16	37	32	143	166	-18	-39.0	-36.4	-43.0	2.7	66.2	210	5.0	1015.1	0.9
63	0.91	48	41	37	148	164	-12	-39.1	-35.3	-43.0	3.9	67.0	220	4.8	1021.2	0.0
64	0.87	12	38	33	178	190	-7	-30.3	-27.9	-33.4	2.5	74.7	258	4.5	1025.6	5.5
65	0.87	37	45	39	181	196	-9	-29.5	-29.2	-32.5	0.4	75.0	311	3.8	1028.9	9.3
66	0.83	40	44	37	169	192	-16	-30.4	-29.7	-33.5	0.8	74.1	20	3.6	1032.2	4.8
67	0.83	46	48	40	160	190	-22	-30.9	-30.2	-34.2	0.8	73.1	50	6.6	1028.7	5.1
68	0.81	56	52	42	162	206	-34	-26.3	-26.1	-29.2	0.2	76.8	61	10.0	1013.9	1.5
69	0.84	3	43	37	198	218	-14	-23.3	-23.2	-25.8	0.0	79.4	62	7.7	1000.7	7.5
70	0.86	0	38	33	234	232	7	-20.5	-20.8	-22.9	-0.3	81.1	85	4.2	998.3	9.8
71	0.88	0	41	36	244	240	9	-18.8	-19.0	-21.1	-0.2	82.0	81	6.6	1001.5	10.0
72	0.84	0	49	42	233	239	1	-18.8	-18.9	-21.1	-0.1	82.3	91	4.5	1012.5	9.9
73	0.86	32	62	53	194	209	-6	-24.7	-24.5	-27.2	0.2	80.1	359	0.8	1021.8	9.7
74	0.81	2	55	45	219	227	2	-20.6	-19.5	-22.8	1.2	83.0	73	4.2	1018.2	7.8
75	0.81	7	61	49	210	226	-4	-21.9	-21.3	-24.2	0.6	81.3	99	3.2	1021.1	8.4
76	0.82	71	70	57	178	212	-21	-24.5	-23.7	-27.2	0.8	78.4	74	6.0	1016.7	2.9
77	0.84	-99	65	54	202	226	-13	-21.5	-21.6	-23.9	-0.1	80.9	88	3.5	1014.8	8.4
78	0.85	1	60	51	245	243	11	-17.5	-17.9	-19.7	-0.3	83.2	81	2.0	1015.9	10.0
79	0.84	-99	61	51	-99	232	-999	-20.5	-20.7	-22.9	-0.1	81.5	62	6.7	1009.7	9.0
80	0.82	-99	71	58	230	237	6	-19.0	-19.2	-21.0	-0.2	83.7	76	4.6	999.2	9.9
81	0.83	-99	68	57	246	247	10	-16.8	-17.1	-19.1	-0.3	82.5	271	2.5	1000.6	9.9
82	0.82	-99	88	72	203	220	-1	-22.9	-21.6	-25.3	1.2	80.4	261	1.7	1010.0	7.5
83	0.84	-99	84	72	187	205	-6	-26.0	-22.6	-28.6	3.3	78.8	83	3.7	1012.8	6.1
84	0.84	-99	87	73	225	247	-8	-15.3	-15.1	-17.4	0.2	84.1	89	6.8	996.9	8.6
85	0.83	-99	85	71	231	250	-5	-14.1	-12.4	-15.6	1.6	88.3	258	1.6	989.9	7.6
86	0.82	51	88	72	232	248	0	-15.8	-15.9	-18.1	0.0	82.6	287	3.9	1001.8	9.0
87	0.83	-99	84	70	230	239	5	-18.8	-18.9	-21.3	-0.1	80.5	264	4.0	1013.4	9.9
88	0.80	-99	109	88	181	216	-14	-23.5	-21.9	-26.0	1.6	80.1	154	1.8	1022.4	6.3
89	0.80	-99	113	90	178	220	-19	-22.5	-22.2	-25.2	0.4	78.9	107	6.5	1023.2	2.6
90	0.82	0	96	79	210	236	-9	-19.1	-19.0	-21.0	0.2	84.7	122	4.9	1022.2	8.6
91	0.84	0	84	70	244	248	10	-16.4	-16.5	-17.9	-0.2	87.7	132	0.7	1018.6	10.0

Table 7. April 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	82	31	168	137	31	205	241	-36	-5	-17.5	-17.1	-19.7	0.3	82.6	53	2.5	1021.0	6.9
SDEV	2	44	38	29	10	31	18	17	14	4.4	4.3	4.7	0.6	4.1		4.0	8.0	3.3
MAX.	86	62	247	195	52	274	278	-4	16	-8.5	-8.9	-990.0	1.7	93.7			1036.4	10.0
MIN.	78	0	113	94	18	159	210	-69	-30	-24.5	-24.1	-27.2	-0.5	75.5			1008.0	0.0
# Days	29	2	29	29	29	29	30	29	29	30	30	30	30	30	30	30	30	30
% Days	97	7	97	97	97	97	100	97	97	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	80.35	434.47	354.38	80.09	531.90	625.01	-92.15	-12.08

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
92	-9.99	0	-99	-99	-99	252	-999	-14.9	-15.1	-16.6	-0.2	86.7	340	3.7	1020.1	10.0
93	0.83	62	113	94	209	237	-9	-18.5	-17.7	-20.5	0.9	84.5	128	2.7	1022.5	7.0
94	0.82	-99	124	101	211	238	-4	-18.6	-18.5	-20.9	0.2	82.7	220	2.3	1018.2	10.0
95	0.79	-99	135	108	159	210	-24	-24.5	-22.8	-26.6	1.7	83.2	35	2.7	1025.5	1.9
96	0.84	-99	120	101	207	228	-2	-20.9	-20.8	-23.2	0.1	81.8	115	6.5	1012.9	6.4
97	0.79	-99	143	113	203	245	-12	-17.2	-17.3	-19.3	-0.1	83.8	272	11.7	1015.5	6.8
98	0.79	-99	143	112	169	220	-20	-22.2	-21.7	-24.4	0.5	81.8	295	2.1	1034.2	4.0
99	0.84	-99	116	98	222	239	1	-18.7	-18.9	-20.9	-0.2	82.6	95	7.4	1032.7	10.0
100	0.85	-99	134	113	215	238	-2	-18.5	-18.5	-20.9	0.0	81.6	74	4.3	1029.1	9.8
101	0.81	-99	158	129	161	216	-26	-24.0	-23.6	-26.8	0.3	77.2	8	6.8	1036.4	4.5
102	0.81	-99	157	127	169	215	-16	-24.3	-24.1	-27.2	0.2	76.8	321	6.8	1034.9	6.3
103	0.83	-99	142	118	206	234	-4	-19.0	-19.1	-21.8	-0.1	78.9	300	8.3	1014.6	10.0
104	0.83	-99	152	126	205	233	-2	-19.6	-19.5	-22.1	0.1	80.3	65	1.3	1008.0	10.0
105	0.81	-99	182	147	176	229	-18	-20.0	-19.3	-23.0	0.7	76.9	77	7.3	1017.7	4.6
106	0.80	-99	189	152	166	233	-30	-19.2	-19.0	-22.5	0.3	75.5	60	9.8	1019.6	0.0
107	0.79	-99	193	154	174	243	-30	-17.0	-17.0	-19.6	0.0	80.5	57	15.7	1014.7	0.4
108	0.85	-99	144	122	208	253	-23	-14.7	-14.8	-16.8	-0.1	84.2	61	16.8	1011.9	4.8
109	0.86	-99	138	118	260	265	15	-12.1	-12.3	-14.1	-0.3	85.0	81	10.4	1012.5	10.0
110	0.86	-99	136	116	274	278	16	-8.5	-8.9	-9.9	-0.5	89.2	109	3.3	1013.2	10.0
111	0.81	-99	173	141	240	268	4	-10.6	-9.4	-11.4	1.2	93.7	82	2.0	1011.7	8.8
112	0.84	-99	158	133	258	269	14	-10.9	-11.1	-12.4	-0.2	88.0	129	2.3	1015.7	9.6
113	0.84	-99	178	149	248	268	9	-10.1	-9.9	-12.1	0.2	85.1	89	2.5	1023.4	9.7
114	0.82	-99	192	158	230	258	6	-13.0	-12.1	-14.7	0.9	86.8	204	2.1	1029.6	9.4
115	0.81	-99	209	168	220	259	2	-12.1	-11.7	-14.8	0.4	80.1	255	3.4	1031.0	7.5
116	0.82	-99	193	158	223	253	5	-14.6	-14.4	-16.4	0.2	86.5	75	5.2	1025.3	9.0
117	0.78	-99	232	183	179	228	0	-20.9	-19.5	-22.8	1.4	84.7	39	3.5	1025.4	3.8
118	0.79	-99	247	195	169	224	-3	-21.6	-20.0	-23.5	1.5	84.0	62	3.9	1026.3	0.0
119	0.82	-99	217	177	192	228	4	-20.8	-20.9	-23.3	-0.1	79.9	121	7.1	1019.8	5.4
120	0.79	-99	219	175	201	238	7	-17.9	-18.0	-20.5	-0.1	79.5	306	7.4	1014.8	8.0
121	0.80	-99	224	179	197	235	7	-18.8	-18.5	-21.8	0.3	77.2	283	5.2	1013.4	9.4

Table 8. May 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	80	107	237	189	48	249	283	-34	15	-6.7	-6.6	-8.5	0.0	86.2	230	3.8	1011.1	8.6
SDEV	4	112	38	27	15	37	29	16	17	6.9	6.7	7.6	0.5	5.7		2.4	5.4	2.3
MAX.	85	354	320	226	94	302	315	-10	43	1.0	0.9	0.1	1.7	96.3			1021.0	10.0
MIN.	70	0	153	120	29	174	224	-70	-30	-20.7	-20.0	-23.6	-0.6	76.5			999.4	0.1
# Days	31	20	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31
% Days	100	65	100	100	100	97	97	97	97	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	287.12	634.00	505.52	128.48	665.93	757.26	-91.33	38.84

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
122	0.79	-99	250	198	174	227	-1	-20.3	-19.7	-23.2	0.6	77.1	295	4.2	1011.2	7.6
123	0.81	-99	242	197	180	227	-2	-20.5	-20.0	-23.5	0.4	76.5	319	4.2	1015.7	7.0
124	0.81	-99	252	203	176	224	1	-20.7	-19.6	-23.6	1.0	77.1	280	3.9	1015.8	7.3
125	0.82	-99	239	197	205	238	9	-17.8	-17.8	-20.7	0.0	78.0	271	5.1	1014.5	9.2
126	0.83	-99	213	177	236	254	18	-13.9	-14.1	-16.6	-0.2	80.1	253	8.8	1009.2	10.0
127	0.80	-99	268	214	205	258	1	-12.5	-12.3	-14.8	0.2	83.1	243	8.3	1010.8	5.8
128	0.80	269	271	216	199	251	3	-14.2	-14.3	-16.5	0.0	82.5	221	7.3	1011.0	4.4
129	0.80	331	283	226	193	246	4	-15.4	-13.7	-17.7	1.7	82.4	197	4.9	1009.7	0.1
130	0.81	126	254	205	235	269	15	-9.6	-9.4	-11.6	0.3	85.9	224	6.4	1010.1	8.5
131	0.82	88	251	207	246	279	11	-7.6	-7.6	-9.6	0.1	85.6	220	5.4	1009.9	9.8
132	0.84	81	233	195	258	282	14	-6.5	-6.5	-8.5	0.0	85.3	169	8.1	1011.7	9.9
133	0.85	66	236	200	263	296	3	-3.1	-2.5	-4.6	0.6	88.9	185	7.1	999.4	8.5
134	0.81	68	254	208	278	305	19	-2.2	-2.3	-3.6	-0.2	90.0	247	7.4	1000.1	9.8
135	0.79	164	275	217	239	278	19	-8.4	-8.6	-10.7	-0.2	83.4	248	5.3	1012.5	9.0
136	0.82	37	231	191	268	289	19	-5.1	-4.6	-6.2	0.5	91.9	30	1.9	1004.1	9.2
137	0.81	81	253	205	261	288	21	-5.2	-5.3	-7.3	-0.1	84.7	234	8.7	1011.5	9.9
138	0.84	24	225	188	269	285	21	-6.1	-6.3	-8.3	-0.2	84.6	251	6.4	1015.5	10.0
139	0.83	-99	220	182	285	295	28	-3.3	-3.5	-5.2	-0.2	86.4	174	3.6	1019.7	9.8
140	0.85	-99	195	166	-99	-99	-999	0.2	0.0	-0.4	-0.2	95.4	234	4.1	1020.7	10.0
141	0.82	-99	209	173	279	315	0	0.2	0.1	-0.3	-0.2	96.3	252	8.1	1021.0	10.0
142	0.82	-99	202	166	259	315	-20	0.5	0.3	-0.2	-0.2	95.0	240	5.9	1018.9	10.0
143	0.79	-99	192	152	245	315	-30	0.9	0.9	0.1	-0.1	94.3	240	9.7	1011.9	10.0
144	0.79	2	153	120	302	315	20	1.0	0.9	0.0	-0.1	92.8	242	10.7	1007.5	10.0
145	0.78	0	159	125	284	300	18	-3.3	-3.5	-6.4	-0.3	79.1	266	8.7	1014.1	10.0
146	0.76	28	210	160	278	301	27	-2.6	-2.7	-5.1	-0.1	82.7	121	5.2	1008.9	8.9
147	0.76	8	207	157	296	308	38	-1.5	-1.9	-3.2	-0.3	88.6	222	2.7	1000.7	10.0
148	0.75	12	247	185	266	287	41	-6.7	-7.2	-8.9	-0.6	84.3	23	1.1	1008.8	10.0
149	0.80	2	213	171	288	301	29	-2.9	-3.3	-4.6	-0.4	88.1	95	6.7	1008.1	10.0
150	0.75	150	274	207	274	312	29	0.4	0.0	-0.9	-0.4	90.9	124	7.6	1009.0	9.6
151	0.71	253	307	217	266	313	43	0.4	0.1	-0.7	-0.3	92.0	102	2.7	1010.4	7.5
152	0.70	354	320	226	252	309	37	-0.3	-0.8	-1.8	-0.5	89.8	65	2.6	1011.9	3.3

Table 9. June 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	34	123	226	75	152	293	327	-34	117	1.1	0.7	-0.6	-0.4	88.7	68	2.5	1014.1	8.4
SDEV	25	125	59	56	70	18	16	20	59	2.2	2.3	2.1	0.3	7.0		2.5	5.8	2.2
MAX.	76	478	350	239	272	313	368	-8	206	7.3	7.7	3.3	0.4	97.8			1025.0	10.0
MIN.	12	0	121	24	35	230	303	-78	18	-3.3	-3.8	-5.1	-0.7	74.8			1000.5	0.9
# Days	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
% Days	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	319.15	586.13	193.18	392.95	758.24	847.32	-89.09	303.86

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
153	0.71	252	287	204	270	312	41	-0.1	-0.6	-1.4	-0.5	90.8	41	2.3	1009.7	6.1
154	0.69	1	196	136	306	314	52	-0.2	-0.6	-1.7	-0.4	89.8	334	4.1	1016.6	10.0
155	0.74	5	203	150	298	310	41	-0.8	-1.4	-2.8	-0.6	86.0	46	3.9	1023.0	10.0
156	0.76	0	147	112	292	303	24	-3.3	-3.8	-4.8	-0.5	89.2	87	1.2	1023.9	10.0
157	0.76	9	160	121	297	310	26	-0.6	-0.9	-3.0	-0.3	83.6	253	2.9	1018.2	10.0
158	0.72	29	204	147	273	304	26	-2.3	-3.0	-5.1	-0.6	80.9	28	3.8	1019.9	9.8
159	0.68	478	350	239	230	308	33	0.7	0.2	-3.2	-0.5	74.8	151	4.8	1017.6	0.9
160	0.57	152	227	130	290	318	69	3.7	3.8	0.2	0.1	77.5	237	4.0	1007.9	7.9
161	0.68	14	121	83	285	305	18	-1.9	-2.2	-4.7	-0.4	80.6	290	4.0	1011.8	8.6
162	0.41	172	250	102	290	314	124	1.6	1.5	-1.0	-0.1	82.5	236	10.5	1006.3	8.2
163	0.17	160	223	37	297	322	161	4.3	4.4	0.3	0.2	75.1	241	7.7	1008.5	7.6
164	0.12	81	210	25	313	330	168	2.3	2.0	1.0	-0.3	91.2	283	0.7	1014.4	9.5
165	0.12	56	188	24	305	330	139	1.4	0.9	0.6	-0.5	94.7	67	4.6	1017.4	10.0
166	0.13	2	188	26	305	322	145	-0.3	-0.8	-1.2	-0.6	93.2	89	8.1	1019.8	10.0
167	0.14	113	252	36	294	326	184	0.1	-0.6	-0.5	-0.6	96.0	101	8.1	1013.9	10.0
168	0.16	290	325	53	265	331	206	0.3	-0.3	-0.5	-0.6	94.1	103	7.5	1012.2	9.7
169	0.18	309	313	55	265	335	188	0.5	-0.2	-0.8	-0.7	90.8	68	3.2	1011.8	6.7
170	0.18	50	194	34	302	331	131	1.4	0.9	-0.2	-0.5	89.5	58	5.8	1006.1	9.3
171	0.17	112	228	40	301	345	144	4.3	4.2	2.8	-0.1	89.6	214	3.0	1000.5	9.8
172	0.18	230	288	54	301	368	167	7.3	7.7	3.3	0.4	75.7	85	0.3	1007.6	6.0
173	0.19	276	303	57	282	355	173	3.9	3.5	1.6	-0.3	84.8	8	4.1	1013.2	4.6
174	0.19	155	240	46	304	339	159	1.9	1.3	1.2	-0.6	95.2	59	6.1	1015.4	8.4
175	0.20	108	194	40	293	332	115	1.6	1.2	1.1	-0.5	95.9	85	8.2	1018.6	7.5
176	0.17	0	147	26	310	328	103	0.8	0.3	0.4	-0.4	97.8	52	4.2	1025.0	10.0
177	0.18	0	169	32	305	328	114	0.4	-0.1	0.0	-0.5	97.0	61	6.2	1021.9	10.0
178	0.18	0	163	30	310	326	117	0.4	0.0	0.0	-0.4	97.0	67	8.4	1015.9	10.0
179	0.19	9	184	34	309	330	129	0.5	-0.1	-0.1	-0.6	96.0	65	7.4	1011.4	10.0
180	0.19	85	253	49	302	341	165	1.5	0.9	0.4	-0.6	92.7	60	7.2	1010.2	10.0
181	0.19	299	286	55	296	348	179	2.6	2.0	0.7	-0.7	86.9	57	6.8	1012.6	6.3
182	0.20	247	291	59	286	342	176	1.1	0.5	-0.1	-0.7	91.6	50	7.4	1012.4	5.6

Table 10. July 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	21	194	234	49	185	293	347	-54	130	2.6	2.1	0.9	-0.5	88.5	61	2.7	1015.1	6.5
SDEV	1	167	73	17	56	25	8	27	34	2.0	2.1	1.7	0.2	5.2		2.7	5.0	3.5
MAX.	22	476	326	70	256	336	366	-11	177	7.2	7.1	5.3	-0.1	96.7			1025.3	10.0
MIN.	18	2	101	19	82	259	334	-91	59	0.2	-0.4	-2.3	-0.7	73.4			1007.1	0.0
# Days	29	27	29	29	29	29	29	29	29	31	31	31	31	31	31	31	31	31
% Days	94	87	94	94	94	94	94	94	94	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	519.50	625.54	131.05	494.49	784.13	929.49	-145.38	349.10

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
183	-9.99	-99	-99	-99	-99	-99	-999	0.7	0.2	0.2	-0.5	96.6	266	3.1	1018.2	10.0
184	0.21	248	297	61	269	345	160	0.7	0.1	-0.4	-0.6	91.8	355	2.4	1022.4	6.4
185	0.20	102	259	51	300	343	165	1.1	0.5	0.2	-0.6	93.5	75	7.8	1020.9	9.3
186	0.20	34	234	48	304	334	156	0.7	0.2	0.1	-0.6	95.5	83	10.4	1018.8	9.6
187	-9.99	-99	-99	-99	-99	-99	-999	2.9	2.3	0.2	-0.6	82.4	84	11.4	1012.0	0.6
188	0.22	-99	305	66	261	345	155	2.5	1.9	0.0	-0.6	83.4	84	10.2	1009.8	2.0
189	0.21	-99	326	70	272	351	177	2.5	1.8	0.5	-0.7	86.4	100	8.3	1012.3	2.0
190	0.22	473	322	70	261	352	161	2.2	1.6	0.2	-0.7	86.3	76	4.5	1015.3	0.0
191	0.21	441	315	68	279	362	164	4.0	3.4	1.5	-0.6	83.4	35	2.5	1014.9	1.2
192	0.20	334	291	60	292	366	157	4.8	4.3	2.5	-0.5	84.7	42	2.8	1012.7	3.1
193	0.20	300	292	60	286	356	162	3.2	2.5	1.6	-0.6	89.6	2	5.3	1007.7	4.4
194	0.20	174	259	52	295	341	161	1.1	0.4	-0.2	-0.7	90.6	7	8.1	1009.4	9.4
195	0.20	77	232	46	301	338	149	0.8	0.2	-0.3	-0.6	92.1	26	6.5	1016.9	9.5
196	0.21	263	275	59	262	339	139	0.3	-0.3	-2.3	-0.6	82.3	51	5.8	1020.2	6.8
197	0.22	364	299	66	259	340	152	0.8	0.1	-1.3	-0.6	86.1	79	6.2	1021.3	3.3
198	0.22	463	305	67	269	353	154	3.8	3.1	0.6	-0.6	79.8	100	7.0	1024.6	4.0
199	0.22	476	306	68	268	352	154	3.5	2.8	1.5	-0.6	86.7	97	6.9	1025.3	3.0
200	0.22	320	264	57	281	346	142	2.0	1.4	0.5	-0.7	89.3	90	5.2	1021.1	4.6
201	0.21	138	188	39	317	358	108	5.3	4.9	3.0	-0.4	84.7	27	1.9	1015.1	7.9
202	0.19	3	105	19	336	352	70	6.2	5.9	4.4	-0.3	88.4	238	5.4	1010.4	9.8
203	0.19	10	119	24	324	345	74	4.8	4.4	3.0	-0.4	87.7	232	7.7	1008.9	10.0
204	0.18	12	101	19	332	355	59	6.9	6.7	5.3	-0.2	89.2	204	2.3	1007.1	9.4
205	0.20	25	170	34	321	346	111	2.6	2.2	2.0	-0.4	95.2	345	4.1	1009.6	10.0
206	0.18	4	118	22	324	335	85	1.5	1.0	0.4	-0.4	92.7	14	4.4	1015.4	10.0
207	0.19	21	128	25	328	341	90	3.1	2.7	2.0	-0.4	92.3	75	4.0	1014.4	10.0
208	0.19	2	157	30	321	341	107	2.0	1.6	1.6	-0.4	96.7	293	2.4	1012.4	10.0
209	0.22	249	256	56	266	340	126	0.2	-0.2	-1.2	-0.3	90.7	343	1.2	1014.8	7.4
210	0.22	286	243	55	265	346	107	2.2	2.0	0.5	-0.2	88.5	29	2.8	1011.0	5.1
211	0.20	122	216	44	292	340	124	0.2	-0.4	-1.1	-0.5	90.8	8	2.9	1017.2	9.8
212	0.22	290	245	54	288	361	118	7.2	7.1	2.8	-0.1	73.4	228	5.5	1011.9	2.4
213	0.20	6	146	29	317	341	93	1.3	0.9	0.3	-0.5	92.6	337	2.2	1015.9	9.9

Table 11. August 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	20	68	127	26	101	298	332	-34	67	2.9	2.7	1.3	-0.2	89.6	156	1.4	1008.7	8.5
SDEV	3	71	29	7	23	17	12	16	17	2.6	2.7	2.6	0.2	6.3		2.3	7.2	2.0
MAX.	35	260	169	38	134	332	365	-8	106	9.2	9.4	7.6	0.3	97.9			1023.0	10.0
MIN.	16	0	68	11	57	255	315	-71	37	-1.1	-1.5	-3.2	-0.6	71.3			993.2	3.7
# Days	30	30	30	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31
% Days	97	97	97	97	97	97	97	97	97	97	97	97	97	97	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	183.12	339.89	69.72	270.17	797.90	889.84	-91.95	178.19

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
214	-9.99	-99	-99	-99	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	189	2.1	1011.9	9.8
215	0.19	3	126	24	308	327	83	0.8	0.3	-0.1	-0.4	93.8	264	5.7	1011.5	10.0
216	0.16	0	68	11	309	323	43	0.9	0.7	0.6	-0.3	97.8	274	4.2	1010.9	10.0
217	0.20	15	160	33	288	323	92	-1.1	-1.4	-2.8	-0.3	88.1	356	2.5	1013.6	9.4
218	0.20	18	169	35	295	323	106	-0.9	-1.5	-2.0	-0.6	92.7	74	6.2	1010.5	9.9
219	0.18	3	88	16	315	326	61	1.6	1.3	1.1	-0.3	96.4	95	10.3	1003.1	9.9
220	0.20	42	135	27	307	339	76	4.5	4.5	4.0	0.0	96.2	233	3.6	1002.0	9.4
221	0.19	48	161	31	305	332	103	2.3	1.8	1.2	-0.5	92.5	255	5.7	1005.9	9.9
222	0.21	130	159	33	298	342	82	5.4	5.5	2.6	0.1	81.8	196	5.7	1010.8	7.3
223	0.17	6	95	17	332	352	58	7.5	7.4	6.4	-0.1	92.7	220	5.3	1005.8	10.0
224	0.18	17	121	22	306	329	76	1.0	0.6	-0.2	-0.4	91.8	353	3.8	1005.8	9.8
225	0.35	9	107	38	307	315	61	-0.2	-0.5	-1.0	-0.2	94.2	345	5.0	1008.6	10.0
226	0.18	7	124	23	291	317	75	-1.0	-1.4	-3.2	-0.4	84.9	277	3.4	1011.2	9.8
227	0.21	67	147	31	277	324	69	1.8	1.6	-1.3	-0.2	80.1	218	6.6	1006.3	9.0
228	0.18	10	89	16	310	339	44	5.9	5.9	1.1	0.0	71.3	199	8.7	995.4	9.8
229	0.19	31	103	20	295	327	51	2.6	2.4	0.7	-0.2	87.3	227	8.2	993.2	9.1
230	0.19	6	111	22	289	323	55	1.4	1.3	-0.2	-0.1	89.1	247	6.8	998.9	9.8
231	0.21	126	164	34	271	325	76	1.4	1.0	-1.3	-0.3	82.1	265	8.1	1013.2	7.6
232	0.22	181	160	35	255	326	54	3.3	3.5	-0.1	0.3	78.7	123	4.2	1023.0	4.3
233	0.21	131	143	31	280	337	55	4.2	4.0	2.4	-0.3	87.8	111	10.2	1020.6	7.1
234	0.20	102	135	27	322	353	77	7.1	6.8	4.7	-0.3	84.5	118	5.5	1012.7	9.0
235	0.19	126	146	29	322	365	74	9.2	9.4	7.6	0.2	89.5	169	2.2	1009.4	7.4
236	0.21	201	162	34	305	352	81	6.1	5.8	5.2	-0.3	93.5	91	5.2	1010.1	6.4
237	0.21	79	122	25	291	338	50	4.4	4.2	2.5	-0.3	87.0	95	9.2	1005.1	8.4
238	0.19	0	94	18	312	328	60	1.7	1.3	1.3	-0.3	97.4	92	6.5	999.9	10.0
239	0.18	1	70	13	307	327	37	2.5	2.4	2.2	-0.1	97.9	296	3.6	1000.8	9.9
240	0.20	46	105	21	299	321	62	0.2	-0.2	-1.5	-0.4	87.9	309	3.5	1017.8	9.6
241	0.20	135	132	27	297	332	70	2.7	2.4	1.6	-0.3	92.6	120	9.9	1019.1	8.7
242	0.22	260	154	34	288	339	69	4.3	4.0	2.9	-0.3	90.8	100	6.0	1017.7	4.3
243	0.21	139	133	28	281	334	52	3.7	3.5	2.6	-0.1	92.6	105	6.4	1011.9	3.7
244	0.21	112	124	26	275	329	44	3.0	3.3	2.0	0.3	93.4	67	4.3	1002.7	4.6

Table 12. September 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE $W\ m^{-2}$	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW		T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	62	9	57	34	23	279	297	-17	5	-3.6	-3.6	-5.3	0.0	86.5	283	2.1	1014.7	9.7
SDEV	29	13	14	17	18	18	15	11	18	3.2	3.1	3.4	0.2	7.2		3.3	7.5	0.6
MAX.	86	40	84	68	60	318	329	-5	46	2.8	2.9	2.2	0.6	95.9			1025.0	10.0
MIN.	16	0	40	7	6	250	271	-44	-22	-9.1	-9.0	-8.9	-0.3	72.3			998.5	7.8
# Days	29	29	29	29	29	29	29	29	29	29	29	28	29	28	29	29	29	30
% Days	97	97	97	97	97	97	97	97	97	97	97	93	97	93	97	97	97	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	22.34	147.93	89.19	58.73	723.25	768.58	-45.31	13.40

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
245	-9.99	-99	-99	-99	-99	-99	-999	2.8	2.9	2.2	0.1	95.9	353	2.1	1003.2	7.8
246	0.17	0	40	7	318	329	22	2.7	2.5	1.7	-0.2	93.5	71	3.9	1010.4	10.0
247	0.16	0	47	8	312	319	32	0.6	0.3	-0.4	-0.2	92.9	69	5.6	1017.9	10.0
248	0.19	1	70	13	309	321	45	0.7	0.4	-0.3	-0.3	93.1	72	4.8	1022.0	10.0
249	0.19	1	62	12	302	320	32	0.6	0.4	-0.4	-0.3	93.0	63	8.7	1021.1	10.0
250	0.17	1	73	13	303	317	46	-0.5	-0.8	-1.1	-0.3	95.6	46	4.8	1016.1	10.0
251	0.16	5	51	9	296	317	21	0.5	0.3	-0.8	-0.2	91.2	251	7.1	1006.4	10.0
252	0.19	15	59	12	283	308	22	-1.0	-1.1	-4.5	-0.2	77.0	280	8.3	1000.5	9.5
253	0.35	5	60	21	274	299	14	-2.8	-2.9	-7.1	-0.1	72.3	268	14.0	998.6	10.0
254	0.28	34	81	23	256	300	14	-2.6	-2.8	-6.9	-0.1	72.3	261	11.5	998.5	9.4
255	0.59	25	75	44	264	299	-4	-2.9	-2.9	-5.1	-0.1	84.5	221	7.7	1005.3	9.6
256	0.72	34	84	60	253	292	-15	-3.5	-3.4	-7.2	0.1	75.1	246	6.8	1013.2	9.7
257	0.80	22	72	57	271	294	-8	-3.8	-3.8	-6.2	0.0	83.3	222	6.1	1013.7	9.9
258	0.85	8	66	56	255	287	-22	-4.4	-3.8	-6.4	0.6	85.6	39	4.8	1021.6	7.8
259	0.85	0	43	36	274	289	-8	-5.0	-5.1	-7.0	-0.1	86.0	306	10.6	1025.0	9.8
260	0.82	0	49	40	275	291	-7	-4.4	-4.5	-6.6	0.0	84.9	289	9.0	1017.2	10.0
261	0.81	36	84	68	250	282	-16	-6.4	-6.3	-8.2	0.1	87.2	29	2.3	1017.8	8.8
262	0.80	40	77	61	270	287	-1	-6.2	-6.4	-8.0	-0.2	87.2	57	6.5	1014.5	9.6
263	0.80	1	46	37	287	295	1	-4.8	-4.7	-8.9	0.1	72.8	80	2.9	1015.9	9.9
264	0.80	0	53	42	293	298	6	-5.5	-5.3	-7.7	0.2	84.8	128	0.7	1020.0	10.0
265	0.82	0	50	41	273	285	-3	-6.0	-5.8	-7.9	0.1	86.0	210	3.4	1022.2	10.0
266	0.83	0	44	37	280	290	-3	-5.3	-5.3	-7.9	0.0	81.6	246	8.1	1021.4	10.0
267	0.81	0	44	35	296	301	4	-4.3	-4.4	-6.0	-0.1	87.9	282	4.3	1018.5	10.0
268	0.82	11	53	43	266	284	-8	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	10.0
269	0.83	1	47	39	270	286	-8	-5.7	-5.6	-7.1	0.1	90.2	335	4.0	1017.5	10.0
270	0.81	3	55	44	270	285	-4	-6.1	-6.0	-7.1	0.1	92.6	317	2.7	1019.9	10.0
271	0.82	0	47	38	280	287	2	-6.6	-6.8	-7.6	-0.2	92.5	312	1.0	1020.9	10.0
272	0.79	0	42	33	275	282	2	-7.8	-7.8	-8.5	-0.1	94.3	205	1.6	1020.1	10.0
273	0.86	2	40	34	277	284	-1	-7.2	-7.4	-8.6	-0.2	89.5	234	5.3	1016.6	10.0
274	0.86	5	41	35	260	271	-5	-9.1	-9.0	999.9	0.2	-99.9	346	1.2	1011.4	10.0

Table 13. October 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	80	8	21	17	4	239	265	-25	-21	-10.4	-10.1	-12.1	0.4	87.7	105	1.5	1008.8	8.8
SDEV	4	21	12	10	3	28	20	14	14	4.7	4.8	4.8	0.7	3.1		3.0	11.3	1.6
MAX.	88	110	42	34	10	295	304	-4	-2	-0.4	0.0	-2.3	2.7	94.4			1029.3	10.0
MIN.	71	1	4	3	1	170	222	-56	-51	-20.5	-19.1	-22.2	-0.2	82.3			983.7	4.0
# Days	31	31	31	31	31	30	29	29	29	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	97	94	94	94	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	21.78	55.31	44.25	11.06	641.02	710.23	-67.04	-56.17

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
275	0.86	4	35	30	-99	-99	-999	-10.1	-8.8	-11.9	1.3	87.1	51	5.2	1010.6	8.8
276	0.85	6	40	34	257	268	-5	-10.4	-10.5	-11.9	-0.1	88.7	49	4.0	1015.2	9.6
277	0.84	3	41	34	234	257	-16	-11.8	-11.2	-13.0	0.6	90.3	49	4.4	1014.8	9.6
278	0.85	11	38	32	251	259	-2	-12.2	-12.3	-13.7	-0.1	88.8	148	3.8	1015.7	9.7
279	0.88	1	28	24	281	287	-2	-5.3	-5.2	-6.1	0.1	93.8	198	4.2	1014.7	10.0
280	0.81	18	25	20	295	303	-3	-0.9	-0.7	-3.2	0.2	84.3	136	12.9	992.4	9.9
281	0.75	110	42	32	248	304	-46	-0.4	0.0	-2.3	0.4	87.2	180	9.5	983.7	5.3
282	0.74	49	35	26	242	281	-30	-5.6	-4.1	-6.6	1.6	93.0	157	4.4	988.3	5.2
283	0.75	11	36	27	253	284	-22	-4.9	-3.7	-6.3	1.1	89.6	257	2.3	994.7	8.2
284	0.73	2	27	20	255	277	-15	-7.3	-6.6	-8.5	0.7	90.8	209	5.2	997.1	9.1
285	0.78	2	29	23	263	289	-20	-4.6	-4.6	-7.2	0.1	82.3	245	6.7	1002.2	9.3
286	0.75	2	24	18	264	279	-9	-7.3	-7.2	-9.5	0.0	83.8	317	4.3	1011.6	9.3
287	0.81	2	24	19	257	277	-15	-7.4	-6.7	-9.0	0.7	88.2	195	5.9	1019.3	9.1
288	0.75	2	21	16	216	-99	-999	-10.1	-7.4	-10.8	2.7	94.4	119	4.4	1023.8	5.8
289	0.71	3	15	11	236	269	-29	-10.5	-10.3	-11.7	0.2	91.2	125	8.4	1027.8	9.3
290	0.78	2	22	17	244	270	-21	-9.6	-9.5	-11.3	0.1	87.5	123	8.4	1029.3	6.8
291	0.78	2	15	12	245	268	-20	-9.8	-9.8	-11.1	0.0	90.5	124	8.9	1026.1	9.8
292	0.80	2	13	11	274	278	-2	-8.1	-8.3	-10.0	-0.2	86.3	108	2.7	1017.9	10.0
293	0.79	2	13	10	273	278	-2	-8.1	-8.3	-9.4	-0.2	90.3	84	4.5	1009.6	10.0
294	0.83	2	16	13	243	265	-19	-10.9	-10.9	-12.7	0.0	86.5	74	7.1	1006.2	9.9
295	0.82	1	15	13	216	252	-34	-13.5	-13.3	-15.2	0.2	87.1	72	7.4	1008.9	9.4
296	0.80	1	11	9	218	248	-28	-14.8	-14.9	-16.6	0.0	85.9	66	10.0	1008.9	10.0
297	0.81	2	14	11	224	245	-18	-15.6	-15.4	-17.6	0.2	84.4	61	6.0	1010.4	10.0
298	0.81	2	4	3	181	232	-50	-17.1	-15.8	-18.7	1.4	87.4	1	3.3	1012.8	8.8
299	0.86	2	9	8	170	222	-51	-20.5	-19.1	-22.2	1.4	85.9	76	3.4	1008.9	4.0
300	0.84	2	10	9	218	239	-20	-17.9	-18.0	-20.0	0.0	84.1	61	9.1	1000.2	9.3
301	0.81	1	7	6	252	259	-6	-12.4	-12.5	-14.0	-0.1	87.9	65	5.2	998.0	9.9
302	0.78	1	9	7	221	251	-28	-13.8	-13.8	-15.9	0.1	84.6	299	8.5	997.4	9.4
303	0.78	1	8	6	229	252	-21	-14.0	-14.0	-16.0	-0.1	84.6	286	14.2	1002.0	9.7
304	0.79	1	7	5	220	254	-32	-13.1	-13.0	-15.0	0.1	85.1	283	9.8	1007.3	9.2
305	0.76	2	7	6	200	243	-42	-15.6	-15.5	-17.5	0.1	85.5	297	9.9	1015.6	7.8

Table 14. November 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	76	0	1	1	0	200	230	-30	-30	-18.9	-17.8	-20.9	1.0	83.8	72	3.8	1010.3	6.6
SDEV	2	0	2	2	1	38	25	19	18	6.4	6.0	6.9	1.2	4.8		3.9	14.3	3.2
MAX.	79	1	8	6	2	269	283	7	7	-6.4	-6.0	-7.1	4.5	94.3			1036.1	10.0
MIN.	73	0	0	0	0	134	179	-57	-57	-33.6	-31.4	-36.7	-0.3	73.6			983.1	0.0
# Days	6	30	30	30	30	24	24	24	24	28	28	28	28	28	25	25	28	30
% Days	20	100	100	100	100	80	80	80	80	93	93	93	93	93	83	83	93	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.78	3.29	2.67	0.60	518.09	595.30	-77.22	-76.46

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
306	0.79	1	8	6	170	216	-44	-23.1	-20.9	-25.2	2.2	82.8	175	4.8	1025.2	4.0
307	0.73	1	6	5	214	242	-27	-16.2	-15.7	-18.8	0.5	79.9	182	8.9	1022.5	8.0
308	0.77	1	6	4	176	216	-38	-21.9	-19.7	-24.5	2.1	79.0	149	5.8	1016.1	0.4
309	0.75	1	4	3	230	262	-31	-10.8	-9.3	-12.1	1.5	90.5	4	5.1	1005.9	6.0
310	0.76	1	4	3	230	258	-27	-12.2	-12.2	-13.9	0.0	87.0	1	10.4	1011.2	9.4
311	0.79	1	3	3	-99	-99	-999	-17.4	-17.0	-19.6	0.4	82.4	62	11.6	1015.0	3.6
312	-9.99	1	2	2	-99	-99	-999	-15.3	-15.4	-17.1	-0.1	85.9	81	13.2	1003.4	9.6
313	-9.99	1	2	2	-99	-99	-999	-14.1	-13.4	-15.6	0.7	88.0	113	7.0	997.6	7.3
314	-9.99	1	1	1	-99	-99	-999	-9.4	-8.0	-10.6	1.5	90.8	115	4.0	984.4	9.8
315	-9.99	0	1	1	269	283	-14	-6.4	-6.0	-7.1	0.3	94.3	300	4.4	983.1	10.0
316	-9.99	0	0	0	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	6.3
317	-9.99	0	1	1	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	8.0
318	-9.99	0	0	0	183	224	-41	-21.1	-16.7	-22.9	4.5	85.7	139	2.6	1018.0	2.2
319	-9.99	0	0	0	216	256	-40	-13.2	-12.7	-14.6	0.5	89.2	-99	-9.9	1015.3	8.6
320	-9.99	0	0	0	246	259	-13	-13.0	-12.9	-14.9	0.1	85.6	-99	-9.9	1009.9	10.0
321	-9.99	0	0	0	204	243	-39	-15.8	-14.8	-17.5	1.0	86.7	-99	-9.9	1019.4	8.6
322	-9.99	0	0	0	162	219	-57	-21.0	-18.8	-22.7	2.3	86.4	20	4.2	1031.7	4.5
323	-9.99	0	0	0	151	207	-56	-24.9	-22.1	-27.0	2.8	82.5	78	5.6	1036.1	0.0
324	-9.99	0	0	0	169	211	-42	-23.7	-21.8	-25.9	1.9	81.8	98	3.1	1028.8	2.7
325	-9.99	0	0	0	203	225	-22	-20.8	-17.8	-22.9	2.9	82.8	274	4.5	1024.0	6.7
326	-9.99	0	0	0	160	208	-48	-24.7	-23.5	-27.4	1.2	78.1	42	7.2	1022.0	3.9
327	-9.99	0	0	0	135	191	-56	-30.2	-28.5	-33.0	1.6	76.0	38	4.7	1012.4	2.6
328	-9.99	0	0	0	134	179	-45	-33.6	-31.4	-36.7	2.2	73.6	108	1.6	1006.2	2.1
329	-9.99	0	0	0	164	196	-32	-30.1	-30.1	-33.0	0.0	75.8	64	9.1	1010.9	5.6
330	-9.99	0	0	0	236	229	7	-21.5	-21.8	-24.0	-0.3	79.5	64	17.7	1004.2	9.7
331	-9.99	0	0	0	241	246	-5	-16.2	-16.4	-18.0	-0.2	85.5	78	13.3	1005.3	10.0
332	-9.99	0	0	0	243	243	0	-17.3	-17.5	-19.4	-0.3	83.6	123	4.8	1011.2	10.0
333	-9.99	0	0	0	225	239	-14	-16.9	-16.9	-18.8	-0.1	85.2	280	2.8	994.3	8.5
334	-9.99	0	0	0	210	229	-19	-19.1	-19.3	-21.2	-0.2	83.7	307	4.2	986.7	9.1
335	-9.99	0	0	0	226	231	-5	-18.4	-18.5	-20.4	-0.2	84.1	85	6.5	986.5	10.0

Table 15. December 1992 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	-99	0	0	0	0	186	209	-22	-22	-23.2	-22.3	-25.5	0.9	80.9	86	1.8	1015.1	5.1
SDEV	-99	0	0	0	0	37	23	19	19	6.6	6.1	7.1	1.1	5.3		3.7	12.9	3.7
MAX.	-99	0	0	0	0	260	261	8	8	-10.4	-9.4	-11.9	4.4	92.0			1040.9	10.0
MIN.	-99	0	0	0	0	140	176	-59	-59	-34.4	-32.8	-37.7	-0.1	71.8			987.0	0.0
# Days	31	31	31	31	31	21	25	21	21	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	68	81	68	68	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.00	0.00	0.00	0.00	497.54	558.71	-59.43	-59.43

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
336	-9.99	0	0	0	-99	-99	-999	-21.8	-21.9	-24.2	-0.1	80.5	208	5.3	999.9	8.8
337	-9.99	0	0	0	-99	240	-999	-15.2	-14.6	-16.9	0.6	87.1	93	10.4	987.0	5.6
338	-9.99	0	0	0	245	256	-11	-12.2	-12.1	-13.5	0.1	89.7	225	16.0	990.4	9.6
339	-9.99	0	0	0	194	222	-28	-20.9	-20.9	-23.1	0.0	82.6	225	11.9	997.9	7.4
340	-9.99	0	0	0	212	229	-17	-19.0	-19.0	-21.1	0.0	83.4	301	6.0	1008.2	9.4
341	-9.99	0	0	0	-99	-99	-999	-24.6	-22.6	-26.5	2.1	84.5	32	3.7	1014.9	0.1
342	-9.99	0	0	0	-99	207	-999	-24.7	-23.3	-27.0	1.5	81.1	56	8.0	1013.4	0.0
343	-9.99	0	0	0	-99	205	-999	-25.1	-24.8	-27.8	0.3	78.8	47	10.8	1011.3	1.1
344	-9.99	0	0	0	147	206	-59	-25.1	-24.8	-27.8	0.3	78.6	48	10.9	1015.2	1.1
345	-9.99	0	0	0	193	199	-6	-27.2	-26.2	-30.0	1.0	77.4	46	8.2	1018.9	0.5
346	-9.99	0	0	0	203	205	-2	-26.3	-25.8	-29.0	0.5	78.1	49	8.8	1021.3	3.0
347	-9.99	0	0	0	-99	-99	-999	-24.6	-24.6	-27.3	0.0	78.6	57	12.4	1024.0	7.3
348	-9.99	0	0	0	179	199	-20	-27.7	-27.5	-30.6	0.2	75.8	49	12.3	1023.6	4.5
349	-9.99	0	0	0	-99	196	-999	-27.2	-26.0	-29.7	1.3	79.2	42	7.7	1030.1	3.0
350	-9.99	0	0	0	180	184	-4	-30.4	-26.5	-32.6	4.0	81.1	108	1.7	1034.1	6.3
351	-9.99	0	0	0	154	176	-22	-34.4	-32.8	-37.7	1.6	71.8	127	5.8	1031.0	0.1
352	-9.99	0	0	0	196	211	-15	-23.8	-23.8	-26.4	0.0	79.0	104	14.0	1009.1	6.0
353	-9.99	0	0	0	237	237	0	-17.1	-17.1	-18.8	-0.1	86.5	197	7.6	1006.8	10.0
354	-9.99	0	0	0	200	214	-14	-23.1	-22.6	-25.4	0.5	81.6	189	4.6	1011.7	9.5
355	-9.99	0	0	0	174	206	-32	-23.6	-23.0	-26.1	0.6	80.0	284	5.0	1013.3	6.3
356	-9.99	0	0	0	150	193	-43	-27.9	-26.5	-30.7	1.4	76.6	259	5.8	1019.6	2.4
357	-9.99	0	0	0	164	195	-31	-27.7	-26.5	-30.5	1.2	76.6	244	4.0	1017.5	6.2
358	-9.99	0	0	0	141	197	-56	-26.8	-26.3	-29.7	0.6	76.5	272	8.8	1020.0	0.3
359	-9.99	0	0	0	142	179	-37	-32.2	-27.8	-35.3	4.4	73.5	258	4.3	1027.1	1.3
360	-9.99	0	0	0	140	187	-47	-30.1	-28.6	-33.1	1.5	75.2	351	2.4	1030.6	0.9
361	-9.99	0	0	0	154	183	-29	-32.4	-30.3	-35.5	2.1	74.3	120	5.1	1040.9	1.5
362	-9.99	0	0	0	236	228	8	-19.8	-19.9	-22.0	-0.1	82.5	123	9.3	1028.0	9.8
363	-9.99	0	0	0	260	261	-1	-10.4	-9.6	-12.3	0.8	85.7	176	6.4	1014.0	9.3
364	-9.99	0	0	0	-99	-99	-999	-10.9	-9.4	-11.9	1.5	92.0	155	1.4	1007.5	8.7
365	-9.99	0	0	0	-99	-99	-999	-13.6	-12.6	-14.7	0.9	91.1	19	4.0	1002.5	8.0
366	-9.99	0	0	0	-99	-99	-999	-12.5	-12.5	-13.9	0.0	89.4	70	5.8	997.2	10.0

Table 16. January 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	-99	0	0	0	0	193	207	-21	-21	-26.3	-25.5	-28.6	0.8	80.2	243	3.0	1006.4	6.6
SDEV	-99	0	0	0	0	44	36	17	17	10.8	10.3	11.6	1.0	7.8		3.3	10.2	3.2
MAX.	-99	0	0	0	0	275	276	5	5	-7.1	-6.8	-8.4	4.3	94.2			1023.5	10.0
MIN.	-99	0	0	0	0	130	152	-58	-58	-43.8	-42.0	-47.5	-0.3	67.0			988.3	0.0
# Days	31	31	31	31	31	25	29	25	25	30	30	30	30	30	30	30	30	31
% Days	100	100	100	100	100	81	94	81	81	97	97	97	97	97	97	97	97	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.00	0.00	0.00	0.00	516.93	553.79	-56.35	-56.35

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
1	-9.99	0	0	0	230	226	4	-20.3	-18.6	-22.0	1.6	86.2	350	1.8	1002.1	7.1
2	-9.99	0	0	0	214	227	-13	-20.4	-19.8	-22.4	0.5	83.7	252	4.4	1011.4	7.6
3	-9.99	0	0	0	209	224	-15	-20.0	-18.8	-22.1	1.2	83.3	222	6.5	1021.9	7.8
4	-9.99	0	0	0	250	249	1	-14.5	-14.0	-15.9	0.5	88.7	149	1.0	1017.9	10.0
5	-9.99	0	0	0	249	245	4	-15.9	-16.1	-17.5	-0.3	86.8	88	14.7	1005.6	10.0
6	-9.99	0	0	0	275	273	2	-7.7	-7.2	-8.7	0.5	92.8	157	3.2	1001.3	9.8
7	-9.99	0	0	0	267	265	2	-10.2	-9.9	-11.1	0.2	92.6	78	1.7	1005.5	10.0
8	-9.99	0	0	0	241	276	-35	-7.1	-6.8	-8.4	0.3	90.5	197	10.3	996.6	9.0
9	-9.99	0	0	0	236	258	-22	-13.1	-13.2	-14.8	-0.1	87.0	245	11.8	1001.7	9.6
10	-9.99	0	0	0	196	223	-27	-21.0	-20.7	-23.5	0.3	80.6	190	5.1	1016.1	6.0
11	-9.99	0	0	0	-99	-99	-999	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	10.0
12	-9.99	0	0	0	200	235	-35	-18.0	-18.0	-20.0	0.0	83.9	230	10.1	1004.3	7.6
13	-9.99	0	0	0	-99	-99	-999	-12.8	-12.9	-13.5	-0.1	94.2	229	6.0	988.3	8.6
14	-9.99	0	0	0	202	214	-12	-24.6	-24.9	-26.4	-0.3	85.6	272	5.0	993.4	9.6
15	-9.99	0	0	0	136	194	-58	-30.3	-30.1	-32.9	0.2	77.6	261	12.3	1004.2	7.8
16	-9.99	0	0	0	172	207	-35	-26.2	-26.0	-28.5	0.2	81.2	223	9.5	997.7	7.0
17	-9.99	0	0	0	145	196	-51	-29.3	-28.9	-31.9	0.4	78.6	281	6.6	990.9	3.9
18	-9.99	0	0	0	-99	170	-999	-37.7	-37.3	-41.2	0.4	70.0	306	5.5	996.6	0.6
19	-9.99	0	0	0	-99	163	-999	-40.4	-39.7	-44.2	0.7	67.2	283	5.2	1000.3	3.4
20	-9.99	0	0	0	-99	152	-999	-43.8	-39.5	-47.5	4.3	67.5	234	4.5	1001.1	3.8
21	-9.99	0	0	0	149	177	-28	-34.7	-33.0	-37.3	1.7	77.6	243	6.3	1003.2	4.9
22	-9.99	0	0	0	187	208	-21	-25.9	-25.9	-28.1	0.1	82.1	266	8.6	1010.0	8.9
23	-9.99	0	0	0	189	207	-18	-26.6	-26.3	-29.0	0.3	79.8	271	6.9	1019.6	9.5
24	-9.99	0	0	0	167	193	-26	-30.2	-29.3	-32.7	0.9	78.4	339	3.3	1020.5	7.9
25	-9.99	0	0	0	154	171	-17	-37.1	-35.2	-40.1	1.9	73.4	42	5.0	1020.6	2.6
26	-9.99	0	0	0	134	175	-41	-36.0	-33.0	-38.8	2.9	75.0	64	6.4	1023.5	0.0
27	-9.99	0	0	0	130	165	-35	-39.2	-36.8	-42.2	2.4	72.9	87	4.2	1021.0	0.0
28	-9.99	0	0	0	141	166	-25	-38.0	-36.3	-41.0	1.7	73.4	53	2.6	1012.2	4.1
29	-9.99	0	0	0	201	196	5	-29.8	-30.1	-32.7	-0.2	76.0	271	3.8	994.4	10.0
30	-9.99	0	0	0	151	181	-30	-34.9	-34.6	-38.3	0.3	71.3	252	7.9	998.3	4.9
31	-9.99	0	0	0	-99	160	-999	-42.8	-42.0	-46.5	0.8	67.0	207	4.4	1011.3	3.3

Table 17. February 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	86	7	12	10	2	202	211	-12	-10	-24.9	-24.0	-27.2	0.9	80.6	56	1.1	1018.6	5.8
SDEV	3	15	8	7	1	39	32	16	16	10.0	9.7	10.8	0.8	7.8		3.1	12.8	3.0
MAX.	90	55	28	25	4	271	273	8	12	-6.4	-5.8	-7.5	2.4	93.2			1042.4	10.0
MIN.	75	0	0	0	0	129	148	-45	-44	-46.9	-44.5	-51.0	-0.2	61.6			994.0	0.0
# Days	24	28	28	28	28	25	26	24	24	28	28	28	28	28	28	28	28	28
% Days	86	100	100	100	100	89	93	86	86	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	17.97	28.16	24.29	3.89	488.58	510.55	-28.84	-24.60

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
32	-9.99	0	0	0	-99	148	-999	-46.9	-44.5	-51.0	2.4	61.6	203	4.7	1015.5	2.4
33	-9.99	0	0	0	-99	160	-999	-40.7	-38.6	-44.1	2.1	70.0	253	7.0	1024.6	3.4
34	-9.99	0	0	0	129	171	-42	-36.8	-36.0	-40.1	0.9	71.5	265	6.9	1040.0	2.6
35	-9.99	0	3	0	156	-99	-999	-38.1	-36.5	-41.1	1.6	73.3	1	2.3	1042.4	0.0
36	0.90	1	4	3	154	181	-26	-33.7	-33.1	-36.8	0.6	73.7	43	8.1	1028.7	4.5
37	0.85	0	4	4	215	215	0	-25.6	-25.8	-27.9	-0.2	80.7	57	16.3	1008.8	10.0
38	0.83	0	5	5	215	221	-6	-23.1	-23.0	-25.0	0.1	84.5	68	6.2	999.5	8.8
39	0.83	0	5	4	223	222	2	-24.2	-23.4	-26.4	0.8	81.7	135	5.8	1008.5	5.0
40	0.83	0	6	5	241	257	-15	-12.8	-12.0	-14.2	0.8	89.4	182	6.0	1003.1	9.0
41	0.84	0	8	7	186	231	-44	-19.1	-18.9	-21.4	0.2	82.3	255	9.3	1013.4	3.9
42	0.86	0	9	8	196	197	0	-26.7	-25.3	-29.5	1.4	76.9	301	4.3	1026.1	0.3
43	0.84	0	8	7	193	197	-3	-27.6	-25.6	-29.7	2.0	82.5	54	4.3	1030.9	5.4
44	0.75	0	15	11	222	214	12	-23.6	-23.0	-25.9	0.7	81.4	78	8.9	1030.1	4.1
45	0.80	0	12	9	225	219	9	-22.2	-21.1	-24.4	1.1	82.7	103	6.5	1025.8	4.4
46	0.88	0	11	10	243	236	8	-16.5	-15.1	-18.0	1.4	88.2	81	4.7	1016.1	6.4
47	0.90	0	4	4	-99	-99	-999	-6.4	-5.8	-7.5	0.6	92.0	216	10.5	1014.9	7.7
48	0.88	1	13	12	229	245	-15	-14.4	-12.4	-15.6	2.0	90.0	260	4.6	1033.5	6.5
49	0.87	0	12	10	256	255	3	-13.6	-13.7	-15.0	-0.2	88.9	112	6.1	1031.6	9.8
50	0.87	0	11	10	269	267	3	-9.4	-9.4	-10.4	0.1	93.0	147	3.4	1018.6	9.3
51	0.89	6	18	16	271	273	0	-8.9	-9.0	-9.8	-0.1	93.2	277	8.1	1014.0	9.4
52	0.88	27	22	19	179	213	-31	-22.6	-21.4	-24.7	1.2	83.1	294	4.2	1025.2	1.0
53	0.86	13	18	16	223	221	4	-20.8	-19.3	-22.8	1.5	84.1	2	2.6	1021.5	7.5
54	0.87	55	23	20	176	193	-14	-29.3	-28.1	-31.7	1.2	79.2	354	3.4	1024.5	2.9
55	0.87	29	20	18	149	180	-29	-32.7	-31.2	-35.6	1.4	74.8	357	2.3	1019.8	4.6
56	0.88	25	20	18	147	184	-35	-32.4	-31.8	-35.6	0.6	72.9	45	6.3	1012.9	6.8
57	0.86	4	21	18	181	194	-10	-30.2	-30.3	-33.4	-0.1	74.1	45	9.8	1002.1	7.6
58	0.88	44	28	25	179	195	-13	-29.8	-29.9	-32.9	-0.1	74.3	49	6.7	994.8	9.6
59	0.86	3	26	22	192	198	-2	-28.0	-27.6	-30.8	0.3	76.7	129	1.2	994.0	9.3

Table 18. March 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	83	76	70	58	12	195	208	-12	-1	-24.9	-24.2	-27.5	0.7	79.0	56	1.7	1015.3	5.9
SDEV	4	68	30	24	10	20	14	13	14	3.5	3.2	3.8	0.9	3.3		2.7	14.4	3.2
MAX.	89	197	138	100	41	229	233	32	48	-18.9	-19.1	-21.4	3.3	85.0			1042.2	10.0
MIN.	71	0	28	23	-12	145	184	-39	-19	-32.3	-31.3	-35.7	-0.4	71.9			990.2	0.1
# Days	31	31	31	31	31	30	28	28	28	31	31	31	31	31	30	30	31	31
% Days	100	100	100	100	100	97	90	90	90	100	100	100	100	100	97	97	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	204.76	188.43	156.63	31.79	522.02	557.78	-32.52	-2.38

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
60	0.87	0	28	24	202	207	-1	-24.9	-24.4	-27.3	0.5	79.9	-99	-9.9	997.8	10.0
61	0.88	0	40	35	145	-99	-999	-30.9	-27.6	-33.4	3.3	78.7	229	0.4	1011.9	1.1
62	0.87	50	40	35	171	193	-17	-28.8	-28.2	-31.8	0.5	75.1	97	7.7	1015.2	2.9
63	0.85	46	38	32	219	221	4	-21.2	-20.7	-23.3	0.5	82.9	102	1.2	1008.7	7.7
64	0.85	14	34	29	211	211	5	-25.8	-26.1	-28.7	-0.3	76.6	347	5.5	1017.6	9.7
65	0.86	11	39	34	202	204	3	-27.8	-28.2	-31.1	-0.3	73.7	43	7.1	1020.3	9.4
66	0.86	28	44	38	178	194	-10	-29.0	-28.1	-31.9	1.0	76.6	64	5.4	1019.4	5.6
67	0.87	94	49	42	198	199	6	-26.1	-24.6	-28.4	1.5	81.0	41	4.3	1022.7	6.9
68	0.85	46	47	40	186	200	-7	-26.6	-25.9	-29.3	0.7	78.2	64	5.3	1028.2	6.3
69	0.85	1	42	36	220	216	10	-23.1	-23.5	-25.7	-0.4	79.3	86	3.6	1034.6	9.9
70	0.81	32	33	23	212	-99	-999	-21.7	-20.7	-23.5	1.0	84.8	178	1.0	1040.4	7.6
71	0.86	9	50	43	229	230	6	-19.6	-19.8	-21.5	-0.3	84.8	131	3.4	1041.3	10.0
72	0.84	111	72	61	203	210	4	-24.0	-21.8	-25.9	2.2	83.9	85	1.2	1034.3	3.1
73	0.82	183	78	64	208	195	27	-27.9	-25.4	-30.1	2.6	81.5	64	3.9	1042.2	0.1
74	0.85	62	63	54	213	213	9	-23.4	-22.7	-26.0	0.7	79.2	160	3.1	1023.6	7.5
75	0.81	84	71	57	194	216	-8	-21.9	-21.8	-24.4	0.2	80.2	276	8.2	1016.0	6.3
76	0.77	160	82	64	169	190	-3	-29.0	-28.6	-32.1	0.4	74.0	236	6.5	1015.7	0.9
77	0.82	65	75	62	175	193	-5	-28.1	-27.1	-31.0	1.0	76.4	213	5.0	1000.7	6.1
78	0.82	62	79	65	168	190	-8	-28.7	-27.8	-31.7	0.9	75.4	254	5.5	1001.8	5.0
79	0.82	92	82	67	159	184	-10	-32.3	-31.3	-35.7	1.0	71.9	185	3.9	1000.9	4.1
80	0.84	43	78	65	185	197	1	-27.1	-25.5	-29.6	1.7	79.0	40	3.8	993.9	5.6
81	0.86	10	74	63	203	224	-10	-20.9	-21.2	-23.5	-0.3	79.6	21	7.2	990.2	10.0
82	0.84	28	77	65	206	227	-9	-20.1	-20.5	-22.6	-0.4	80.5	31	9.4	992.1	9.7
83	0.85	7	73	62	207	230	-12	-20.1	-20.5	-22.8	-0.4	79.1	62	8.1	998.5	9.7
84	0.84	51	90	76	190	213	-9	-24.9	-23.5	-27.5	1.4	78.5	219	5.7	1008.5	8.6
85	0.89	173	79	91	206	213	-19	-23.5	-23.2	-26.1	0.2	78.8	257	8.7	1017.4	0.9
86	0.77	193	122	94	219	199	48	-27.1	-26.1	-29.8	1.0	78.3	301	2.0	1024.5	0.1
87	0.71	184	138	97	172	211	2	-24.7	-24.5	-27.7	0.2	76.3	82	8.1	1013.3	4.2
88	0.71	153	135	97	-99	-99	-999	-22.3	-20.6	-24.1	1.7	85.0	11	2.9	1008.4	3.8
89	0.79	181	109	98	192	218	-15	-22.1	-21.2	-24.6	0.9	80.5	52	6.0	1016.9	3.3
90	0.84	197	120	100	206	233	-7	-18.9	-19.1	-21.4	-0.2	80.3	72	10.7	1018.8	6.1

Table 19. April 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	83	144	161	137	25	223	239	-16	5	-14.9	-14.8	-17.0	0.2	84.4	55	5.9	1018.9	6.0
SDEV	5	148	42	34	14	14	14	10	12	4.0	3.8	4.4	0.7	4.0		2.9	4.6	4.4
MAX.	89	434	246	203	62	253	270	0	24	-7.5	-7.9	-8.8	1.6	90.8			1027.3	10.0
MIN.	68	0	106	90	-14	204	214	-35	-16	-23.3	-22.9	-25.9	-0.6	76.1			1011.4	0.0
# Days	27	28	29	29	28	16	15	14	14	30	30	30	30	30	29	29	30	30
% Days	90	93	97	97	93	52	50	45	45	100	100	100	100	100	97	97	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	372.42	417.93	356.09	64.33	578.66	618.27	-42.59	13.32

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
91	0.73	190	124	103	-99	229	-999	-19.9	-20.0	-22.5	-0.2	79.8	65	12.1	1015.3	5.2
92	0.72	280	139	115	229	229	24	-19.0	-18.9	-21.9	0.1	77.8	56	12.4	1016.0	0.1
93	0.83	228	138	114	230	232	22	-18.3	-18.3	-21.5	0.0	76.1	56	12.5	1016.7	1.8
94	0.84	34	106	90	228	240	4	-16.7	-17.0	-19.1	-0.3	81.6	80	9.0	1016.1	9.6
95	0.85	31	113	96	233	241	9	-16.1	-16.2	-18.5	-0.1	81.4	81	5.0	1019.5	9.9
96	0.86	47	114	98	220	234	2	-17.3	-16.5	-19.4	0.9	83.8	72	4.3	1023.4	9.8
97	0.85	111	139	118	221	246	-4	-15.3	-15.8	-17.7	-0.5	81.8	90	4.8	1023.5	9.5
98	0.84	185	154	129	219	233	11	-18.6	-18.6	-21.0	0.1	81.6	39	6.1	1019.9	5.9
99	0.83	161	156	130	205	214	17	-23.3	-22.9	-25.9	0.4	79.0	28	7.4	1016.7	4.1
100	0.81	86	150	122	206	224	10	-20.9	-21.2	-23.5	-0.3	79.5	51	6.1	1014.8	8.8
101	0.81	108	153	124	211	234	6	-18.7	-19.3	-21.3	-0.6	79.4	83	3.7	1013.8	9.1
102	0.86	82	144	123	218	238	1	-16.7	-16.9	-18.9	-0.2	83.2	67	2.4	1015.1	9.5
103	0.86	0	129	111	221	254	-15	-13.0	-13.4	-14.9	-0.4	85.8	50	4.1	1014.5	10.0
104	0.86	1	137	118	225	260	-16	-11.1	-11.5	-13.0	-0.4	85.5	35	4.1	1014.1	10.0
105	0.87	0	133	116	-99	-99	-999	-10.3	-10.7	-12.1	-0.4	86.8	8	4.6	1015.5	10.0
106	0.88	0	126	111	-99	-99	-999	-10.5	-10.9	-12.2	-0.4	87.1	24	5.0	1013.3	10.0
107	0.87	0	140	122	253	270	1	-9.4	-9.9	-11.0	-0.5	88.0	13	3.2	1011.4	10.0
108	0.89	3	148	132	-99	-99	-999	-10.3	-10.9	-12.0	-0.6	87.4	50	4.8	1017.3	9.9
109	0.87	16	161	141	-99	-99	-999	-8.9	-9.4	-10.3	-0.5	89.9	58	5.3	1016.8	9.8
110	0.87	9	155	135	-99	-99	-999	-7.5	-7.9	-8.8	-0.4	90.8	91	8.8	1017.7	10.0
111	0.87	2	155	135	-99	-99	-999	-7.8	-8.2	-9.1	-0.4	90.5	84	9.3	1022.5	10.0
112	-9.99	190	189	-99	-99	-99	-999	-12.4	-12.4	-14.3	0.0	85.8	67	9.1	1026.8	4.4
113	0.68	380	235	173	-99	-99	-999	-13.9	-13.6	-16.3	0.2	81.7	55	9.1	1027.3	0.0
114	0.81	414	233	188	-99	-99	-999	-15.5	-14.7	-17.4	0.9	85.5	24	7.4	1024.8	0.0
115	-9.99	410	-99	192	-99	-99	-999	-16.3	-15.4	-18.3	0.9	84.5	21	6.3	1024.7	0.0
116	-9.99	-99	170	184	-99	-99	-999	-16.5	-15.0	-17.7	1.5	90.0	28	2.5	1027.0	0.4
117	0.81	285	217	176	249	-99	-999	-16.1	-14.7	-17.9	1.4	85.9	-99	-9.9	1024.8	1.0
118	0.80	336	233	188	204	-99	-999	-15.0	-13.6	-16.4	1.5	88.8	53	2.8	1022.7	0.5
119	0.82	-99	239	197	-99	-99	-999	-16.6	-15.0	-18.1	1.6	88.3	49	4.9	1019.3	0.0
120	0.82	434	246	203	-99	-99	-999	-16.0	-14.8	-17.9	1.2	84.8	44	6.2	1016.9	0.0

Table 20. May 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	82	184	245	201	44	264	289	-25	20	-5.7	-5.8	-7.4	-0.1	87.4	76	6.3	1020.8	7.4
SDEV	5	181	40	23	20	36	20	21	27	4.7	4.7	5.1	0.3	4.3		3.3	6.6	3.8
MAX.	88	542	324	246	98	308	317	-3	90	0.7	1.2	-0.2	0.9	93.8			1031.6	10.0
MIN.	70	0	184	159	23	181	247	-71	-23	-15.4	-15.1	-17.7	-0.4	79.4			1009.7	0.0
# Days	31	14	31	31	31	29	30	29	29	31	31	31	31	31	31	31	31	31
% Days	100	45	100	100	100	94	97	94	94	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	493.20	656.64	537.50	119.14	707.74	774.33	-66.96	53.38

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
121	0.82	400	248	204	-99	-99	-999	-15.4	-14.9	-17.6	0.4	82.4	59	7.7	1016.0	0.0
122	0.82	337	252	207	187	248	-16	-14.0	-13.9	-16.8	0.1	79.4	62	8.6	1018.2	0.0
123	0.82	-99	259	212	188	247	-12	-15.3	-15.1	-17.7	0.1	81.8	64	8.5	1020.2	0.4
124	0.81	-99	267	217	181	252	-21	-13.7	-13.7	-16.5	0.0	79.4	66	10.6	1015.7	0.0
125	0.81	-99	255	207	204	258	-6	-12.3	-12.5	-14.7	-0.2	82.2	65	11.0	1011.8	6.5
126	0.86	-99	184	159	259	268	16	-10.6	-11.0	-12.8	-0.4	84.0	68	10.9	1009.7	10.0
127	0.85	-99	191	162	273	277	25	-8.6	-8.9	-10.6	-0.4	84.9	64	7.9	1010.6	10.0
128	0.85	-99	198	169	277	285	21	-6.3	-6.6	-8.1	-0.2	87.0	43	2.9	1010.4	10.0
129	0.86	-99	196	168	284	290	22	-5.1	-5.3	-7.4	-0.2	83.9	233	1.3	1012.1	10.0
130	0.87	0	195	170	284	290	19	-5.2	-5.4	-7.1	-0.2	86.3	101	1.7	1015.1	10.0
131	0.85	-99	219	187	273	286	19	-5.9	-6.1	-7.9	-0.2	85.6	65	3.4	1013.5	10.0
132	0.88	-99	196	173	274	283	14	-7.0	-7.3	-8.8	-0.3	87.6	85	1.8	1018.2	10.0
133	0.87	-99	237	205	274	285	21	-6.8	-7.2	-8.4	-0.3	88.6	138	3.8	1028.0	9.7
134	0.85	-99	251	213	266	283	21	-6.6	-6.9	-7.5	-0.4	92.7	84	5.7	1028.4	9.1
135	0.87	-99	243	211	-99	285	-999	-6.3	-6.5	-7.6	-0.2	91.1	46	8.6	1023.7	9.9
136	0.86	-99	227	195	302	306	28	-1.5	-1.8	-2.6	-0.3	92.4	78	7.0	1024.8	9.8
137	0.86	-99	238	205	299	308	24	-1.4	-1.7	-2.8	-0.3	90.4	88	7.4	1025.4	9.9
138	0.88	-99	220	195	296	307	14	-0.9	-1.3	-2.6	-0.3	88.6	96	10.5	1024.1	10.0
139	0.85	-99	231	196	308	311	32	-0.5	-0.8	-1.6	-0.3	91.9	98	10.6	1025.2	9.4
140	0.78	542	314	246	275	302	41	-1.3	-1.4	-4.2	-0.1	80.7	71	12.3	1026.7	0.0
141	0.82	243	275	225	256	285	21	-5.9	-6.0	-8.2	-0.2	83.5	62	10.9	1031.6	4.8
142	0.72	-99	316	232	251	282	53	-6.5	-6.5	-8.8	0.0	83.7	53	8.8	1028.5	3.9
143	0.80	272	303	242	258	288	31	-5.2	-4.3	-6.7	0.9	89.1	117	1.1	1027.4	6.3
144	0.85	2	223	189	243	294	-17	-4.7	-5.1	-6.2	-0.4	89.5	79	6.3	1028.7	10.0
145	0.86	0	203	175	241	292	-23	-4.8	-5.0	-6.0	-0.2	91.2	72	8.4	1022.9	10.0
146	0.82	48	254	208	246	300	-8	-3.3	-3.6	-4.6	-0.3	91.0	70	7.6	1013.8	9.9
147	0.81	18	247	200	280	309	18	-1.4	-1.5	-2.6	-0.1	91.4	72	3.8	1014.9	9.9
148	0.78	56	243	189	291	317	28	0.7	1.2	-0.2	0.6	93.8	165	2.6	1023.9	9.7
149	0.70	337	324	226	303	311	90	0.5	0.6	-0.6	0.2	92.2	95	5.5	1028.0	3.9
150	0.72	284	321	232	303	311	81	-0.1	-0.3	-1.5	-0.2	90.5	110	8.9	1025.3	5.5
151	0.75	39	270	202	287	313	42	-0.7	-0.8	-1.8	-0.2	92.3	98	4.3	1021.1	9.9

Table 21. June 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	41	144	245	104	141	296	319	-24	101	0.9	0.7	-0.9	-0.2	88.1	59	2.8	1015.2	8.6
SDEV	28	144	57	78	67	11	15	14	56	2.7	3.0	1.5	0.3	8.6		2.6	6.7	1.6
MAX.	79	427	357	249	252	328	362	1	218	10.5	11.5	3.0	1.0	95.1			1026.3	10.0
MIN.	10	8	147	17	41	282	298	-46	20	-3.0	-3.4	-4.8	-0.9	59.3			1000.8	4.7
# Days	29	29	29	29	29	17	18	17	17	30	30	30	30	30	30	30	30	30
% Days	97	97	97	97	97	57	60	57	57	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	372.08	634.68	268.84	365.83	766.17	827.42	-62.21	260.73

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
152	0.76	25	214	163	-99	-99	-999	-1.3	-1.3	-2.3	0.0	93.2	343	2.1	1016.8	9.6
153	0.75	8	225	169	-99	313	-999	-0.3	-0.4	-1.4	-0.1	92.6	14	2.7	1017.6	9.9
154	0.75	14	261	194	282	310	39	-1.6	-1.9	-2.5	-0.3	93.5	50	3.8	1020.0	10.0
155	0.70	236	324	226	295	305	88	-1.8	-1.9	-2.8	-0.1	93.2	44	4.0	1020.5	7.7
156	0.73	302	331	244	297	304	80	-2.3	-2.7	-3.4	-0.4	92.0	48	6.4	1016.6	7.4
157	0.70	426	357	249	299	298	109	-3.0	-3.4	-4.8	-0.4	87.7	58	9.2	1010.5	5.6
158	0.79	29	198	157	287	308	20	-1.1	-1.5	-2.3	-0.4	91.6	68	11.1	1000.8	9.9
159	0.69	125	237	165	296	316	52	1.3	1.7	-0.9	0.4	85.6	203	3.4	1004.4	9.1
160	0.68	141	264	180	300	314	70	0.9	0.7	-1.3	-0.2	85.4	88	4.2	1012.8	9.5
161	0.68	30	197	134	289	314	38	0.4	0.3	-0.6	-0.1	93.2	330	4.3	1011.9	9.9
162	0.62	391	318	197	309	311	119	0.2	0.0	-1.1	-0.1	91.1	67	3.1	1019.6	6.6
163	0.66	85	181	120	295	312	44	-0.1	-0.5	-1.4	-0.4	91.3	81	9.0	1021.5	8.8
164	0.53	93	221	118	-99	-99	-999	1.1	0.9	0.3	-0.2	93.8	109	6.7	1023.9	9.6
165	0.46	356	323	147	-99	-99	-999	-0.3	-0.9	-1.3	-0.6	93.1	95	6.0	1026.3	7.9
166	0.33	181	262	87	-99	-99	-999	0.5	0.1	-0.8	-0.4	90.9	98	4.9	1019.2	8.4
167	0.19	270	279	52	-99	-99	-999	2.9	2.8	0.8	-0.1	86.1	231	1.3	1016.5	7.9
168	0.11	95	262	30	-99	-99	-999	-0.9	-1.2	-1.6	-0.3	95.1	319	3.7	1019.0	10.0
169	0.11	191	278	31	-99	-99	-999	0.2	-0.2	-1.4	-0.4	88.8	81	3.2	1019.2	7.1
170	0.10	38	200	22	-99	-99	-999	2.0	1.7	0.5	-0.3	89.8	38	0.5	1019.7	9.8
171	0.11	33	157	17	-99	-99	-999	1.5	1.2	0.0	-0.3	90.1	350	2.5	1020.3	9.0
172	0.12	15	164	20	-99	-99	-999	0.8	0.5	-0.5	-0.2	91.1	43	5.3	1019.5	10.0
173	0.13	118	255	35	300	329	191	0.8	0.6	-1.0	-0.2	87.7	360	2.6	1018.8	8.7
174	0.12	10	147	17	287	326	91	0.8	0.7	-0.5	-0.2	90.4	337	4.8	1013.1	9.8
175	0.14	38	207	29	293	330	141	0.8	0.6	-0.6	-0.2	89.9	12	5.2	1016.3	9.6
176	0.15	16	204	30	288	328	134	0.4	-0.6	-1.1	-0.9	90.0	79	4.4	1018.3	10.0
177	0.15	14	197	30	284	324	127	0.0	-0.9	-1.2	-0.9	91.5	97	8.2	1012.2	9.9
178	0.16	56	231	36	296	342	149	2.1	1.5	0.8	-0.6	91.1	101	3.0	1002.6	8.5
179	0.18	427	308	56	328	362	218	6.4	6.3	1.2	-0.2	69.2	213	1.7	1001.9	4.8
180	0.17	400	299	53	-99	-99	-999	10.5	11.5	3.0	1.0	59.3	58	0.4	1004.6	4.7
181	-9.99	-99	-99	-99	-99	-99	-999	6.5	6.4	0.2	-0.1	63.8	293	2.7	1011.3	7.4

Table 22. July 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	20	156	200	40	160	316	357	-41	119	5.3	4.9	2.3	-0.4	82.7	98	1.1	1015.6	8.4
SDEV	2	141	57	12	45	15	17	19	31	3.4	3.5	3.0	0.2	7.5		2.8	7.7	1.9
MAX.	27	536	306	64	242	347	389	-17	165	10.6	10.9	8.6	0.2	94.7			1025.3	10.0
MIN.	17	2	77	15	62	281	331	-81	45	0.7	0.1	-3.2	-0.7	64.2			998.7	3.6
# Days	30	30	30	31	30	30	30	30	30	31	31	28	31	28	31	31	31	31
% Days	97	97	97	100	97	97	97	97	97	100	100	90	100	90	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	418.37	536.83	107.48	429.27	845.92	955.39	-109.47	319.80

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
182	-9.99	-99	-99	39	-99	-99	-999	1.5	0.9	-2.8	-0.6	73.0	74	5.6	1017.2	9.3
183	0.21	381	270	56	286	348	152	2.9	2.2	-3.2	-0.7	64.2	84	9.6	1008.1	6.7
184	0.18	4	197	36	318	336	143	1.3	0.6	-1.3	-0.6	82.6	85	8.3	1002.2	10.0
185	0.18	123	247	46	313	349	165	1.9	1.2	-0.9	-0.7	81.8	81	4.8	1002.7	8.3
186	0.20	327	262	53	287	351	145	1.7	1.1	-1.7	-0.6	77.8	338	1.3	1010.5	6.0
187	0.19	110	251	48	305	352	156	1.8	1.2	0.0	-0.6	87.9	297	4.0	1022.3	10.0
188	0.17	2	138	24	322	339	97	1.4	1.1	0.1	-0.3	90.6	24	2.5	1024.3	10.0
189	0.18	79	167	31	327	350	113	3.2	2.8	999.9	-0.5	-99.9	88	2.2	1024.3	9.5
190	0.20	300	254	51	305	374	134	8.8	8.4	999.9	-0.4	-99.9	147	5.2	1025.3	6.6
191	0.19	159	209	40	322	378	113	10.2	10.1	999.9	-0.1	-99.9	233	4.6	1024.4	8.7
192	0.19	240	244	47	328	379	146	9.9	9.4	5.8	-0.5	75.7	239	9.7	1023.0	8.9
193	0.21	536	306	64	302	383	161	10.0	9.5	5.3	-0.5	72.0	218	2.7	1023.4	3.6
194	0.20	416	277	56	326	389	158	10.6	10.4	6.3	-0.1	74.8	109	5.0	1018.9	4.5
195	0.19	164	214	42	347	384	135	10.5	10.5	5.9	0.0	72.7	128	2.2	1016.1	8.8
196	0.27	115	179	49	328	361	97	7.2	6.8	4.9	-0.3	85.4	66	2.6	1021.7	8.9
197	0.22	157	228	51	314	337	154	5.3	4.7	2.7	-0.6	83.1	82	6.0	1021.6	8.2
198	0.19	86	190	35	324	355	124	4.4	4.0	2.1	-0.5	84.8	15	2.4	1022.0	9.4
199	0.22	426	276	61	281	361	135	6.3	5.6	3.5	-0.6	82.4	83	7.5	1021.5	5.4
200	0.19	71	193	37	321	364	113	6.1	5.6	3.3	-0.5	82.2	26	1.0	1020.9	9.9
201	0.19	122	203	39	337	380	121	9.9	9.4	5.5	-0.4	74.2	255	1.0	1015.8	8.2
202	0.20	47	133	26	326	349	84	4.2	4.0	1.8	-0.3	83.8	312	6.4	1007.6	9.1
203	0.20	31	172	34	316	339	115	1.8	1.5	0.8	-0.3	93.5	22	5.8	1013.1	10.0
204	0.20	153	218	43	312	356	131	4.9	4.4	2.8	-0.5	86.4	117	5.3	1009.3	9.3
205	0.20	165	161	32	312	350	91	4.8	4.6	3.6	-0.2	91.9	40	2.8	1010.7	8.7
206	0.20	16	176	35	307	336	112	0.7	0.1	-1.4	-0.6	86.0	65	2.2	1022.4	10.0
207	0.20	163	222	46	308	357	127	6.3	5.7	3.0	-0.6	78.8	125	7.9	1017.7	8.1
208	0.21	187	212	44	319	377	110	10.6	10.9	8.6	0.2	87.1	240	1.5	1013.7	3.7
209	0.19	47	106	21	330	353	62	5.4	4.9	3.8	-0.5	89.5	265	4.3	1010.6	9.9
210	0.18	30	104	19	327	348	64	6.1	5.9	4.7	-0.2	90.8	217	7.2	998.7	9.9
211	0.19	20	127	24	307	331	79	1.7	1.2	-0.1	-0.5	87.9	261	11.5	1004.3	10.0
212	0.19	9	77	15	318	335	45	2.5	2.1	1.8	-0.4	94.7	81	3.4	1008.3	10.0

Table 23. August 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	17	31	97	17	80	307	330	-23	57	1.6	1.1	0.0	-0.4	89.4	290	1.9	1012.5	9.6
SDEV	3	56	38	8	31	15	7	14	21	1.7	1.7	2.2	0.1	6.9		2.4	7.7	0.7
MAX.	30	244	177	37	143	340	341	-1	106	4.8	4.5	4.7	-0.2	99.1			1024.1	10.0
MIN.	13	0	29	4	25	279	315	-49	22	-1.0	-1.4	-4.1	-0.6	74.5			998.8	6.6
# Days	31	31	31	31	31	31	31	31	31	30	28	30	28	30	30	30	30	31
% Days	100	100	100	100	100	100	100	100	100	97	90	97	90	97	97	97	97	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	84.24	258.95	45.80	213.15	822.54	883.44	-60.91	152.24

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
213	0.14	0	29	4	340	341	24	4.8	4.5	4.7	-0.3	99.1	251	3.4	1006.1	10.0
214	0.15	0	64	10	333	338	49	3.5	999.9	3.1	999.9	97.1	299	1.1	1006.8	10.0
215	0.14	1	75	11	311	329	46	1.1	999.9	-0.2	999.9	91.1	285	2.3	1014.2	10.0
216	0.16	19	147	24	304	331	96	0.4	-0.2	-1.4	-0.6	87.4	315	3.7	1015.5	10.0
217	0.17	13	139	24	295	324	86	0.0	-0.6	-1.6	-0.6	89.2	260	8.2	1017.3	9.9
218	0.17	7	116	19	296	324	69	0.3	-0.3	-0.7	-0.5	93.0	254	6.0	1018.3	9.5
219	0.16	1	75	12	310	322	51	0.2	-0.3	-0.5	-0.5	95.1	275	7.4	1018.9	10.0
220	0.16	2	109	18	305	322	74	-0.5	-1.0	-0.9	-0.5	96.4	271	4.6	1022.6	10.0
221	0.17	0	91	15	314	326	64	0.5	0.0	-0.2	-0.5	95.1	263	6.8	1020.9	10.0
222	0.17	1	92	16	318	329	65	1.8	1.3	0.7	-0.5	92.5	249	8.9	1016.2	10.0
223	0.18	25	108	19	311	340	60	4.0	3.6	2.3	-0.4	88.9	248	8.9	1005.9	9.0
224	0.19	90	155	30	287	323	89	0.0	-0.5	-2.3	-0.5	84.3	266	10.2	1007.0	10.0
225	0.18	39	130	24	290	324	72	0.4	-0.1	-2.3	-0.5	81.9	257	8.6	1006.0	9.6
226	0.20	80	137	27	279	327	62	0.8	0.3	-3.1	-0.4	75.4	258	4.2	1003.4	8.1
227	0.30	1	103	31	304	321	55	-0.1	-0.5	-2.0	-0.4	86.9	28	4.9	998.8	10.0
228	0.18	12	127	23	283	322	65	-0.4	-0.8	-3.4	-0.4	80.1	28	3.3	1002.5	9.6
229	0.13	166	163	20	295	332	106	3.4	2.9	-0.6	-0.5	74.5	119	5.3	1004.0	8.9
230	0.21	244	177	37	292	341	91	3.3	2.7	0.8	-0.6	83.8	71	5.3	1006.4	8.8
231	0.20	104	123	25	298	340	56	3.9	3.5	0.8	-0.4	80.4	84	8.1	1001.3	9.3
232	0.20	66	116	24	293	340	45	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	6.6
233	0.17	8	76	13	327	340	50	4.0	3.6	3.0	-0.4	93.1	94	5.3	1001.7	10.0
234	0.17	0	71	13	315	328	45	1.0	0.5	0.1	-0.4	93.9	311	4.7	1007.3	10.0
235	0.17	0	56	10	317	328	35	1.2	0.8	0.0	-0.4	91.6	304	4.3	1014.0	10.0
236	0.16	0	57	9	320	331	37	1.9	1.5	0.8	-0.4	92.0	318	2.9	1017.5	10.0
237	0.13	0	38	6	325	335	22	3.8	3.7	2.8	-0.2	93.5	282	2.8	1021.0	10.0
238	0.14	0	64	9	325	334	46	2.5	2.1	2.0	-0.4	96.7	326	2.8	1024.1	10.0
239	0.15	1	90	14	323	338	61	3.1	2.7	2.9	-0.4	98.8	264	2.2	1024.1	10.0
240	0.17	60	93	16	301	335	43	2.6	2.2	2.0	-0.3	96.0	76	4.2	1020.0	9.8
241	0.13	0	53	7	320	327	39	1.8	1.3	0.4	-0.4	90.8	57	9.0	1018.0	10.0
242	0.16	26	63	10	296	318	31	-0.2	-0.6	-2.6	-0.4	83.6	65	5.9	1018.5	9.6
243	0.16	9	60	10	293	315	28	-1.0	-1.4	-4.1	-0.4	79.8	344	4.3	1016.2	9.6

Table 24. September 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE $W\ m^{-2}$	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW		T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	53	19	51	24	27	293	314	-21	6	-0.1	-0.1	-2.5	-0.1	83.7	328	0.1	1008.2	9.6
SDEV	36	23	16	16	23	12	14	9	21	2.8	2.7	3.2	0.3	5.7		3.0	6.6	0.5
MAX.	92	74	80	56	68	314	342	-6	48	6.3	6.3	3.9	0.7	93.6			1016.9	10.0
MIN.	11	0	26	5	2	268	285	-38	-26	-6.4	-6.6	-10.5	-0.3	72.8			991.5	8.3
# Days	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	30
% Days	100	100	100	100	100	100	100	100	100	97	97	97	97	97	97	97	97	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	50.28	131.93	62.54	69.39	759.53	812.85	-53.32	16.07

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
244	0.48	6	63	30	294	311	16	-1.0	-1.3	-3.2	-0.3	85.2	24	4.9	1016.9	9.9
245	0.52	2	59	31	296	310	14	-0.9	-1.2	-3.3	-0.3	83.4	40	8.7	1012.6	10.0
246	0.64	11	66	42	310	317	17	0.3	0.1	-0.6	-0.2	93.6	95	4.5	1007.3	10.0
247	0.27	11	69	19	297	321	26	1.6	1.5	-0.8	-0.1	84.0	162	9.8	1007.8	10.0
248	0.14	41	80	12	303	323	48	1.1	0.7	-0.4	-0.3	89.7	214	5.6	1010.5	9.9
249	0.12	32	51	6	291	322	14	1.1	0.9	-0.4	-0.2	89.9	58	11.6	1007.9	8.8
250	0.18	0	37	7	311	317	24	0.1	-0.2	-1.0	-0.2	92.5	56	12.9	1004.9	10.0
251	0.17	2	68	12	310	321	45	0.6	0.3	-0.5	-0.3	92.8	79	6.3	1016.4	10.0
252	0.12	13	76	9	299	329	37	2.4	2.0	-0.3	-0.3	82.1	113	6.9	1014.4	10.0
253	0.11	1	46	5	314	331	24	2.8	2.5	0.3	-0.2	83.6	236	6.1	1007.2	10.0
254	0.11	0	40	5	310	326	19	2.0	1.7	0.3	-0.3	88.4	262	4.2	1013.4	10.0
255	0.12	5	59	7	292	326	18	2.7	3.2	0.3	0.4	84.2	128	4.7	1011.3	9.4
256	0.14	60	75	11	296	330	30	2.8	2.5	0.4	-0.3	83.8	126	8.4	1012.3	9.6
257	0.14	74	69	10	298	333	24	4.0	3.8	1.0	-0.3	80.9	128	11.9	1009.8	9.8
258	0.13	51	59	8	304	342	13	6.3	6.3	3.9	0.0	84.6	181	7.1	1001.0	8.3
259	0.15	72	37	6	302	327	6	2.6	2.6	0.5	-0.1	85.5	14	6.9	1003.4	8.7
260	0.68	6	36	25	288	311	-12	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	9.4
261	0.87	15	36	31	290	309	-14	-0.1	-0.1	-3.2	0.0	79.8	254	12.1	999.0	9.6
262	0.85	32	54	47	283	309	-19	-0.3	-0.3	-3.6	0.0	78.5	254	11.6	991.5	9.3
263	0.90	42	63	56	272	305	-26	-2.0	-2.1	-3.2	-0.1	91.4	193	9.3	994.2	8.3
264	0.89	11	37	32	285	303	-13	-1.7	-1.3	-3.0	0.4	90.8	54	2.8	995.8	8.6
265	0.92	30	55	50	286	306	-15	-0.9	-0.9	-4.3	0.0	77.6	301	9.9	1004.3	9.3
266	0.91	41	56	51	278	302	-19	-1.7	-1.4	-4.6	0.3	80.8	312	4.3	1010.0	9.4
267	0.90	16	41	37	276	294	-14	-3.5	-2.8	-6.0	0.7	82.4	99	5.0	1011.8	9.6
268	0.90	4	38	34	285	299	-10	-2.7	-2.7	-6.7	0.0	73.3	301	6.9	1013.3	9.9
269	0.90	0	33	30	290	301	-8	-2.4	-2.4	-5.4	0.0	79.9	283	11.7	1007.1	10.0
270	0.91	0	26	24	293	304	-9	-1.7	-1.6	-4.6	0.0	80.2	283	12.4	1010.9	10.0
271	0.90	2	30	27	293	305	-9	-1.5	-1.5	-4.9	0.0	77.3	295	9.3	1013.8	10.0
272	0.89	0	32	28	268	285	-13	-6.4	-6.6	-10.5	-0.1	72.8	23	6.4	1014.1	9.8
273	0.89	2	36	32	277	289	-8	-5.4	-5.6	-8.8	-0.1	77.2	83	6.3	1013.5	10.0

Table 25. October 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	86	9	16	14	2	273	291	-18	-17	-5.0	-4.9	-7.1	0.2	85.3	81	2.7	1007.8	9.4
SDEV	4	18	11	9	2	34	23	14	15	5.2	5.0	5.6	0.5	6.0		4.5	7.9	1.1
MAX.	91	68	50	44	7	315	316	-1	1	0.9	1.1	-0.5	1.6	96.6			1022.5	10.0
MIN.	77	0	5	4	0	181	230	-64	-64	-20.3	-18.8	-22.4	-0.2	75.5			995.1	4.5
# Days	30	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31
% Days	97	100	100	100	100	97	97	97	97	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	24.37	42.08	36.37	5.70	730.75	780.22	-49.47	-44.19

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
274	0.91	0	24	22	296	306	-8	-1.7	-1.8	-3.5	-0.1	87.2	76	17.7	995.1	10.0
275	0.86	52	50	44	281	308	-21	-1.1	-1.1	-2.9	0.0	87.9	117	7.7	997.4	9.1
276	0.86	27	36	32	288	312	-20	-0.4	-0.4	-1.5	0.0	92.3	234	9.3	1007.1	9.5
277	0.85	68	38	32	278	300	-16	-2.6	-2.7	-6.0	-0.1	77.2	282	10.8	1019.8	9.0
278	0.81	8	34	27	-99	-99	-999	-4.1	-3.5	-7.4	0.5	77.7	142	1.4	1018.7	9.5
279	0.85	0	18	15	289	302	-10	-2.5	-2.7	-4.8	-0.1	84.2	117	10.9	1007.7	10.0
280	0.83	23	28	23	293	311	-13	-0.3	0.1	-2.0	0.3	88.0	149	7.4	996.3	10.0
281	0.83	1	16	13	305	316	-8	0.9	1.1	-2.0	0.1	80.9	235	10.5	1003.4	10.0
282	0.83	4	18	15	268	301	-30	-2.0	-1.6	-3.6	0.4	89.2	108	6.2	1010.7	7.9
283	0.79	1	11	9	315	316	1	0.1	0.0	-0.5	-0.1	95.4	85	7.5	998.8	10.0
284	0.78	15	14	11	298	311	-10	-0.9	-0.8	-2.4	0.2	89.6	263	14.9	1003.4	10.0
285	0.81	0	11	9	288	297	-7	-4.1	-3.8	-6.3	0.3	84.9	291	11.4	1017.1	10.0
286	0.77	0	15	12	284	297	-10	-3.8	-3.8	-7.4	0.0	75.5	87	4.6	1019.9	9.9
287	0.88	0	11	10	293	303	-9	-2.5	-2.2	-4.3	0.3	87.1	105	9.9	1009.1	10.0
288	0.88	0	12	10	300	307	-5	-1.8	-1.4	-2.6	0.4	94.3	82	10.5	1001.7	10.0
289	0.88	0	13	12	308	313	-4	-0.7	-0.4	-1.2	0.3	96.6	91	7.8	999.2	10.0
290	0.90	0	13	11	301	309	-6	-1.6	-1.8	-2.3	-0.2	94.8	68	8.4	996.8	10.0
291	0.90	0	12	11	292	301	-8	-3.1	-3.3	-4.2	-0.2	92.4	29	7.6	998.2	10.0
292	0.91	0	13	12	293	301	-7	-2.7	-2.9	-4.2	-0.1	89.4	308	3.1	1004.2	10.0
293	0.88	0	13	12	282	296	-13	-3.4	-3.5	-6.0	-0.2	82.0	299	3.3	1005.3	9.9
294	0.88	0	9	8	285	292	-6	-4.8	-5.0	-7.2	-0.2	83.2	303	2.1	1007.2	10.0
295	0.91	0	9	8	276	285	-8	-6.5	-6.7	-9.0	-0.2	82.1	293	4.5	1006.4	10.0
296	0.89	0	9	8	269	280	-10	-7.8	-7.7	-10.1	0.1	82.9	243	1.2	1009.4	10.0
297	0.88	0	6	6	247	270	-23	-8.6	-7.5	-10.9	1.1	83.5	127	4.9	1010.2	9.0
298	0.90	3	10	9	260	274	-13	-9.2	-9.2	-11.4	0.0	83.6	324	6.2	1014.4	9.8
299	0.91	59	12	11	181	230	-48	-20.3	-18.8	-22.4	1.6	83.2	184	7.4	1022.5	4.5
300	0.89	14	10	9	196	234	-37	-18.6	-17.1	-20.7	1.5	83.5	149	3.9	1017.8	8.5
301	0.89	1	6	5	231	275	-43	-8.4	-8.2	-11.9	0.2	76.1	53	9.8	1018.4	9.1
302	0.88	6	5	5	199	263	-64	-10.7	-10.6	-14.2	0.1	75.5	60	15.8	1009.8	7.4
303	-9.99	0	6	6	240	264	-24	-11.8	-12.0	-14.6	-0.2	79.2	63	18.1	1007.1	10.0
304	0.88	0	5	4	249	265	-15	-11.3	-11.5	-13.2	-0.2	85.6	69	12.1	1009.7	10.0

Table 26. November 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	88	2	1	1	0	222	251	-29	-29	-14.7	-14.3	-16.9	0.4	83.6	197	1.3	1007.9	8.0
SDEV	2	6	1	1	0	47	32	19	19	7.8	7.7	8.3	0.5	5.6		3.2	8.5	2.5
MAX.	90	28	5	4	1	293	300	-5	-4	-3.0	-2.0	-3.5	1.4	96.1			1020.1	10.0
MIN.	83	0	0	0	0	150	192	-63	-63	-32.4	-31.1	-35.5	-0.3	73.7			985.4	1.3
# Days	7	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
% Days	23	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	4.22	2.15	1.74	0.44	574.57	649.56	-74.99	-74.57

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
305	0.89	0	4	3	260	276	-15	-9.0	-9.1	-10.6	-0.1	88.6	104	6.0	1007.0	9.3
306	0.88	28	5	4	241	269	-27	-9.8	-8.6	-11.9	1.3	84.8	233	4.5	1010.5	7.5
307	0.88	20	5	4	204	242	-37	-16.0	-15.2	-18.6	0.9	80.7	131	8.2	1015.4	4.2
308	0.83	1	2	1	288	293	-4	-4.3	-4.4	-6.5	-0.1	85.0	181	8.3	1012.5	9.9
309	0.90	0	1	1	293	300	-7	-3.0	-2.3	-4.3	0.6	90.4	153	2.0	1013.3	10.0
310	0.87	0	2	2	285	297	-12	-3.0	-2.0	-3.5	1.0	96.1	64	3.1	1015.5	10.0
311	0.90	0	1	1	278	291	-13	-5.0	-4.7	-5.8	0.3	93.8	85	4.4	1017.7	10.0
312	-9.99	0	1	1	289	295	-6	-4.6	-4.8	-5.9	-0.2	90.9	89	6.3	1013.9	10.0
313	-9.99	0	1	1	281	288	-7	-6.1	-6.3	-8.1	-0.2	85.4	89	5.3	1011.0	10.0
314	-9.99	0	1	1	256	275	-19	-9.3	-9.4	-11.1	-0.2	86.4	60	10.4	1003.2	10.0
315	-9.99	0	1	1	220	257	-37	-11.3	-10.2	-13.6	1.1	82.8	72	2.6	1004.3	6.3
316	-9.99	0	0	0	245	261	-16	-12.2	-12.3	-15.6	-0.1	75.8	292	6.3	1000.8	10.0
317	-9.99	0	1	0	249	260	-10	-13.2	-13.5	-15.6	-0.3	82.5	318	4.6	1003.5	10.0
318	-9.99	0	0	0	233	248	-15	-16.0	-16.2	-17.9	-0.2	85.6	348	1.2	1005.9	9.1
319	-9.99	0	0	0	242	253	-11	-15.4	-15.6	-17.3	-0.3	85.4	194	4.0	1008.9	10.0
320	-9.99	0	0	0	190	231	-41	-19.7	-19.4	-22.0	0.3	82.2	170	5.3	998.3	8.4
321	-9.99	0	0	0	182	225	-43	-20.7	-19.3	-23.2	1.4	80.6	42	0.9	1003.7	6.9
322	-9.99	0	0	0	173	217	-44	-22.1	-21.6	-25.3	0.5	74.9	312	4.4	1013.2	9.0
323	-9.99	0	0	0	160	216	-56	-22.6	-22.3	-25.7	0.4	76.0	253	7.7	1011.0	6.9
324	-9.99	0	0	0	180	243	-63	-15.5	-14.9	-17.7	0.6	83.6	229	10.4	1011.3	6.0
325	-9.99	0	0	0	247	267	-20	-10.4	-10.3	-11.8	0.1	89.1	186	12.9	995.8	9.1
326	-9.99	0	0	0	251	274	-23	-8.8	-8.1	-10.1	0.7	89.7	205	6.7	985.4	9.5
327	-9.99	0	0	0	221	259	-38	-11.8	-11.4	-13.8	0.4	85.1	279	7.7	986.5	7.9
328	-9.99	0	0	0	160	217	-57	-21.8	-21.0	-24.9	0.8	76.2	293	6.8	1003.4	6.2
329	-9.99	0	0	0	151	213	-62	-22.7	-22.1	-25.3	0.5	79.0	281	6.2	1018.0	2.7
330	-9.99	0	0	0	205	221	-16	-23.4	-23.5	-25.8	-0.1	80.7	178	1.6	1020.1	10.0
331	-9.99	0	0	0	156	209	-53	-24.6	-23.8	-27.3	0.8	78.5	49	0.1	1017.7	4.1
332	-9.99	0	0	0	150	209	-59	-24.2	-23.1	-26.5	1.2	81.4	54	0.4	1013.7	1.3
333	-9.99	0	0	0	205	220	-15	-23.4	-23.3	-25.6	0.2	82.2	198	0.8	1009.0	9.8
334	-9.99	0	0	0	155	192	-37	-32.4	-31.1	-35.5	1.3	73.7	175	2.4	1005.6	5.5

Table 27. December 1993 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	-99	0	0	0	0	188	221	-33	-33	-22.3	-21.8	-24.8	0.5	79.9	65	7.3	1012.7	6.1
SDEV	-99	0	0	0	0	32	16	20	20	4.2	4.0	4.5	0.7	3.2		4.8	12.7	3.5
MAX.	-99	0	0	0	0	238	249	-1	-1	-15.4	-15.3	-17.1	2.5	86.5			1033.0	10.0
MIN.	-99	0	0	0	0	133	192	-70	-70	-29.7	-29.2	-32.4	-0.3	73.5			983.6	0.0
# Days	31	31	31	31	31	29	29	29	29	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	94	94	94	94	100	100	100	100	100	100	100	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.00	0.00	0.00	0.00	503.62	591.66	-88.01	-88.01

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
335	-9.99	0	0	0	190	217	-27	-23.7	-23.0	-26.2	0.7	79.3	72	6.5	998.7	9.0
336	-9.99	0	0	0	220	232	-12	-20.2	-20.1	-22.8	0.1	80.0	169	1.1	995.2	8.9
337	-9.99	0	0	0	222	241	-19	-17.4	-17.5	-20.0	-0.1	80.0	342	7.2	1001.7	9.3
338	-9.99	0	0	0	-99	-99	-999	-19.9	-19.1	-22.3	0.8	81.5	341	1.8	1003.6	8.3
339	-9.99	0	0	0	226	238	-12	-18.1	-17.5	-20.1	0.6	83.9	222	3.1	1000.1	10.0
340	-9.99	0	0	0	210	237	-27	-18.2	-17.9	-20.6	0.3	81.1	24	8.0	990.0	9.1
341	-9.99	0	0	0	230	238	-8	-18.3	-17.2	-20.6	1.0	82.1	60	1.9	983.6	8.6
342	-9.99	0	0	0	200	215	-15	-24.9	-22.5	-27.4	2.5	79.9	191	3.7	991.3	6.5
343	-9.99	0	0	0	174	216	-42	-23.4	-21.3	-25.6	2.1	82.2	84	5.8	1001.0	1.6
344	-9.99	0	0	0	196	219	-23	-22.6	-21.9	-24.8	0.7	81.9	57	2.9	1005.6	7.8
345	-9.99	0	0	0	219	239	-20	-17.6	-17.4	-19.6	0.3	84.6	51	6.1	1005.5	9.1
346	-9.99	0	0	0	206	235	-29	-18.9	-18.8	-21.1	0.2	82.5	55	7.6	1011.1	8.3
347	-9.99	0	0	0	152	205	-53	-25.7	-24.5	-28.2	1.2	79.5	51	6.5	1020.6	2.4
348	-9.99	0	0	0	175	210	-35	-24.9	-23.8	-27.3	1.1	80.1	4	3.0	1022.3	7.0
349	-9.99	0	0	0	146	194	-48	-27.9	-26.2	-30.6	1.7	77.6	55	5.1	1025.3	2.8
350	-9.99	0	0	0	137	192	-55	-29.7	-28.1	-32.4	1.6	77.1	62	6.0	1023.7	0.6
351	-9.99	0	0	0	133	194	-61	-29.2	-28.6	-32.3	0.5	74.2	59	9.0	1024.1	0.1
352	-9.99	0	0	0	141	198	-57	-28.7	-28.3	-31.8	0.4	74.8	55	9.6	1023.3	0.9
353	-9.99	0	0	0	177	201	-24	-29.0	-29.2	-32.3	-0.2	73.5	51	12.4	1018.8	7.0
354	-9.99	0	0	0	214	215	-1	-25.1	-25.4	-27.9	-0.3	77.5	79	12.6	1022.9	9.9
355	-9.99	0	0	0	156	219	-63	-22.8	-22.4	-25.6	0.3	77.2	68	14.5	1024.4	2.3
356	-9.99	0	0	0	144	214	-70	-23.9	-23.7	-26.9	0.2	76.3	63	14.1	1033.0	0.1
357	-9.99	0	0	0	157	212	-55	-25.2	-25.2	-28.1	0.0	76.9	56	16.2	1022.9	4.0
358	-9.99	0	0	0	201	215	-14	-25.1	-25.4	-27.8	-0.3	77.9	76	15.8	1018.0	9.8
359	-9.99	0	0	0	208	227	-19	-21.2	-21.4	-23.6	-0.2	81.1	85	13.5	1014.7	8.9
360	-9.99	0	0	0	228	244	-16	-16.3	-16.3	-18.1	0.0	85.6	99	10.3	1011.3	7.9
361	-9.99	0	0	0	238	249	-11	-15.4	-15.3	-17.1	0.1	86.5	72	4.2	1013.1	9.4
362	-9.99	0	0	0	200	228	-28	-21.0	-20.9	-23.2	0.1	81.8	28	7.0	1019.7	8.0
363	-9.99	0	0	0	182	223	-41	-22.2	-22.1	-24.7	0.1	80.4	70	9.5	1025.9	7.1
364	-9.99	0	0	0	171	239	-68	-17.3	-17.1	-19.7	0.2	81.0	82	17.9	1021.6	3.1
365	-9.99	0	0	0	-99	-99	-999	-17.1	-16.9	-19.8	0.3	79.8	82	14.4	1021.7	0.0

Table 28. January 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenth's
MEAN	-99	0	0	0	0	172	217	-45	-45	-23.0	-22.4	-26.0	0.6	76.6	64	7.7	1028.5	3.6
SDEV	-99	0	0	0	0	27	14	21	21	3.8	3.5	3.7	0.6	4.3		4.3	11.6	3.5
MAX.	-99	1	1	1	1	243	249	5	5	-15.8	-15.9	-17.7	2.1	86.2			1048.6	10.0
MIN.	-99	0	0	0	0	137	189	-71	-71	-30.9	-29.1	-33.9	-0.3	68.0			1003.4	0.0
# Days	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.27	0.27	0.16	0.08	461.30	582.50	-121.22	-121.14

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
1	-9.99	0	0	0	172	238	-66	-16.9	-16.7	-20.9	0.2	71.2	76	16.1	1022.9	0.0
2	-9.99	0	0	0	158	229	-71	-19.2	-19.0	-23.0	0.2	71.4	76	14.9	1026.2	0.3
3	-9.99	0	0	0	166	231	-65	-18.6	-18.5	-23.1	0.2	68.0	75	15.2	1032.7	0.0
4	-9.99	0	0	0	163	230	-67	-19.2	-19.0	-22.5	0.2	74.6	72	14.1	1028.8	0.0
5	-9.99	0	0	0	166	223	-57	-20.5	-19.3	-24.1	1.1	72.6	59	8.3	1030.2	0.1
6	-9.99	0	0	0	147	206	-59	-25.7	-23.6	-28.1	2.1	80.3	46	4.8	1039.4	1.1
7	-9.99	0	0	0	143	197	-54	-27.9	-27.2	-31.0	0.7	74.8	43	5.9	1044.9	3.4
8	-9.99	0	0	0	148	201	-53	-27.1	-26.3	-30.1	0.8	75.9	43	6.8	1048.6	1.2
9	-9.99	0	0	0	160	223	-63	-22.1	-21.6	-24.6	0.5	79.9	25	8.6	1038.8	3.1
10	-9.99	0	0	0	169	210	-41	-25.1	-23.8	-27.6	1.4	79.8	58	4.3	1036.6	7.4
11	-9.99	0	0	0	168	216	-48	-23.8	-22.2	-26.0	1.5	81.4	59	6.6	1032.2	4.6
12	-9.99	0	0	0	142	209	-67	-25.3	-25.1	-28.3	0.1	75.4	67	14.1	1034.1	1.1
13	-9.99	0	0	0	154	220	-66	-22.1	-21.9	-25.1	0.2	76.4	77	14.5	1034.9	0.0
14	-9.99	0	0	0	151	219	-68	-22.1	-21.8	-25.4	0.3	74.1	77	13.4	1039.3	0.0
15	-9.99	0	0	0	157	217	-60	-22.6	-22.3	-26.6	0.3	69.5	70	11.4	1042.8	0.0
16	-9.99	0	0	0	153	219	-66	-21.8	-21.3	-25.8	0.4	69.5	87	12.7	1037.6	0.0
17	-9.99	0	0	0	177	229	-52	-18.8	-17.9	-21.9	0.9	76.3	73	9.6	1017.4	1.7
18	-9.99	0	0	0	216	237	-21	-17.4	-16.5	-19.1	0.9	86.2	18	4.9	1006.4	7.4
19	-9.99	0	0	0	190	227	-37	-21.5	-21.5	-24.0	-0.1	79.9	24	10.1	1019.3	6.5
20	-9.99	0	0	0	137	196	-59	-28.6	-27.4	-31.7	1.2	74.7	40	7.1	1034.1	0.3
21	-9.99	0	0	0	162	201	-39	-26.7	-25.5	-29.5	1.3	77.4	27	1.8	1031.9	4.0
22	-9.99	0	0	0	167	205	-38	-26.9	-25.6	-29.5	1.3	78.6	67	4.7	1022.1	4.5
23	-9.99	0	0	0	179	209	-30	-26.2	-25.7	-28.9	0.5	77.7	67	7.1	1019.8	7.5
24	-9.99	0	0	0	178	215	-37	-24.3	-24.3	-27.0	0.0	78.0	63	11.7	1009.0	6.1
25	-9.99	0	0	0	215	225	-10	-21.9	-22.1	-24.6	-0.2	78.6	70	7.0	1003.4	10.0
26	-9.99	0	0	0	197	219	-22	-22.8	-22.1	-25.4	0.7	78.8	299	2.6	1006.8	8.4
27	-9.99	0	0	0	179	210	-31	-24.5	-23.7	-27.1	0.8	78.7	288	4.2	1016.6	7.0
28	-9.99	3	0	0	143	189	-46	-30.9	-29.1	-33.9	1.8	74.4	18	2.0	1028.4	0.4
29	-9.99	0	1	1	198	207	-9	-26.8	-26.6	-29.8	0.2	75.3	93	9.3	1031.1	5.6
30	-9.99	0	1	1	241	236	5	-19.5	-19.8	-22.0	-0.3	80.6	117	2.9	1031.8	8.8
31	-9.99	0	1	0	243	249	-5	-15.8	-15.9	-17.7	-0.2	85.0	74	7.6	1034.3	10.0

Table 29. February 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	86	49	13	11	2	185	220	-35	-33	-22.9	-22.1	-25.2	0.8	80.5	20	0.8	1026.9	4.5
SDEV	4	44	9	8	2	43	29	17	17	7.8	7.7	8.2	0.8	4.5		3.8	11.5	3.4
MAX.	90	136	31	27	7	271	289	10	11	-4.6	-4.4	-7.0	3.1	91.7			1045.2	10.0
MIN.	68	0	1	1	0	127	179	-57	-53	-33.7	-32.2	-36.5	-0.3	74.3			1007.3	0.0
# Days	23	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28
% Days	82	100	100	100	100	100	96	96	96	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	117.84	30.84	26.27	4.57	446.61	532.85	-83.78	-79.37

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
32	-9.99	0	2	1	263	253	11	-14.8	-15.0	-17.1	-0.3	81.9	93	17.2	1027.1	10.0
33	-9.99	0	1	1	240	256	-16	-13.4	-13.4	-15.4	0.0	84.4	103	11.6	1012.6	6.9
34	-9.99	4	1	1	271	289	-18	-4.6	-4.4	-7.0	0.2	83.6	182	9.2	1007.3	9.2
35	-9.99	0	2	1	267	267	1	-7.9	-5.9	-9.6	2.0	87.5	216	3.8	1013.9	8.8
36	0.90	5	3	2	266	272	-5	-8.7	-8.3	-9.8	0.4	91.7	190	3.8	1025.7	8.9
37	0.86	2	4	3	219	242	-22	-17.0	-16.2	-18.8	0.8	86.1	101	2.7	1023.5	7.1
38	0.88	8	4	3	203	242	-38	-17.2	-16.4	-18.9	0.8	86.2	80	4.6	1018.3	7.7
39	0.87	1	3	2	195	237	-41	-18.5	-17.9	-20.4	0.7	85.0	48	5.6	1012.9	4.6
40	0.88	25	5	5	166	215	-49	-23.9	-23.4	-26.3	0.5	80.4	42	6.4	1017.9	3.8
41	0.90	2	5	5	167	214	-47	-23.7	-23.2	-26.2	0.6	79.9	4	5.0	1024.3	4.1
42	-9.99	9	6	6	183	226	-43	-21.0	-20.9	-23.3	0.1	81.2	304	9.0	1018.8	7.8
43	0.87	45	9	8	183	223	-39	-21.9	-21.9	-24.3	0.0	80.4	295	10.5	1022.9	6.3
44	0.85	13	10	9	176	225	-48	-21.5	-21.2	-23.8	0.2	81.5	271	10.2	1017.1	2.7
45	0.86	27	11	10	199	226	-26	-21.6	-21.8	-24.0	-0.2	81.1	287	14.6	1016.6	8.4
46	0.87	59	12	11	186	216	-29	-24.7	-24.9	-27.2	-0.2	79.7	294	8.4	1025.2	6.8
47	0.88	84	13	12	147	196	-48	-28.6	-27.5	-31.1	1.0	78.9	312	3.6	1026.4	1.0
48	0.88	67	14	12	141	190	-47	-30.7	-29.0	-33.3	1.6	78.0	36	4.7	1030.9	0.0
49	0.89	76	15	13	135	185	-48	-32.5	-31.4	-35.4	1.2	75.6	89	5.3	1039.1	0.3
50	0.88	63	17	15	141	192	-49	-30.7	-30.5	-33.7	0.2	74.7	107	10.0	1043.1	0.0
51	0.86	112	19	16	146	197	-48	-29.2	-29.0	-32.2	0.2	75.3	115	9.8	1043.5	0.0
52	0.85	85	20	17	153	189	-33	-32.0	-29.5	-35.0	2.4	74.7	129	3.1	1043.2	1.4
53	0.86	136	23	20	198	218	-17	-22.0	-18.9	-24.0	3.1	83.7	266	2.8	1044.1	6.1
54	0.68	119	23	16	175	208	-26	-25.7	-24.5	-27.7	1.2	83.1	111	4.1	1044.5	2.8
55	0.85	100	24	20	157	-99	-999	-26.6	-26.1	-29.4	0.5	77.1	326	7.7	1045.2	1.9
56	0.84	51	24	20	159	194	-31	-29.8	-28.4	-32.7	1.5	76.1	225	3.4	1040.4	2.3
57	0.85	89	27	23	177	210	-29	-25.9	-25.7	-28.7	0.2	77.3	334	4.9	1022.7	5.9
58	0.86	71	29	25	129	186	-53	-31.9	-30.9	-34.9	0.9	74.3	317	4.5	1027.9	0.0
59	0.85	111	31	27	127	179	-48	-33.7	-32.2	-36.5	1.5	75.6	7	3.4	1019.6	0.0

Table 30. March 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	85	103	67	56	10	169	200	-31	-21	-28.5	-27.5	-31.3	0.9	76.4	39	0.9	1015.6	5.3
SDEV	2	70	26	21	5	34	20	16	15	5.3	4.8	5.6	1.0	3.1		2.3	9.1	3.4
MAX.	89	214	116	97	19	256	253	13	22	-14.8	-14.9	-17.0	3.3	82.6			1034.0	10.0
MIN.	82	0	29	25	4	119	168	-49	-43	-37.0	-35.3	-40.2	-0.4	71.6			998.1	0.0
# Days	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
% Days	100	97	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	277.13	178.17	151.28	26.86	451.79	534.56	-82.76	-55.90

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
60	0.85	78	30	25	128	176	-43	-34.5	-32.7	-37.5	1.8	74.1	44	4.7	1013.7	1.3
61	0.87	25	31	27	168	198	-26	-29.2	-28.9	-32.2	0.3	75.5	34	6.8	1009.2	9.5
62	0.87	14	29	25	178	201	-19	-28.7	-28.8	-31.7	-0.1	75.4	38	7.1	1005.0	8.9
63	0.89	55	34	30	168	197	-25	-28.3	-25.9	-30.9	2.4	78.6	253	1.5	1008.7	8.4
64	0.87	62	41	36	164	199	-30	-28.1	-26.5	-30.7	1.6	78.3	248	5.2	1018.4	4.3
65	0.88	69	42	37	153	191	-33	-30.4	-28.5	-33.3	2.0	75.9	246	5.2	1027.7	4.1
66	0.87	153	47	41	137	186	-43	-31.0	-29.5	-33.6	1.5	77.9	326	3.2	1032.5	0.0
67	0.88	153	50	44	155	191	-30	-30.3	-29.0	-32.9	1.3	78.0	321	3.2	1034.0	2.8
68	0.86	59	45	39	167	198	-25	-27.9	-26.4	-30.4	1.5	78.9	42	4.4	1022.0	5.9
69	0.87	27	46	40	166	201	-29	-27.5	-26.2	-30.0	1.3	79.3	55	6.7	1019.2	6.4
70	0.85	10	44	38	201	215	-8	-24.8	-25.0	-27.4	-0.2	78.9	72	9.6	1016.6	10.0
71	0.89	0	39	34	229	228	6	-21.5	-21.8	-23.9	-0.3	80.7	87	7.1	1002.9	10.0
72	0.89	7	44	39	226	231	0	-20.9	-21.3	-23.3	-0.3	81.3	293	5.4	998.1	10.0
73	0.85	137	61	52	166	208	-33	-25.8	-25.4	-28.5	0.4	78.1	261	6.3	1013.0	4.5
74	0.83	180	67	55	152	190	-26	-31.1	-27.8	-34.2	3.3	74.1	198	5.3	1012.5	0.6
75	0.82	164	74	61	153	192	-26	-30.2	-27.2	-33.0	3.0	76.1	241	3.9	1012.4	4.1
76	0.82	188	74	61	146	193	-34	-29.9	-29.2	-32.8	0.7	75.4	289	5.7	1018.6	0.9
77	0.82	181	78	64	137	183	-32	-33.0	-31.8	-36.1	1.2	73.9	277	4.5	1024.1	1.1
78	0.83	152	76	64	142	182	-28	-34.2	-33.4	-37.5	0.7	71.6	203	4.8	1015.5	3.8
79	0.85	-99	87	73	119	168	-35	-36.0	-34.4	-39.2	1.7	72.3	72	1.8	1021.6	0.5
80	0.85	116	81	69	125	168	-31	-37.0	-35.3	-40.2	1.7	72.0	89	5.1	1028.3	4.7
81	0.83	194	94	78	127	174	-31	-36.1	-35.0	-39.3	1.1	72.8	25	3.8	1026.1	4.2
82	0.82	202	94	77	148	180	-15	-34.1	-33.3	-37.4	0.9	72.4	55	5.5	1019.1	3.1
83	0.84	78	86	72	183	203	-6	-28.2	-28.1	-31.4	0.0	74.1	56	7.2	1009.5	8.2
84	0.87	11	78	68	215	218	7	-24.7	-25.1	-27.8	-0.4	75.4	61	5.7	1006.0	10.0
85	0.84	116	91	77	195	217	-8	-24.4	-24.6	-27.4	-0.2	76.3	235	6.6	1008.2	7.9
86	0.85	164	102	87	150	193	-28	-30.1	-29.0	-33.3	1.2	74.1	220	5.2	1006.0	4.3
87	0.86	156	99	84	165	194	-14	-29.9	-29.5	-33.2	0.4	72.7	314	0.9	1014.0	4.6
88	0.88	7	75	66	256	243	22	-17.4	-17.8	-19.7	-0.3	82.0	90	10.7	1007.1	10.0
89	0.85	132	107	91	231	253	-6	-14.8	-14.9	-17.0	-0.1	82.6	172	2.4	1007.5	9.0
90	0.84	214	116	97	179	216	-18	-22.6	-21.7	-25.0	0.8	80.1	267	0.5	1026.8	2.0

Table 31. April 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	84	159	162	136	27	210	239	-27	0	-18.2	-18.0	-20.3	0.2	83.8	69	2.3	1020.7	6.6
SDEV	2	146	32	25	8	46	28	20	15	6.7	6.6	7.3	0.6	5.7		2.4	6.9	3.5
MAX.	89	430	212	171	41	273	284	-1	22	-6.7	-6.7	-8.3	1.7	93.4			1034.3	10.0
MIN.	80	0	100	88	10	154	203	-59	-24	-27.8	-27.9	-30.6	-0.4	74.5			1007.9	0.0
# Days	29	30	30	29	29	30	28	28	28	30	30	30	30	30	30	30	30	30
% Days	97	100	100	97	97	100	93	93	93	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	411.27	420.68	351.89	70.35	543.62	620.68	-69.23	0.18

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
91	0.83	309	128	106	178	224	-24	-20.7	-19.8	-23.5	0.9	78.1	84	8.3	1029.3	0.6
92	0.84	229	122	102	215	249	-14	-14.8	-14.6	-17.1	0.1	82.0	85	8.5	1017.7	5.3
93	0.84	146	115	97	251	259	10	-12.1	-10.9	-13.8	1.2	87.0	156	2.7	1019.3	8.4
94	0.87	33	102	89	273	284	2	-6.7	-6.7	-8.3	0.0	88.5	243	6.7	1025.4	10.0
95	0.88	5	100	88	264	267	9	-11.2	-11.4	-13.3	-0.3	84.2	29	1.5	1027.6	10.0
96	0.89	4	101	91	249	250	9	-16.2	-16.5	-18.6	-0.4	82.0	74	7.6	1024.0	10.0
97	-9.99	247	145	-99	173	-99	-999	-22.2	-21.9	-25.0	0.3	78.0	35	7.7	1026.7	4.6
98	0.81	361	161	126	161	220	-24	-21.9	-21.3	-24.6	0.5	78.5	28	7.6	1034.3	0.0
99	0.80	269	161	128	166	219	-20	-22.0	-20.5	-24.3	1.5	81.9	45	6.6	1033.0	1.6
100	0.83	187	156	130	179	222	-17	-22.2	-21.9	-24.8	0.3	79.0	58	5.6	1029.8	6.1
101	0.85	86	147	125	193	219	-4	-23.9	-23.6	-26.5	0.3	79.0	93	4.4	1025.2	7.0
102	0.83	55	151	126	189	217	-3	-23.2	-22.2	-25.8	0.9	79.1	113	1.1	1017.2	7.9
103	0.86	36	144	123	194	216	-1	-25.6	-26.0	-28.8	-0.4	74.8	166	5.5	1008.9	8.3
104	0.84	214	176	148	162	207	-17	-26.0	-25.2	-29.1	0.8	74.5	87	5.1	1007.9	6.4
105	0.82	301	185	152	156	207	-18	-24.9	-25.0	-26.8	-0.1	84.1	65	3.3	1013.7	6.0
106	0.81	305	193	156	154	206	-15	-25.0	-25.1	-27.4	-0.1	80.8	68	2.7	1014.7	2.8
107	0.80	305	190	153	162	-99	-999	-22.6	-22.8	-24.6	-0.2	83.5	315	0.4	1018.5	6.0
108	0.81	370	202	163	155	204	-10	-27.2	-27.4	-30.0	-0.2	76.8	226	2.1	1025.1	3.3
109	0.81	430	208	168	155	203	-8	-27.8	-27.9	-30.6	-0.1	76.6	213	2.6	1025.2	0.0
110	0.81	422	212	171	156	205	-8	-27.0	-26.2	-28.9	0.7	83.8	140	1.0	1024.4	0.0
111	0.82	239	193	158	186	223	-2	-21.5	-19.8	-23.0	1.7	87.3	44	3.5	1023.4	5.3
112	0.84	119	185	156	233	250	12	-15.4	-15.3	-17.3	0.1	85.2	60	3.9	1017.4	9.6
113	0.86	8	164	141	254	261	16	-12.7	-12.5	-13.9	0.2	90.4	62	2.6	1016.3	9.9
114	0.83	14	178	149	253	263	19	-12.3	-12.3	-13.3	-0.1	91.8	89	0.5	1016.2	9.9
115	0.85	3	173	147	266	271	21	-10.4	-10.6	-11.9	-0.2	89.4	297	2.8	1023.7	10.0
116	0.85	0	162	138	270	276	18	-9.2	-9.4	-10.1	-0.1	93.4	16	1.9	1022.7	10.0
117	0.85	2	179	152	260	268	19	-11.2	-11.4	-12.3	-0.2	91.4	44	1.5	1016.4	10.0
118	0.85	17	177	151	263	271	18	-10.4	-10.5	-11.8	-0.1	89.9	322	2.7	1012.4	9.5
119	0.85	44	187	160	252	267	12	-11.1	-11.0	-12.3	0.1	90.8	65	3.5	1012.8	9.1
120	0.83	0	172	143	270	277	22	-9.1	-9.2	-10.0	-0.1	93.0	100	4.0	1011.6	10.0

Table 32. May 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	84	159	246	205	40	256	281	-25	15	-7.8	-7.7	-9.1	0.0	90.3	66	5.0	1014.5	7.8
SDEV	3	197	37	27	11	29	17	19	14	4.0	4.0	4.4	0.3	4.5		1.9	6.0	3.1
MAX.	89	568	306	251	57	296	316	-2	46	0.5	1.0	-0.6	0.8	99.1			1023.8	10.0
MIN.	79	0	183	159	20	187	256	-71	-17	-14.3	-14.6	-16.5	-0.3	78.6			999.2	0.0
# Days	29	29	29	29	29	29	28	28	28	31	31	31	31	31	30	30	31	31
% Days	94	94	94	94	94	94	90	90	90	100	100	100	100	100	97	97	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	424.58	657.79	549.82	107.97	685.03	751.59	-68.11	41.14

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
121	0.85	12	187	160	272	-99	-999	-8.5	-8.6	-9.4	-0.1	93.1	8	4.6	1010.0	10.0
122	0.87	306	225	194	233	266	-2	-11.1	-10.6	-12.5	0.5	89.6	334	4.0	1012.2	5.9
123	0.85	299	250	211	219	258	0	-12.5	-11.8	-13.7	0.8	90.7	53	4.3	1015.7	7.5
124	0.87	23	196	170	272	282	16	-7.8	-7.9	-8.8	-0.1	92.5	75	7.0	1012.1	10.0
125	0.89	8	183	163	282	287	15	-6.6	-6.7	-7.2	-0.2	94.8	63	5.8	1008.1	10.0
126	0.88	16	189	167	290	292	20	-5.3	-5.3	-5.8	0.0	95.6	70	4.6	1007.1	10.0
127	0.87	13	217	189	275	282	21	-8.1	-8.3	-9.3	-0.2	91.2	72	6.5	1013.3	10.0
128	0.87	9	214	186	263	273	18	-9.9	-10.0	-11.1	-0.1	91.1	74	6.4	1017.6	9.6
129	0.86	55	232	200	275	277	30	-9.1	-9.2	-10.4	-0.2	90.1	68	7.3	1015.3	9.6
130	0.82	429	286	235	258	263	46	-11.7	-11.3	-13.4	0.4	87.0	63	7.0	1017.1	1.9
131	0.81	568	294	240	187	258	-17	-12.5	-11.8	-14.3	0.7	86.5	61	6.4	1018.6	0.0
132	0.83	137	252	210	228	259	11	-13.6	-13.8	-15.7	-0.2	84.2	71	7.8	1020.6	8.1
133	0.85	21	246	209	237	257	17	-14.3	-14.6	-16.5	-0.2	83.9	88	6.6	1023.5	9.3
134	0.83	139	276	231	222	256	11	-14.3	-14.5	-16.1	-0.2	86.0	96	6.8	1023.3	9.3
135	0.83	349	294	243	209	259	1	-12.8	-12.7	-14.4	0.1	88.1	108	8.0	1020.1	4.6
136	0.81	539	300	244	220	268	8	-11.1	-10.9	-12.7	0.2	87.7	115	4.1	1017.3	1.4
137	0.82	487	302	248	231	283	2	-6.6	-6.2	-7.7	0.4	91.8	51	5.4	1019.5	4.0
138	0.82	544	306	251	221	287	-11	-5.8	-5.6	-7.1	0.2	90.7	66	9.5	1017.5	2.5
139	0.85	78	225	191	277	297	14	-4.1	-4.2	-4.8	-0.1	95.1	73	8.5	1006.3	9.7
140	0.80	339	283	226	265	313	9	0.5	1.0	-0.8	0.5	91.1	184	4.3	999.2	5.5
141	0.79	97	260	204	294	316	34	-0.2	-0.2	-0.6	-0.1	96.9	230	5.1	1003.9	8.9
142	-9.99	-99	-99	-99	-99	-99	-999	-1.9	-1.3	-2.1	0.6	99.1	52	2.6	1007.2	5.0
143	-9.99	-99	-99	-99	-99	-99	-999	-2.8	-3.0	-3.5	-0.2	94.2	25	9.1	1011.0	10.0
144	0.85	0	186	159	296	304	19	-3.0	-3.1	-3.7	-0.1	95.1	-99	-9.9	1012.1	10.0
145	0.83	0	230	192	289	300	27	-4.1	-4.3	-5.0	-0.2	93.3	50	7.7	1013.6	10.0
146	0.82	23	245	200	276	294	27	-5.9	-6.2	-7.0	-0.3	92.0	56	6.2	1016.9	10.0
147	0.81	79	271	220	260	286	25	-7.6	-7.8	-8.6	-0.3	91.8	59	6.5	1020.9	9.4
148	0.83	11	238	198	267	285	22	-7.4	-7.6	-9.2	-0.2	87.0	62	7.0	1023.8	10.0
149	0.84	16	239	200	266	283	22	-8.0	-8.2	-9.8	-0.2	86.6	62	6.2	1018.3	10.0
150	0.84	0	243	204	267	284	22	-7.9	-8.1	-10.3	-0.2	82.6	56	3.4	1013.4	10.0
151	0.82	0	253	208	266	288	23	-7.3	-7.1	-10.3	0.1	78.6	81	0.9	1014.3	10.0

Table 33. June 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	39	148	260	110	150	282	323	-40	109	-0.6	-0.6	-1.6	-0.1	92.5	270	0.4	1011.3	8.6
SDEV	29	152	53	93	67	20	15	16	61	2.3	2.4	2.5	0.6	4.3		1.5	3.9	2.0
MAX.	82	631	355	278	273	315	351	-10	196	4.0	4.0	3.6	2.3	99.4			1020.3	10.0
MIN.	12	5	166	20	49	245	287	-77	12	-6.6	-6.6	-9.1	-0.6	82.5			1004.3	1.9
# Days	30	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
% Days	100	93	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	384.63	673.74	285.82	387.94	731.64	836.00	-104.38	283.56

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
152	0.82	69	278	229	264	290	23	-6.6	-6.6	-9.1	0.0	82.5	164	1.8	1013.8	9.9
153	0.81	137	301	245	245	287	14	-6.5	-6.4	-7.8	0.0	90.1	144	4.8	1008.3	9.5
154	0.80	211	299	238	263	303	21	-3.0	-3.2	-4.7	-0.1	88.6	265	5.6	1009.5	8.9
155	0.78	263	304	236	257	300	25	-3.1	-2.5	-4.5	0.7	90.3	199	1.7	1012.1	7.1
156	0.76	244	313	236	267	310	34	-1.8	-1.7	-3.5	0.0	87.7	128	2.3	1009.7	9.4
157	0.79	41	293	231	293	314	41	-1.4	-1.7	-1.6	-0.3	99.1	219	2.8	1008.1	10.0
158	0.78	631	355	278	249	314	12	-0.2	0.8	-0.7	1.0	96.4	157	1.3	1006.9	3.3
159	0.76	408	289	220	265	314	20	0.7	3.0	-1.3	2.3	86.5	234	4.7	1009.3	6.6
160	0.72	20	237	169	308	318	58	0.0	-0.2	-0.3	-0.2	97.9	89	1.5	1019.8	10.0
161	0.69	215	308	214	287	317	64	-0.1	-0.3	-0.2	-0.2	99.4	117	6.0	1020.3	8.3
162	0.58	-99	348	201	264	319	92	0.9	0.9	-0.2	0.0	92.6	111	2.9	1014.6	1.9
163	0.39	-99	277	108	290	321	138	1.1	1.0	-0.2	-0.1	90.7	24	2.2	1010.9	8.7
164	0.21	338	306	63	278	328	193	2.0	2.0	-0.2	0.1	85.5	88	1.6	1007.4	4.4
165	0.13	113	221	28	308	335	166	2.3	2.5	0.4	0.2	87.3	245	4.9	1004.3	8.8
166	0.12	5	166	20	305	327	124	-0.2	-0.4	-0.9	-0.2	94.7	42	0.3	1010.1	10.0
167	0.17	41	192	32	300	326	134	-0.3	-0.6	-0.9	-0.3	95.6	295	3.1	1011.3	10.0
168	0.19	171	244	46	272	321	149	-1.5	-1.8	-2.5	-0.3	92.8	274	6.2	1011.3	8.6
169	0.22	10	185	41	302	324	122	-0.3	-0.6	-0.7	-0.4	96.7	281	4.2	1007.5	10.0
170	0.14	18	222	30	290	330	152	-0.4	-0.8	-1.0	-0.3	95.3	291	3.6	1010.7	9.4
171	0.24	30	230	55	297	326	146	-0.3	-0.7	-0.9	-0.4	95.6	277	4.4	1004.5	10.0
172	0.13	38	225	29	296	332	160	0.1	-0.3	-0.7	-0.4	94.0	331	3.5	1009.6	10.0
173	0.14	209	276	40	273	332	177	-0.9	-1.2	-2.8	-0.4	86.5	318	2.9	1013.1	7.9
174	0.15	323	323	50	255	332	196	-2.2	-2.5	-3.6	-0.4	90.0	304	2.3	1017.7	7.9
175	0.14	16	200	28	297	328	141	-0.6	-1.1	-1.3	-0.5	95.0	352	3.8	1015.7	9.9
176	0.16	52	259	41	283	329	172	-1.0	-1.6	-1.5	-0.6	96.2	33	4.2	1014.4	9.8
177	0.17	321	320	55	258	335	188	-0.6	-1.2	-1.4	-0.6	93.8	36	3.8	1013.5	9.3
178	0.17	31	224	38	279	330	135	-1.3	-1.7	-2.1	-0.4	94.2	73	2.1	1010.9	8.8
179	0.17	62	214	36	296	335	139	0.9	0.4	-0.4	-0.4	91.0	99	4.8	1009.3	9.6
180	0.17	38	186	32	312	348	118	3.5	3.3	2.3	-0.2	91.9	91	2.9	1010.4	9.3
181	0.19	100	203	39	315	351	128	4.0	4.0	3.6	0.0	96.9	217	2.9	1012.9	9.9

Table 34. July 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	19	171	213	41	172	303	349	-46	126	3.5	3.2	2.4	-0.3	92.9	90	1.2	1010.2	8.3
SDEV	1	143	57	11	46	14	13	18	32	3.0	3.2	2.4	0.3	5.4		1.8	6.5	2.2
MAX.	21	588	304	62	253	339	385	-13	191	11.9	12.7	8.9	0.8	99.0			1022.9	10.0
MIN.	16	0	105	21	84	276	334	-88	67	0.3	-0.2	-0.5	-0.6	79.2			998.1	0.4
# Days	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	458.52	569.64	108.88	460.77	810.94	934.25	-123.29	337.48

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
182	0.18	134	253	45	297	345	160	1.7	1.3	0.9	-0.4	94.3	100	3.2	1014.5	10.0
183	0.18	144	223	42	290	341	130	1.9	1.4	1.1	-0.5	94.6	46	2.8	1003.9	9.9
184	0.17	2	165	28	311	334	114	0.7	0.2	0.3	-0.5	96.8	50	4.6	1009.0	10.0
185	0.19	238	273	52	292	349	164	1.0	0.7	0.6	-0.4	97.2	106	0.7	1008.8	8.4
186	0.17	97	184	31	311	341	123	1.9	1.5	1.3	-0.4	95.5	100	5.5	1004.4	8.9
187	0.18	223	275	50	294	352	167	3.0	2.7	2.5	-0.4	96.4	97	3.0	1003.5	9.6
188	0.18	149	173	31	309	356	95	6.7	6.9	5.0	0.2	88.6	138	2.8	1005.4	7.9
189	0.18	84	214	39	316	352	139	3.8	3.5	2.9	-0.3	94.0	251	2.3	1006.1	9.9
190	0.19	275	198	38	284	335	109	0.7	0.4	0.4	-0.4	97.4	54	4.3	1009.7	7.1
191	0.19	122	219	42	304	345	136	1.6	1.2	1.1	-0.4	96.3	31	1.7	1013.4	9.7
192	0.16	404	302	49	290	352	191	2.7	2.2	1.3	-0.5	90.2	77	3.6	1021.3	5.3
193	0.19	302	271	53	296	350	164	2.4	1.9	1.4	-0.5	93.3	84	5.0	1022.9	7.9
194	0.20	276	251	49	299	348	153	1.6	1.1	0.9	-0.5	95.0	61	0.7	1018.5	7.6
195	0.19	189	211	41	292	349	113	4.3	4.0	3.0	-0.3	91.4	242	1.9	1018.3	7.5
196	0.20	90	205	40	319	372	112	8.5	8.9	5.3	0.4	79.8	215	1.8	1014.1	9.5
197	0.20	213	252	50	295	349	148	2.7	2.2	1.9	-0.5	94.4	95	2.0	1013.5	7.9
198	0.20	214	244	48	294	343	147	1.5	1.0	0.9	-0.5	95.4	93	6.0	1008.6	6.8
199	0.20	229	271	54	281	340	158	0.3	-0.2	-0.3	-0.6	95.2	81	4.6	1003.3	8.3
200	0.18	201	264	48	276	343	149	0.5	0.1	-0.4	-0.4	93.6	322	1.2	998.7	8.1
201	0.19	93	174	33	305	348	98	4.0	3.9	0.7	-0.1	79.2	258	2.4	998.1	9.1
202	0.21	34	170	36	300	334	100	0.4	0.0	-0.5	-0.4	93.4	311	0.4	1008.6	10.0
203	0.19	8	106	21	332	346	71	5.1	4.9	4.9	-0.2	98.6	197	2.4	1003.8	10.0
204	0.20	34	148	30	312	339	91	2.7	2.4	2.4	-0.3	97.5	53	0.2	1004.9	10.0
205	0.20	58	152	31	316	342	95	3.5	3.2	2.6	-0.3	93.4	257	6.6	1002.9	10.0
206	0.20	14	149	30	300	335	84	1.8	1.5	1.1	-0.3	95.3	186	0.7	1013.1	10.0
207	0.20	383	259	54	309	381	133	11.9	12.7	8.9	0.8	81.5	224	1.7	1016.5	4.0
208	0.20	588	304	62	297	385	154	11.4	11.7	8.3	0.3	80.9	270	1.8	1017.5	0.4
209	0.19	422	278	54	288	366	146	6.8	6.5	5.8	-0.3	93.7	82	3.6	1017.1	5.1
210	0.19	72	165	31	318	352	100	5.4	5.1	4.4	-0.3	93.0	101	6.1	1010.5	10.0
211	0.19	15	135	27	339	352	95	4.6	4.3	4.5	-0.3	99.0	273	3.5	1010.5	9.6
212	0.20	0	105	21	320	337	67	2.2	1.8	1.6	-0.4	96.2	68	5.0	1015.2	10.0

Table 35. August 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	21	87	112	23	89	313	346	-32	57	5.5	5.5	3.7	0.0	88.6	148	0.7	1009.3	8.5
SDEV	8	108	48	10	40	26	23	17	30	4.7	4.7	5.3	0.3	8.8		2.0	7.5	1.9
MAX.	45	389	233	48	185	350	381	-5	127	12.7	13.0	10.7	0.9	98.8			1028.7	10.0
MIN.	14	0	61	10	33	269	306	-61	11	-2.2	-2.3	-7.1	-0.3	65.1			997.4	3.8
# Days	31	31	31	31	31	31	31	31	31	30	30	30	30	30	29	29	30	31
% Days	100	100	100	100	100	100	100	100	100	97	97	97	97	97	94	94	97	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	231.74	299.98	60.99	238.99	839.20	925.60	-86.41	152.59

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
213	0.19	7	90	18	339	344	67	4.8	4.5	4.6	-0.2	98.4	93	6.1	1007.4	9.9
214	0.20	122	161	34	320	367	80	10.1	10.5	7.9	0.3	85.8	193	3.4	1004.2	8.1
215	0.17	1	83	15	331	348	51	5.3	5.1	4.7	-0.3	95.3	249	6.2	1010.4	10.0
216	0.20	279	194	39	298	356	97	6.8	6.6	5.9	-0.2	93.4	106	4.2	1018.5	5.0
217	0.20	389	233	48	308	366	127	8.3	8.0	7.1	-0.3	92.2	107	4.3	1015.9	5.7
218	0.20	297	209	42	314	375	106	10.4	11.2	9.6	0.9	94.7	90	1.9	1016.1	3.8
219	0.19	155	131	25	343	369	80	9.6	10.0	9.0	0.4	95.7	139	0.6	1012.7	6.9
220	0.17	90	131	23	319	355	72	8.1	8.2	6.8	0.2	92.0	241	3.6	1014.3	9.0
221	0.18	270	198	36	328	381	109	12.6	12.7	10.0	0.1	83.9	119	1.9	1013.2	6.8
222	0.19	187	166	32	345	380	99	12.3	12.1	10.7	-0.2	90.1	126	2.8	1005.6	7.5
223	0.17	208	161	27	323	377	80	12.7	13.0	9.3	0.3	79.6	179	4.3	1005.8	6.2
224	0.16	14	90	14	345	369	52	10.7	10.6	8.7	-0.1	87.5	234	5.0	1008.3	9.8
225	0.14	11	82	11	346	367	50	10.0	9.9	9.1	-0.1	94.1	215	2.9	1011.6	9.9
226	0.15	9	87	13	350	367	57	10.3	10.3	8.8	0.0	90.2	224	8.2	1004.5	10.0
227	0.16	52	112	18	311	342	63	4.7	4.5	3.9	-0.2	94.5	258	4.9	1012.1	9.9
228	0.15	1	79	12	348	364	51	9.8	9.7	9.0	-0.1	94.8	177	1.1	1003.9	10.0
229	0.16	0	63	10	335	348	40	5.6	5.4	5.4	-0.2	98.8	32	3.9	997.4	10.0
230	0.15	15	82	13	319	334	54	3.1	2.8	2.0	-0.2	92.4	21	2.7	1002.3	9.9
231	0.17	11	90	15	322	347	50	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	9.6
232	0.19	1	65	12	330	340	43	4.4	4.2	4.0	-0.2	97.0	84	5.5	1003.8	10.0
233	0.19	1	72	14	316	331	43	2.0	1.8	1.1	-0.3	93.6	344	6.9	997.6	10.0
234	0.20	127	120	24	272	320	48	0.3	0.2	-1.8	-0.1	85.5	272	2.8	1002.4	8.6
235	0.20	119	89	19	271	329	12	2.4	2.7	0.9	0.3	89.9	187	2.9	1001.6	6.8
236	0.19	44	99	20	299	327	51	1.5	1.4	-1.8	-0.1	78.4	-99	-9.9	1005.7	9.7
237	0.18	58	90	16	280	324	30	1.4	1.5	-4.4	0.1	65.1	61	3.6	1007.4	8.3
238	0.45	2	61	28	298	315	16	-0.6	-0.7	-2.0	-0.1	89.9	347	6.2	1002.0	10.0
239	0.44	4	68	30	280	306	12	-2.0	-2.0	-7.1	0.0	68.1	323	4.4	1011.4	9.3
240	0.39	11	66	26	278	307	11	-2.2	-2.3	-6.4	0.0	72.6	23	2.2	1024.0	9.9
241	0.33	6	76	25	284	312	23	-0.6	-0.5	-4.0	0.1	77.6	131	7.0	1028.7	9.1
242	0.23	19	105	24	292	319	54	0.6	0.4	-0.3	-0.2	93.9	126	8.5	1021.1	9.9
243	0.19	172	119	23	269	327	38	2.5	2.8	1.4	0.3	92.7	142	2.1	1009.5	4.4

Table 36. September 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	28	47	52	15	37	276	307	-30	7	-3.0	-3.2	-4.8	-0.2	87.9	357	1.0	1012.1	8.9
SDEV	21	82	20	9	20	29	14	21	16	2.6	2.6	3.2	0.1	7.0		2.5	6.1	2.0
MAX.	87	328	113	38	88	330	341	-8	43	3.8	3.6	3.8	0.1	100.0			1024.6	10.0
MIN.	12	0	24	5	3	194	293	-99	-21	-5.8	-6.1	-10.7	-0.3	67.8			999.8	2.3
# Days	29	30	30	30	30	30	30	30	30	28	28	28	28	28	28	28	28	30
% Days	97	100	100	100	100	100	100	100	100	93	93	93	93	93	93	93	93	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	122.34	135.12	38.36	96.76	716.51	795.48	-78.98	17.81

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
244	0.19	11	65	11	330	341	43	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	10.0
245	0.16	0	51	9	318	329	31	999.9	999.9	999.9	999.9	-99.9	-99	-9.9	-999.9	10.0
246	0.18	0	41	8	327	335	25	3.8	3.6	3.8	-0.2	100.0	121	3.3	1002.7	10.0
247	0.12	0	61	8	305	323	35	0.5	0.3	-1.0	-0.2	89.8	279	6.7	1007.2	10.0
248	0.14	8	48	7	295	317	19	-0.2	-0.3	-1.8	-0.1	88.6	259	5.7	1016.0	9.9
249	0.19	0	47	9	312	330	20	2.5	2.3	2.2	-0.1	98.3	258	7.5	1012.6	9.8
250	0.16	0	50	8	295	315	22	-1.7	-1.9	-3.2	-0.2	89.3	15	2.4	1013.5	9.9
251	0.14	1	46	7	282	308	13	-3.7	-4.0	-5.8	-0.3	85.1	353	4.0	1018.2	10.0
252	0.15	0	48	8	284	307	17	-3.8	-4.1	-6.9	-0.3	78.9	141	0.2	1023.7	10.0
253	0.22	207	113	25	243	313	18	-0.8	-1.0	-3.4	-0.2	82.3	120	8.1	1019.0	3.9
254	0.19	56	72	14	276	318	16	0.2	0.3	-0.4	0.1	95.7	105	3.8	1011.4	6.3
255	0.17	0	42	7	301	316	20	-0.8	-0.9	-1.8	-0.2	92.9	299	0.1	1009.6	10.0
256	0.20	0	32	7	300	314	11	-1.0	-1.2	-2.5	-0.2	89.8	74	7.2	1009.9	10.0
257	0.23	166	80	19	238	302	-3	-3.7	-3.9	-7.1	-0.2	77.1	61	9.2	1012.0	8.6
258	0.21	94	56	12	258	299	3	-4.8	-5.1	-7.1	-0.2	84.1	44	8.2	1008.1	9.8
259	0.24	328	103	25	194	293	-21	-5.8	-5.9	-10.7	-0.1	67.8	51	6.3	1012.3	2.3
260	0.20	118	58	12	239	296	-11	-5.1	-5.1	-8.4	0.0	77.6	49	3.4	1016.8	6.1
261	0.18	0	28	5	279	297	5	-5.3	-5.6	-7.3	-0.3	85.9	64	5.2	1018.4	10.0
262	0.18	0	36	7	278	295	12	-5.8	-6.1	-7.0	-0.3	91.3	62	6.0	1021.6	10.0
263	0.25	214	75	19	247	299	4	-4.4	-4.7	-5.9	-0.3	89.5	63	5.6	1024.6	6.6
264	0.22	100	63	14	237	295	-9	-4.9	-4.8	-5.8	0.0	93.7	35	1.4	1011.7	7.4
265	0.20	13	39	8	275	304	2	-3.0	-3.1	-4.2	-0.2	91.6	236	4.4	999.8	9.6
266	0.31	1	24	8	276	298	-6	-4.3	-4.4	-6.6	-0.1	84.3	304	4.6	1002.9	9.8
267	0.42	9	46	19	272	296	3	-4.5	-4.7	-6.9	-0.2	83.2	269	3.5	1007.4	9.9
268	0.42	28	51	21	264	293	1	-5.6	-5.8	-7.7	-0.2	85.4	297	5.1	1006.5	9.6
269	0.55	9	31	17	266	295	-15	-4.2	-4.2	-5.8	0.0	88.1	258	7.4	1009.5	8.3
270	0.73	0	38	27	277	293	-5	-5.6	-5.8	-6.8	-0.1	91.7	289	6.5	1008.6	10.0
271	0.84	25	46	38	271	294	-15	-4.7	-4.7	-5.6	0.0	93.3	29	2.7	1009.6	10.0
272	-9.99	0	34	31	276	293	-14	-4.6	-4.7	-5.3	0.0	95.3	216	4.3	1013.5	10.0
273	0.87	28	40	34	278	299	-15	-3.9	-3.9	-5.2	0.0	90.3	282	9.8	1010.9	10.0

Table 37. October 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS									METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	88	24	21	19	4	235	258	-23	-17	-13.0	-12.4	-14.4	0.6	89.3	62	2.2	1010.3	8.3
SDEV	2	44	12	10	3	28	19	13	10	4.3	3.9	4.6	0.9	3.8		2.5	5.8	2.7
MAX.	92	204	46	40	13	281	291	-8	-5	-5.7	-5.8	-6.5	3.6	94.7			1021.2	10.0
MIN.	83	0	4	4	0	166	208	-49	-40	-25.3	-23.4	-27.4	-0.2	75.5			999.8	0.1
# Days	23	31	31	26	26	31	31	31	26	31	31	31	31	31	31	31	31	31
% Days	74	100	100	84	84	100	100	100	84	100	100	100	100	100	100	100	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	63.00	56.33	49.87	9.70	629.50	691.96	-62.46	-46.55

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
274	0.83	1	43	36	225	266	-34	-10.1	-9.6	-11.4	0.5	90.8	17	2.2	1021.2	9.1
275	0.85	0	31	27	266	280	-10	-8.2	-8.3	-9.7	-0.1	88.8	75	7.7	1016.7	10.0
276	0.86	0	32	27	267	278	-6	-9.0	-9.1	-9.8	-0.1	94.0	55	7.8	1007.2	10.0
277	0.88	0	26	23	281	291	-7	-5.7	-5.8	-6.5	-0.1	94.1	53	5.0	1003.0	10.0
278	0.88	0	26	23	268	280	-9	-8.7	-8.8	-9.8	-0.1	92.1	25	6.4	1007.0	10.0
279	0.90	0	30	27	252	260	-5	-13.3	-13.5	-14.8	-0.2	88.8	344	6.4	1005.2	10.0
280	0.89	55	39	35	255	270	-11	-11.4	-11.3	-12.8	0.1	89.9	81	7.0	1006.6	9.0
281	0.88	204	46	40	179	225	-40	-20.8	-19.1	-24.0	1.7	75.5	125	5.5	1012.5	0.1
282	0.85	57	30	26	252	273	-17	-9.7	-7.9	-11.5	1.9	86.6	13	1.0	1009.5	7.8
283	0.86	2	29	24	265	279	-9	-8.9	-8.9	-9.7	0.1	94.1	140	0.7	1005.4	9.8
284	-9.99	11	32	-99	201	243	-999	-16.3	-14.7	-17.8	1.6	88.2	108	1.0	1006.9	5.4
285	0.88	0	21	18	257	279	-19	-7.7	-7.3	-8.4	0.3	94.7	77	4.9	1004.4	9.5
286	-9.99	96	31	18	212	245	-20	-16.0	-12.4	-17.3	3.6	90.1	188	2.4	1006.1	4.9
287	0.92	96	28	16	184	232	-36	-18.8	-17.2	-20.6	1.5	85.5	168	4.9	1011.5	1.6
288	0.87	12	19	16	241	270	-26	-9.6	-9.0	-10.9	0.6	90.0	193	5.0	1013.8	8.5
289	0.89	11	19	17	260	278	-16	-8.1	-7.6	-9.2	0.5	92.1	236	1.6	1013.0	10.0
290	-9.99	79	22	-99	200	249	-999	-14.1	-11.9	-15.1	2.2	92.1	349	0.8	1014.3	5.9
291	-9.99	22	17	13	203	242	-35	-14.7	-12.9	-15.8	1.7	90.8	55	0.9	1015.8	6.5
292	0.89	38	20	18	218	247	-27	-14.9	-13.3	-16.1	1.6	90.4	43	2.8	1011.2	7.5
293	0.90	0	12	11	251	266	-14	-11.3	-11.1	-12.9	0.1	87.5	59	3.7	1014.6	10.0
294	0.90	0	11	10	243	257	-13	-13.9	-14.0	-15.5	-0.1	88.0	69	4.4	1019.8	10.0
295	0.88	0	11	10	231	248	-16	-15.8	-15.8	-17.4	0.0	87.4	73	4.3	1017.4	10.0
296	0.84	0	17	14	227	245	-15	-16.7	-16.4	-18.1	0.3	88.4	113	0.5	1012.5	10.0
297	0.87	0	12	10	244	257	-11	-13.6	-13.6	-14.8	-0.1	90.2	46	2.1	1007.0	10.0
298	0.89	0	9	9	245	265	-20	-11.6	-11.5	-12.6	0.1	91.8	23	1.7	999.8	10.0
299	0.92	0	8	8	246	264	-18	-11.7	-11.4	-12.8	0.3	91.2	37	1.7	1000.3	10.0
300	-9.99	0	6	-99	246	262	-999	-12.6	-12.5	-13.9	0.1	89.5	25	5.3	1002.9	10.0
301	-9.99	0	7	4	249	261	-9	-12.9	-12.9	-14.2	-0.1	89.8	1	4.8	1007.0	10.0
302	-9.99	39	8	-99	222	250	-999	-14.7	-14.5	-16.2	0.3	88.5	312	5.3	1014.7	8.6
303	-9.99	6	6	-99	166	208	-999	-25.3	-23.4	-27.4	1.9	82.3	351	0.9	1021.0	2.5
304	0.85	0	4	4	230	239	-9	-17.7	-17.9	-19.5	-0.1	86.3	123	9.3	1009.9	9.1

Table 38. November 1994 BARROW, AK SUMMARY

MONTH	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
	ALB	SW IRRAD. ($W\ m^{-2}$)				LW IRRAD. ($W\ m^{-2}$)			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	$W\ m^{-2}$	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS ($m\ s^{-1}$)	(mb)	tenths
MEAN	87	4	1	1	0	180	222	-42	-42	-22.5	-21.8	-24.6	0.7	82.8	61	1.9	1006.4	6.3
SDEV	3	11	1	1	0	34	22	17	17	5.8	5.5	6.2	0.7	4.4		3.3	11.7	3.0
MAX.	92	49	5	5	1	258	279	-13	-12	-7.9	-7.9	-8.9	2.7	92.9			1031.1	10.0
MIN.	82	0	0	0	0	134	192	-71	-71	-30.6	-29.0	-33.4	-0.1	76.6			983.0	0.3
# Days	7	30	30	30	30	30	30	30	30	30	29	30	29	30	30	30	30	30
% Days	23	100	100	100	100	100	100	100	100	100	97	100	97	100	100	100	100	100

TOTAL ENERGY ($MJ\ m^{-2}\ mo^{-1}$)	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	9.85	2.41	2.15	0.26	465.86	574.57	-108.68	-108.42

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
305	0.92	0	5	5	257	276	-19	-8.8	-8.7	-9.8	0.1	92.6	120	9.4	995.3	9.3
306	0.82	0	3	3	257	279	-22	-7.9	-7.9	-8.9	0.1	92.9	112	10.4	990.5	9.3
307	0.88	0	3	2	258	271	-12	-10.6	-10.5	-11.7	0.1	91.3	77	16.1	983.0	10.0
308	0.89	49	3	2	174	242	-67	-17.2	-17.0	-19.1	0.3	85.0	57	13.6	1002.2	4.8
309	0.87	38	3	3	154	223	-69	-21.1	-20.3	-23.0	0.9	85.1	86	5.7	1018.7	1.1
310	0.86	5	3	3	150	221	-71	-21.0	-19.3	-22.7	1.7	86.6	46	3.4	1003.6	1.5
311	0.88	15	2	2	170	214	-44	-24.9	-24.0	-27.1	0.9	82.2	125	2.6	994.2	7.1
312	-9.99	7	2	1	162	205	-42	-27.5	-26.2	-29.9	1.3	79.4	172	3.4	1003.9	8.1
313	-9.99	0	1	1	170	215	-45	-23.2	-22.2	-25.3	1.0	83.0	83	6.3	995.5	5.1
314	-9.99	0	1	1	189	229	-40	-20.4	-20.2	-22.4	0.2	84.7	53	7.1	990.6	7.6
315	-9.99	0	1	1	214	233	-19	-20.0	-20.0	-21.9	0.0	85.1	48	5.3	996.8	10.0
316	-9.99	0	1	1	208	236	-28	-18.9	-18.9	-20.7	0.1	86.0	27	5.0	1002.4	10.0
317	-9.99	0	0	0	188	221	-33	-21.9	-21.5	-23.9	0.4	84.0	277	1.6	1011.5	9.1
318	-9.99	0	0	0	212	227	-15	-22.0	-22.1	-24.2	-0.1	82.5	200	4.5	1011.5	9.8
319	-9.99	0	0	0	190	223	-33	-22.0	-21.9	-24.2	0.1	82.4	66	7.3	996.6	7.6
320	-9.99	0	0	0	198	225	-27	-20.9	-20.4	-23.1	0.5	82.4	75	4.1	1006.1	8.3
321	-9.99	0	0	0	188	217	-29	-23.4	-22.9	-25.5	0.6	83.1	52	3.7	1001.1	8.5
322	-9.99	0	0	0	170	221	-51	-22.6	-22.4	-24.8	0.2	82.3	297	7.1	999.7	8.8
323	-9.99	0	0	0	163	212	-49	-25.0	-24.8	-27.4	0.2	80.2	283	8.3	1009.1	8.1
324	-9.99	0	0	0	141	200	-59	-28.1	-27.6	-30.8	0.5	78.0	297	4.4	1014.0	4.6
325	-9.99	0	0	0	145	198	-53	-29.5	-29.0	-32.2	0.5	76.7	321	3.9	1019.8	3.4
326	-9.99	0	0	0	164	204	-40	-26.9	-26.1	-29.5	0.8	78.8	273	4.7	1024.2	6.3
327	-9.99	0	0	0	167	211	-44	-24.7	-24.2	-27.1	0.4	80.2	293	5.7	1024.3	5.8
328	-9.99	0	0	0	149	195	-46	-29.5	-26.9	-32.1	2.7	78.3	234	2.5	1031.1	5.1
329	-9.99	0	0	0	143	195	-52	-29.8	-27.9	-32.5	2.0	77.0	109	3.7	1021.7	2.3
330	-9.99	0	0	0	147	214	-67	-24.2	-22.6	-26.3	1.6	82.9	65	5.3	1002.5	0.8
331	-9.99	0	0	0	202	230	-28	-20.4	-19.8	-22.2	0.6	85.2	59	1.9	1001.2	9.1
332	-9.99	0	0	0	167	221	-54	-22.8	999.9	-25.1	999.9	81.9	291	7.7	1011.2	4.5
333	-9.99	0	0	0	134	192	-58	-30.6	-28.3	-33.4	2.3	76.6	260	3.5	1021.3	0.3
334	-9.99	0	0	0	161	200	-39	-28.9	-28.2	-31.7	0.7	76.8	178	2.3	1009.6	4.1

Table 39. December 1994 BARROW, AK SUMMARY

MONTH	ALB	SURFACE RADIATION MEASUREMENTS								METEOROLOGICAL MEASUREMENTS								
		SW IRRAD. (W m^{-2})				LW IRRAD. (W m^{-2})			NET ALLWAVE	TEMPERATURE (C)				RH	VECTOR WIND		PRES	SC
STATS	%	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	W m^{-2}	T2m	T16m	Tdew	T16-T2	%	WD (deg)	WS (m s^{-1})	(mb)	tenths
MEAN	-99	0	0	0	0	174	206	-32	-32	-27.0	-25.9	-29.5	1.0	78.5	53	0.6	1006.7	5.9
SDEV	-99	0	0	0	0	39	26	17	17	7.2	6.3	7.6	1.3	5.2		2.3	9.2	3.2
MAX.	-99	0	0	0	0	251	266	-6	-6	-11.5	-11.4	-12.2	4.4	94.2			1022.8	10.0
MIN.	-99	0	0	0	0	124	168	-62	-62	-37.7	-33.3	-40.6	-1.7	72.9			988.2	0.2
# Days	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
% Days	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TOTAL ENERGY (MJ m^{-2} mo^{-1})	DIR	SWD	SWU	NETSW	LWD	LWU	NETLW	AL-WAVE
	0.00	0.00	0.00	0.00	466.04	551.75	-85.71	-85.71

DOY	ALB	DIR	SWD	SWU	LWD	LWU	NET	T2m	T16m	Tdew	T16-T2	RH	WD	WS	PRES	SC
335	-9.99	0	0	0	199	224	-25	-21.7	-20.6	-23.7	1.1	83.8	205	3.3	1009.5	6.8
336	-9.99	0	0	0	251	266	-15	-11.5	-11.4	-12.2	0.1	94.2	227	6.6	995.6	10.0
337	-9.99	0	0	0	150	203	-53	-27.6	-27.1	-30.3	0.6	78.0	257	5.6	995.8	4.1
338	-9.99	0	0	0	124	186	-62	-32.1	-31.1	-35.3	0.9	72.9	262	5.9	998.5	2.8
339	-9.99	0	0	0	129	182	-53	-33.5	-31.4	-36.7	2.1	73.0	248	4.3	1011.0	0.2
340	-9.99	0	0	0	170	195	-25	-30.4	-28.5	-33.2	1.9	76.3	219	3.3	1014.9	6.9
341	-9.99	0	0	0	175	214	-39	-24.4	-24.0	-26.8	0.4	80.4	245	5.7	1015.1	7.6
342	-9.99	0	0	0	144	190	-46	-30.1	-28.6	-32.7	1.5	78.3	263	1.7	1022.8	4.0
343	-9.99	0	0	0	142	193	-51	-30.2	-28.5	-32.8	1.7	77.9	52	1.8	1020.5	3.3
344	-9.99	0	0	0	136	196	-60	-30.3	-29.3	-33.1	1.1	76.6	37	2.3	1021.8	0.3
345	-9.99	0	0	0	133	189	-56	-32.4	-31.1	-35.3	1.3	75.0	39	1.7	1016.3	2.6
346	-9.99	0	0	0	138	192	-54	-31.2	-30.7	-34.3	0.5	73.9	38	2.0	1003.9	6.9
347	-9.99	0	0	0	130	181	-51	-33.7	-32.4	-36.7	1.3	74.3	49	1.1	1004.3	0.9
348	-9.99	0	0	0	140	180	-40	-33.9	-32.8	-37.0	1.1	73.6	53	0.9	1005.5	3.6
349	-9.99	0	0	0	156	186	-30	-31.0	-30.0	-33.8	1.0	76.1	52	2.2	1009.9	4.4
350	-9.99	0	0	0	197	212	-15	-25.9	-25.9	-28.8	0.0	76.7	52	4.7	1012.9	9.1
351	-9.99	0	0	0	154	190	-36	-30.2	-29.0	-33.1	1.2	75.9	40	2.7	1014.1	6.7
352	-9.99	0	0	0	186	206	-20	-27.5	-27.6	-30.6	-0.1	75.2	67	5.9	1008.6	9.8
353	-9.99	0	0	0	209	215	-6	-25.0	-25.3	-27.6	-0.3	78.8	63	10.1	999.7	10.0
354	-9.99	0	0	0	207	221	-14	-23.4	-23.5	-25.6	-0.1	81.3	49	8.0	990.0	9.8
355	-9.99	0	0	0	193	212	-19	-25.3	-24.8	-27.8	0.6	79.8	309	2.3	988.2	8.8
356	-9.99	0	0	0	135	175	-40	-35.7	-31.5	-38.8	4.2	73.5	242	3.5	993.4	1.9
357	-9.99	0	0	0	142	168	-26	-37.7	-33.3	-40.6	4.4	74.1	244	1.2	1002.7	2.4
358	-9.99	0	0	0	153	184	-31	-33.6	-29.7	-36.5	3.9	75.7	269	1.6	1008.1	4.4
359	-9.99	0	0	0	162	179	-17	-35.0	-32.8	-38.0	2.2	73.9	79	4.3	1012.2	4.0
360	-9.99	0	0	0	188	218	-30	-23.9	-23.7	-26.2	0.2	81.2	100	8.9	1000.8	9.1
361	-9.99	0	0	0	223	238	-15	-18.0	-16.9	-19.8	1.1	85.8	242	2.7	1002.8	7.5
362	-9.99	0	0	0	230	241	-11	-17.4	-17.5	-19.2	0.0	85.9	41	4.7	1004.3	9.9
363	-9.99	0	0	0	220	242	-22	-16.8	-16.3	-18.4	0.4	87.1	67	4.9	1003.0	6.6
364	-9.99	0	0	0	238	252	-14	-14.4	-14.4	-16.0	0.0	87.0	67	3.2	1000.1	9.6
365	-9.99	0	0	0	240	256	-16	-11.9	-13.6	-15.0	-1.7	77.6	231	3.1	1020.2	9.3

Time Series of Daily Means

Time series of daily mean radiation data (plots labeled a) and meteorological data (plots labeled b) for 1992, 1993, and 1994 are presented in Figures 3, 4, and 5, respectively. Yearly multiple plots, some of which are composites of related variables, are individually titled and have legends and labels that identify the traces and respective units. On the radiation plots, missing days are indicated for the five measured quantities, LWD, LWU, SWD, SWU, and DIR, by vertical tick marks. When both downward and upward components have missing days, the topmost set of tick marks relate to missing downward fluxes and the bottom set, upward fluxes. All missing data are also flagged in the corresponding tables of daily means given in the previous data section. Examining the distribution of missing data may be helpful in assessing whether or not a monthly mean resulting from incomplete daily data is a reliable estimate. Few days are missing from the meteorological record; these are flagged in the daily tables, but are not indicated on time series plots to minimize clutter.

Daily sky cover (in tenths) is plotted in the bottom panel of each figure to enable visual correlation of this important climate variable with other geophysical parameters. Equally-sized panels were designed to facilitate comparisons or to examine interannual variability of any one variable (accomplished most easily by making a set of transparent overlays).

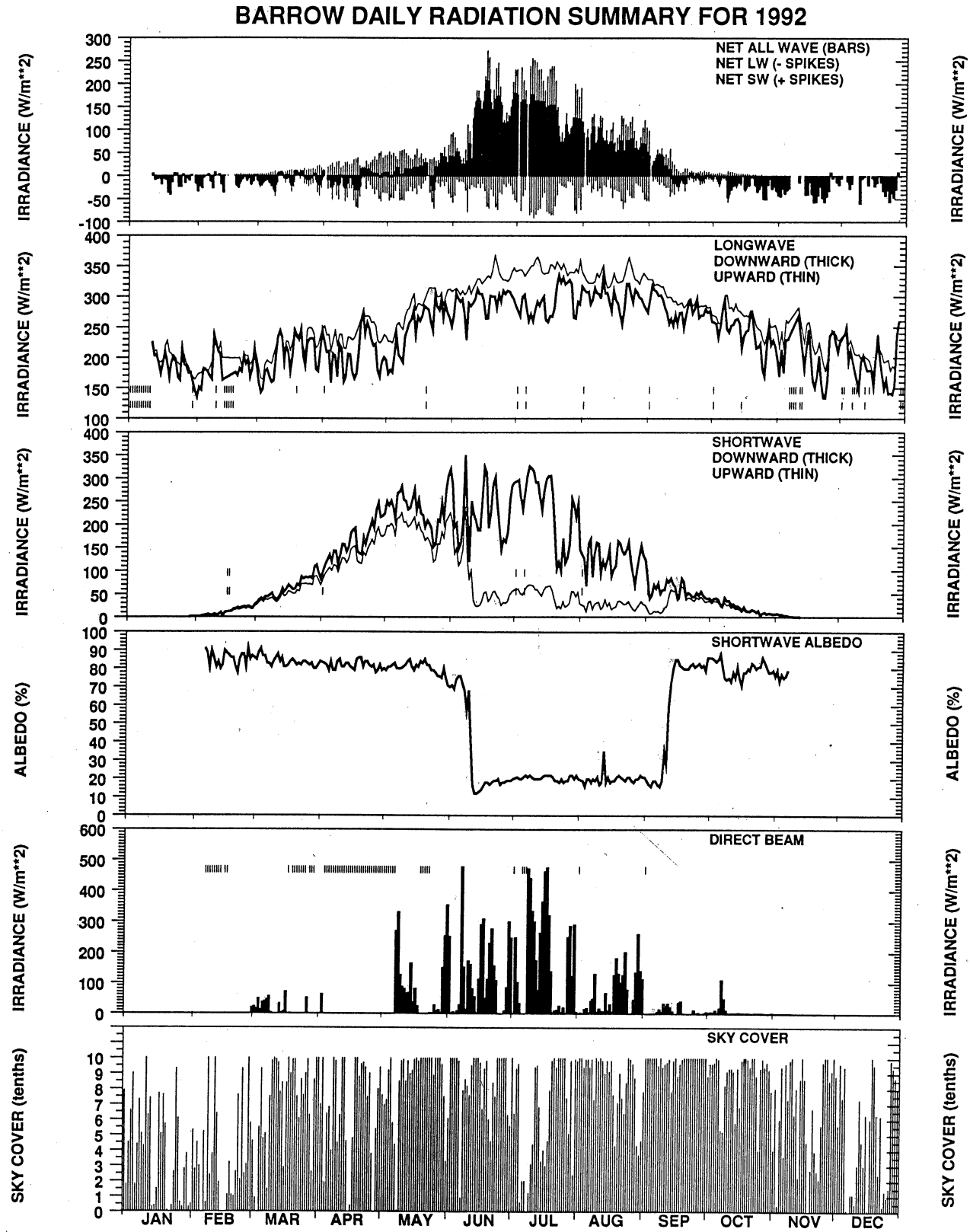
BARROW DAILY RADIATION SUMMARY FOR 1992
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
SKY COVER
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Figure 3a

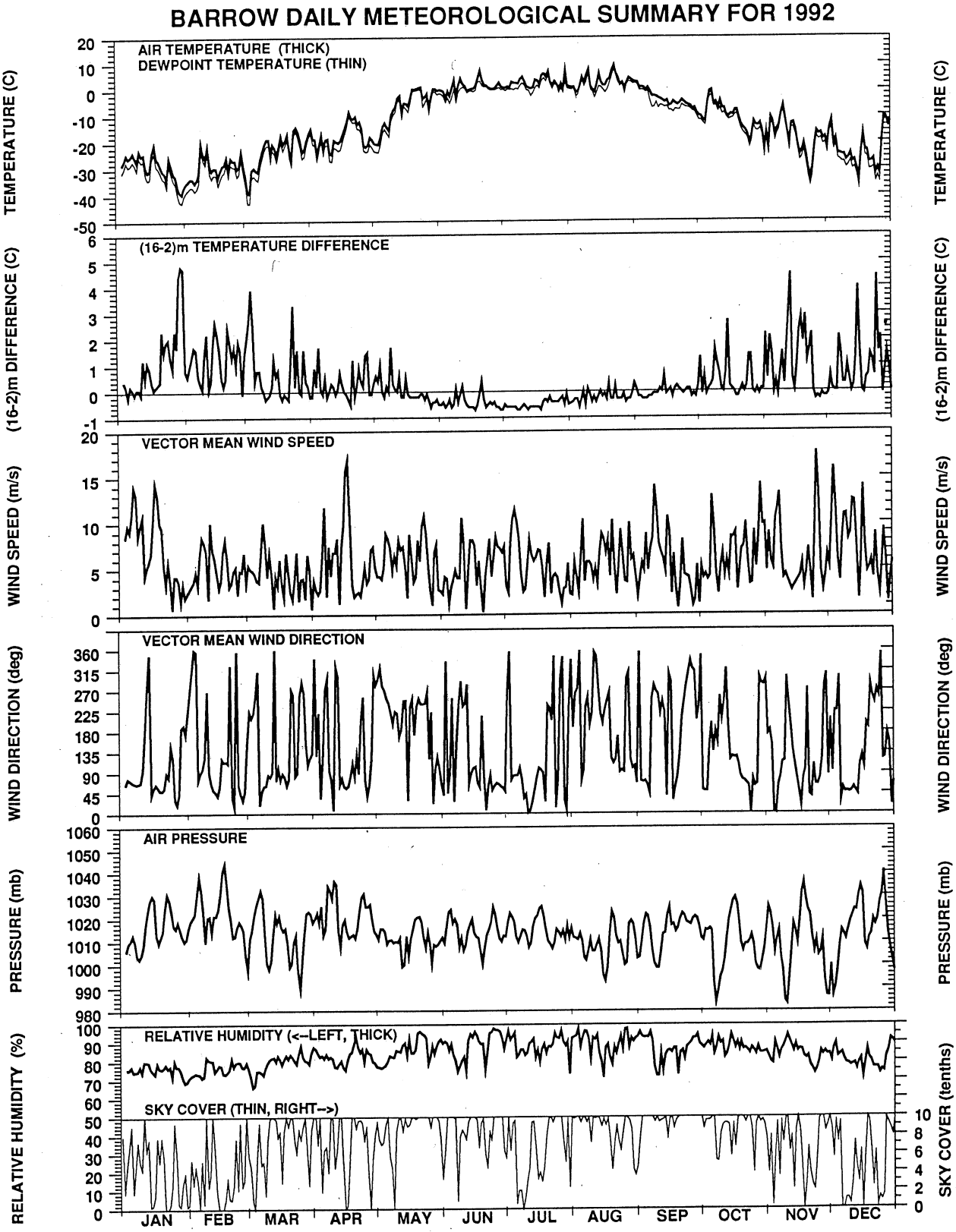
BARROW DAILY METEOROLOGICAL SUMMARY FOR 1992
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
VECTOR MEAN WIND SPEED
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION
WIND DIRECTION (deg)
AIR PRESSURE
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 3b

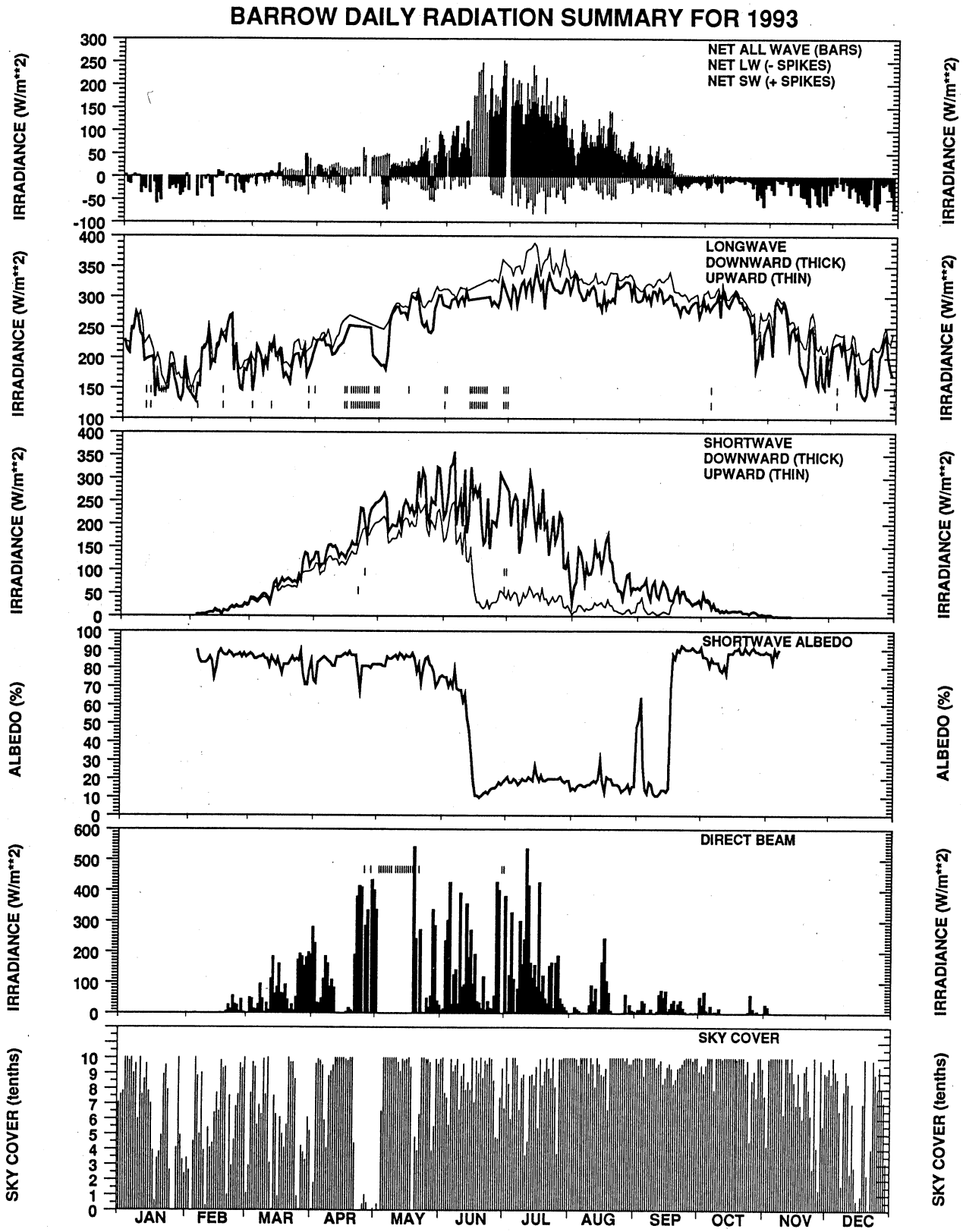
BARROW DAILY RADIATION SUMMARY FOR 1993
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
SKY COVER
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Figure 4a

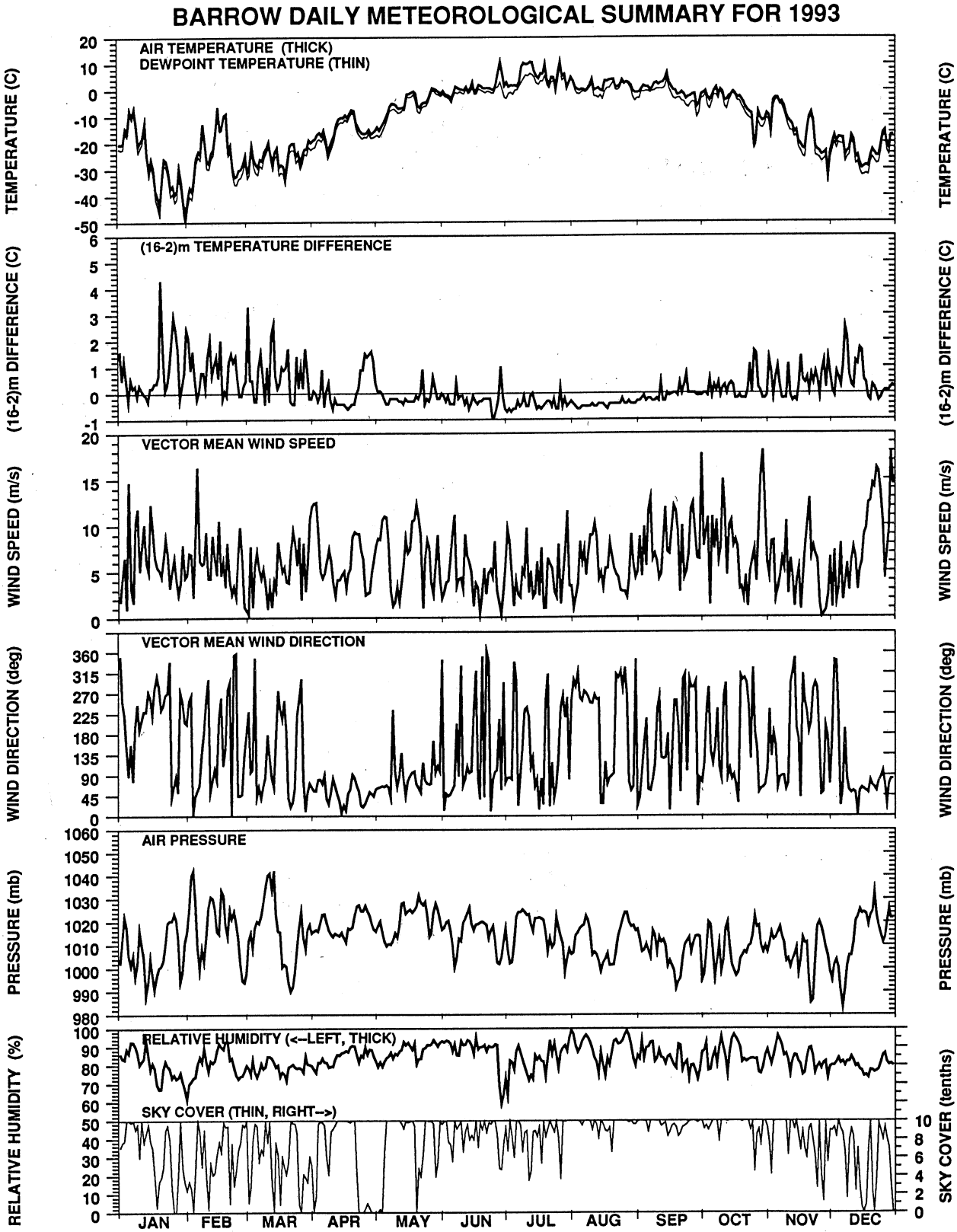
BARROW DAILY METEOROLOGICAL SUMMARY FOR 1993
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
VECTOR MEAN WIND SPEED
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION
WIND DIRECTION (deg)
AIR PRESSURE
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 4b

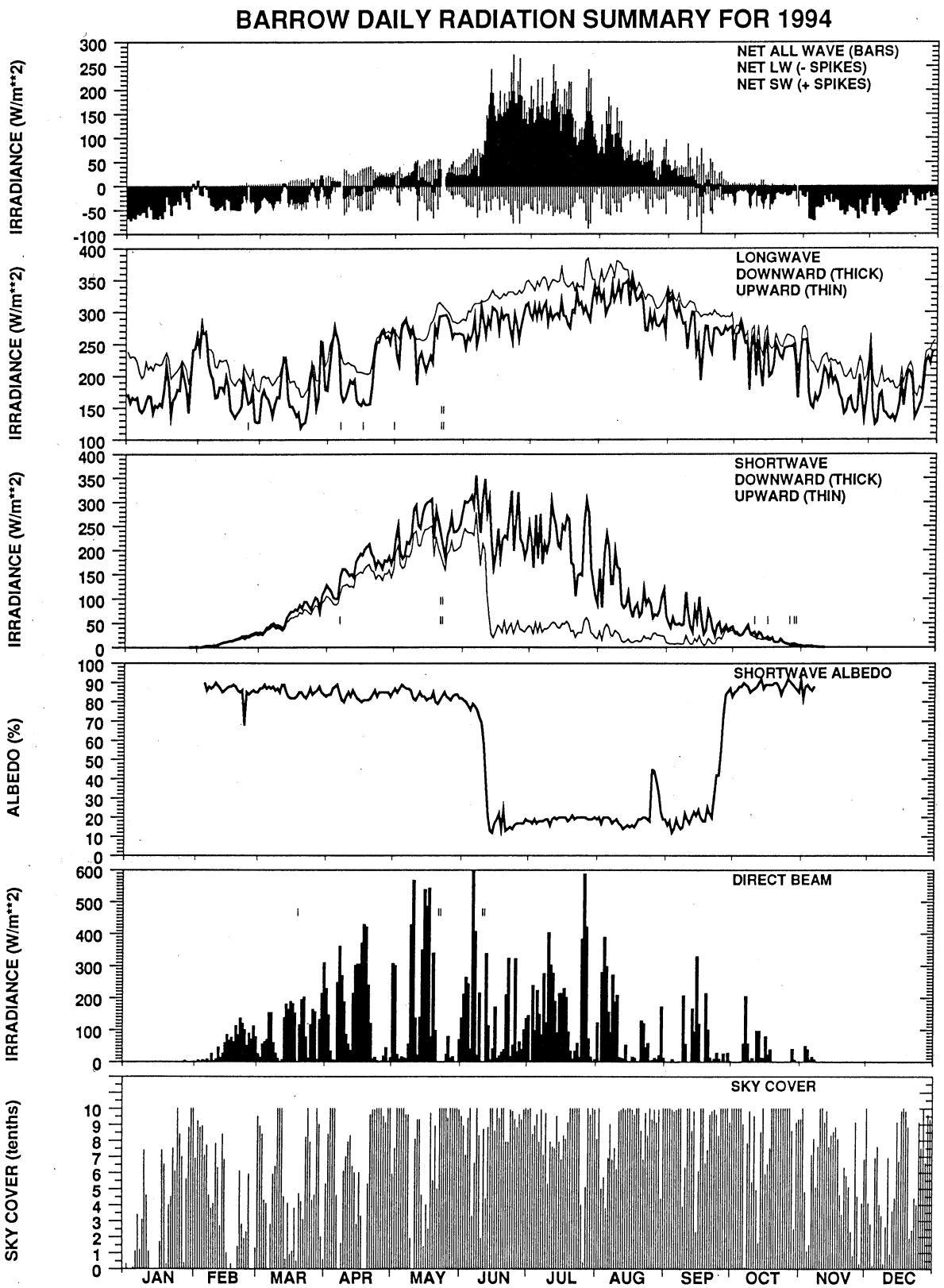
BARROW DAILY RADIATION SUMMARY FOR 1994
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
SKY COVER
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Figure 5a

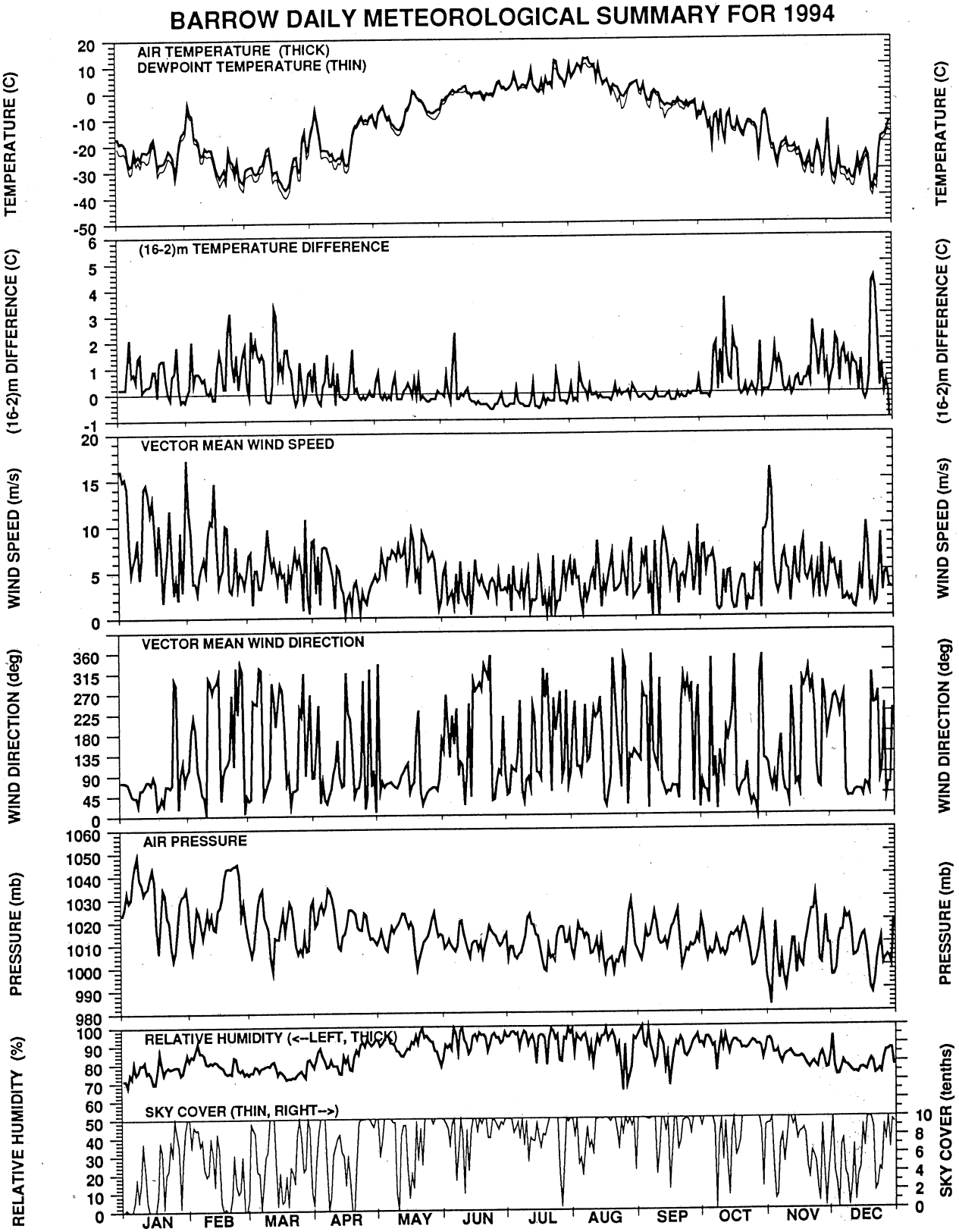
BARROW DAILY METEOROLOGICAL SUMMARY FOR 1994
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
VECTOR MEAN WIND SPEED
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION
WIND DIRECTION (deg)
AIR PRESSURE
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 5b

Time Series of Monthly Means and Annual Cycles of Surface Net Radiative Energy

Monthly mean time series of radiation variables (plots labeled a) and meteorological variables (plots labeled b) for 1992, 1993, and 1994 are presented in Figures 6, 7, and 8, respectively. The plots are derived from corresponding data shown in the daily plots in the previous data section. The top panel of each of the monthly mean radiation time series also gives the percentage of valid daily means used to compute the NET. This was also done on the plot of the monthly direct-beam irradiance because there is a significant amount of missing DIR data. Superimposed on some of the meteorological monthly time series are climatological means computed from the longer term NOAA/CMDL records, or in the case of sky cover, from Kahl (1990). These are included for the purpose of putting the few years of data reported here into historic perspective. For instance, it is seen that January and February of 1992 were a few degrees colder than average, whereas March and April were warmer than average. October and November of 1993 were unusually warm, whereas the following year these months were colder than normal. A cursory look at the 1992-1994 SC record compared with Kahl's (1990) analysis (labeled '1976-1985 MEAN SKY COVER' on the plots) suggests that spring cloudiness has increased significantly in recent years. Perhaps related to this, Figure 9 shows a preliminary analysis of the 1992, 1993, and 1994 annual cycles of net radiative energy received at the surface compared with an estimate made for the period 1962-1966 (Maykut and Church, 1973). A comparison suggests that there has been an increase of net surface radiation in recent years during March, April, and May. Another anomaly appears in the vector mean wind direction for September, manifest as a shift in prevailing wind from east-northeast historically to northwest in the recent record, suggestive of enhanced cyclonic activity during this month in recent years.

Whether any of these observations can be corroborated, and perhaps associated with changes in circulation patterns, sea ice anomalies (e.g., Serreze et al., 1995; Johannessen et al., 1995; Maslanik et al., 1996), or with greenhouse warming in the central Arctic, are subjects of ongoing research (Stone, 1996).

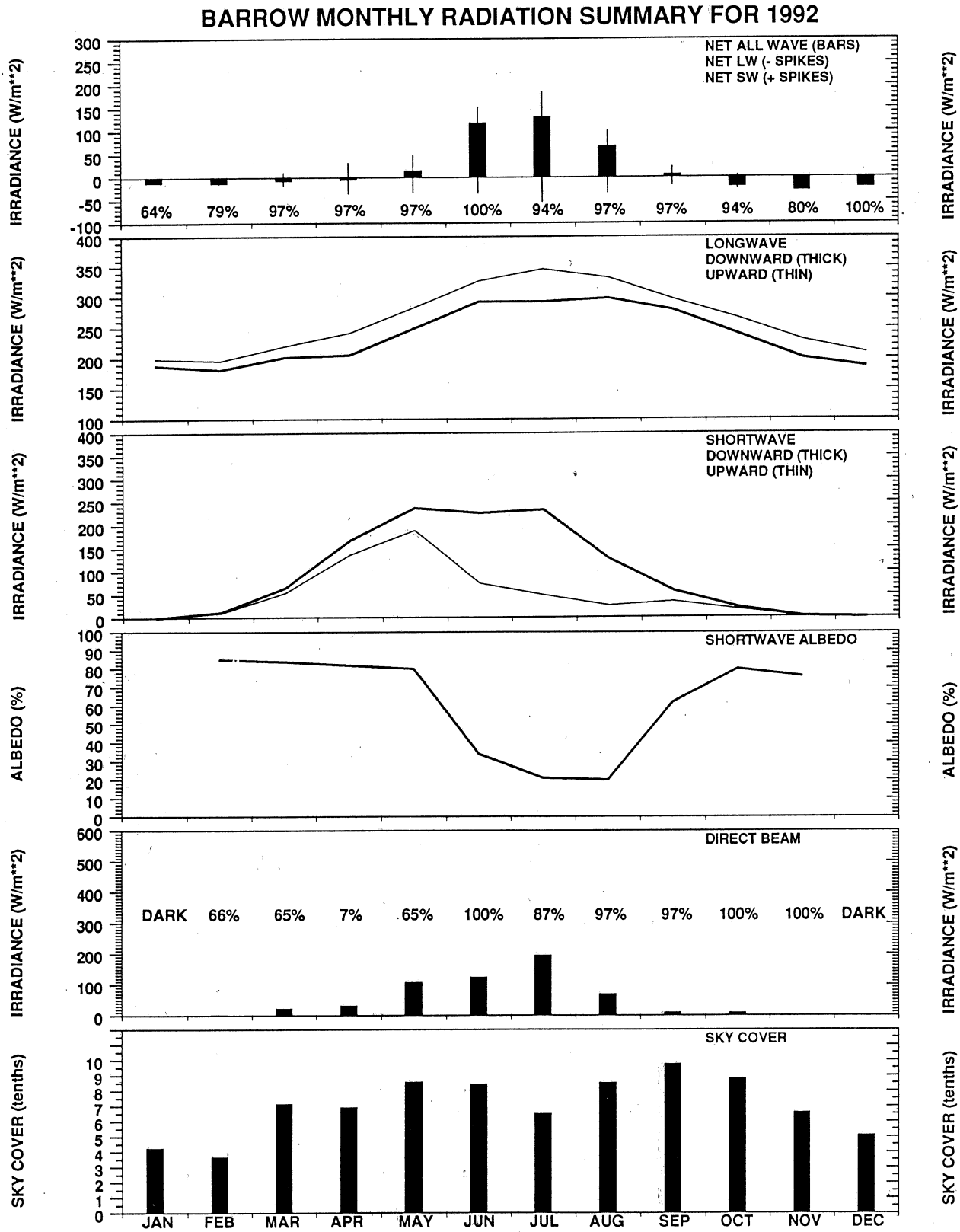
BARROW MONTHLY RADIATION SUMMARY FOR 1992
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
64% 79% 97% 97% 97% 100% 94% 97% 97% 94% 80% 100%
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
DARK 66% 65% 7% 65% 100% 87% 97% 97% 100% 100% DARK
SKY COVER
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)

Figure 6a

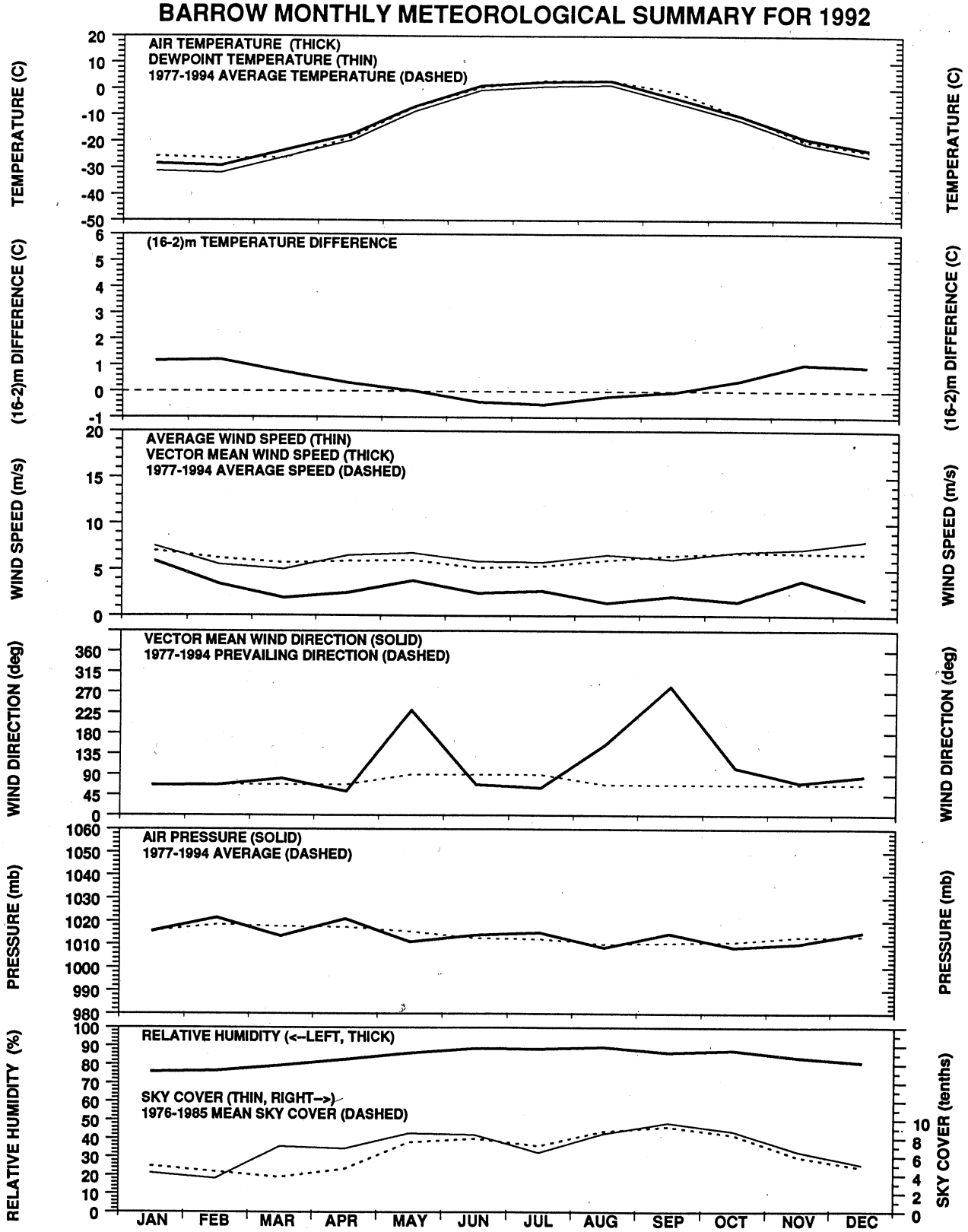
BARROW MONTHLY METEOROLOGICAL SUMMARY FOR 1992
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
1977-1994 AVERAGE TEMPERATURE (DASHED)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
AVERAGE WIND SPEED (THIN)
VECTOR MEAN WIND SPEED (THICK)
1977-1994 AVERAGE SPEED (DASHED)
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION (SOLID)
1977-1994 PREVAILING DIRECTION (DASHED)
WIND DIRECTION (deg)
AIR PRESSURE (SOLID)
1977-1994 AVERAGE (DASHED)
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
1976-1985 MEAN SKY COVER (DASHED)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 6b

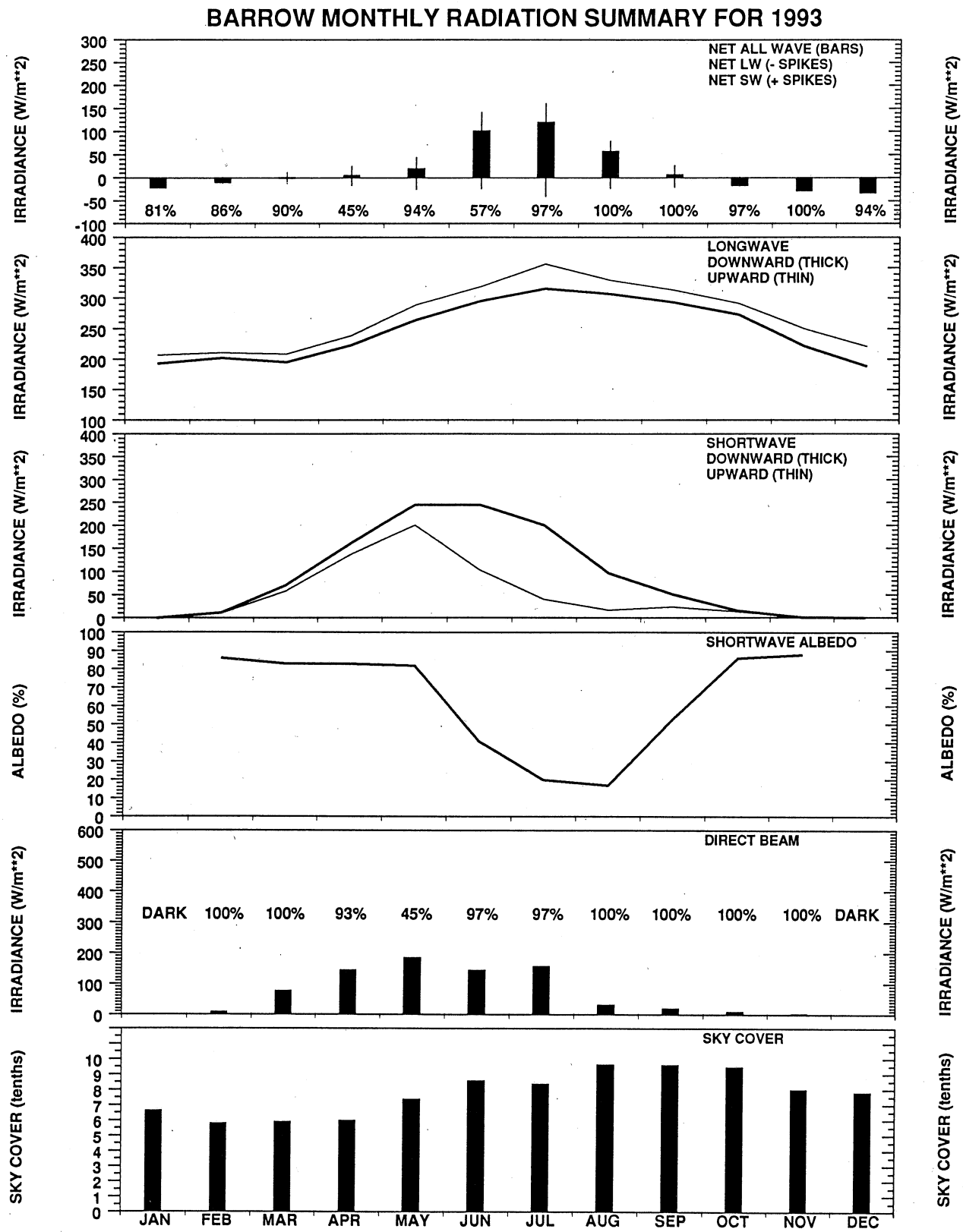
BARROW MONTHLY RADIATION SUMMARY FOR 1993
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
81% 86% 90% 45% 94% 57% 97% 100% 100% 97% 100% 94%
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
DARK 100% 100% 93% 45% 97% 97% 100% 100% 100% 100% DARK
SKY COVER
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)

Figure 7a

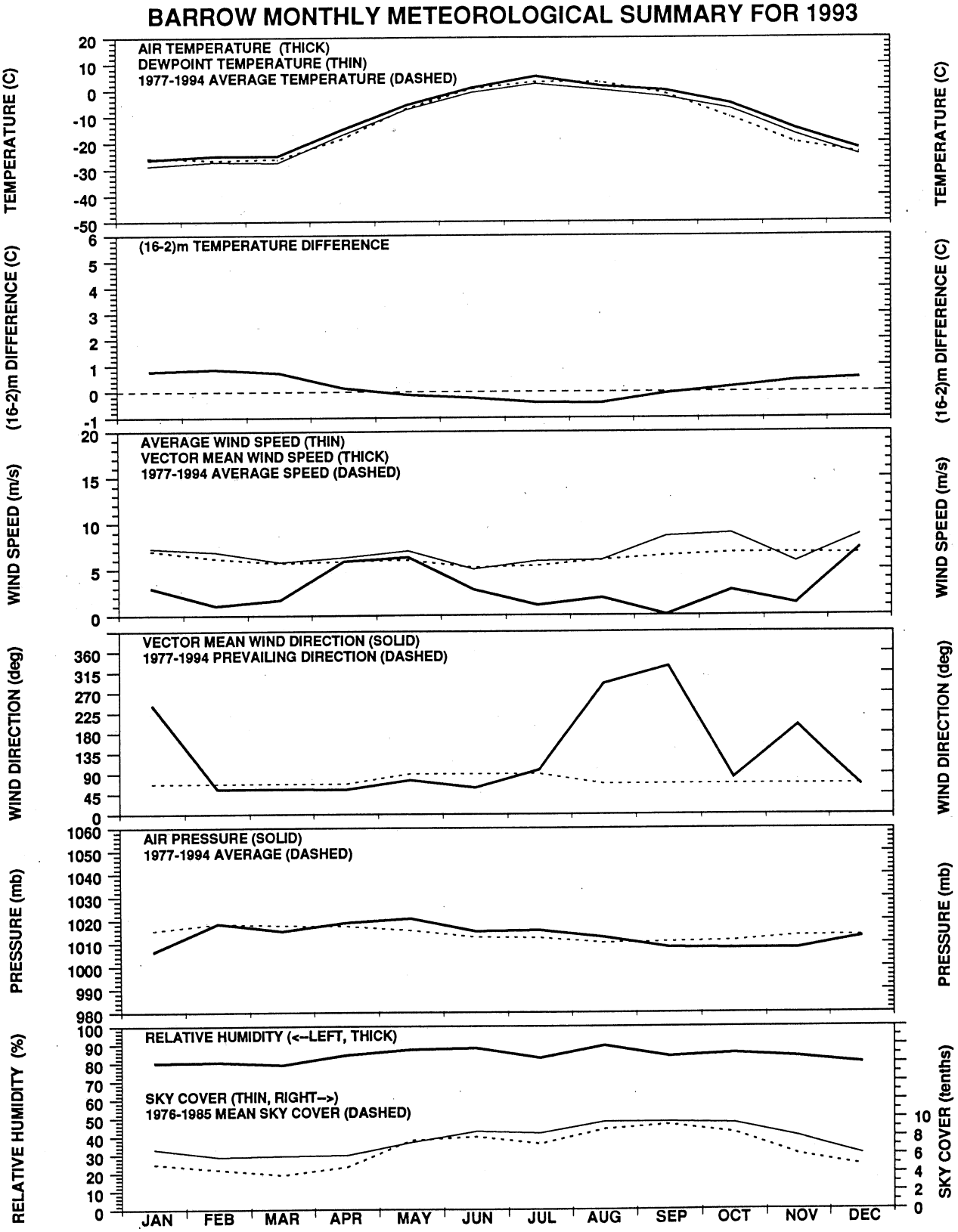
BARROW MONTHLY METEOROLOGICAL SUMMARY FOR 1993
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
1977-1994 AVERAGE TEMPERATURE (DASHED)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
AVERAGE WIND SPEED (THIN)
VECTOR MEAN WIND SPEED (THICK)
1977-1994 AVERAGE SPEED (DASHED)
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION (SOLID)
1977-1994 PREVAILING DIRECTION (DASHED)
WIND DIRECTION (deg)
AIR PRESSURE (SOLID)
1977-1994 AVERAGE (DASHED)
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
1976-1985 MEAN SKY COVER (DASHED)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 7b

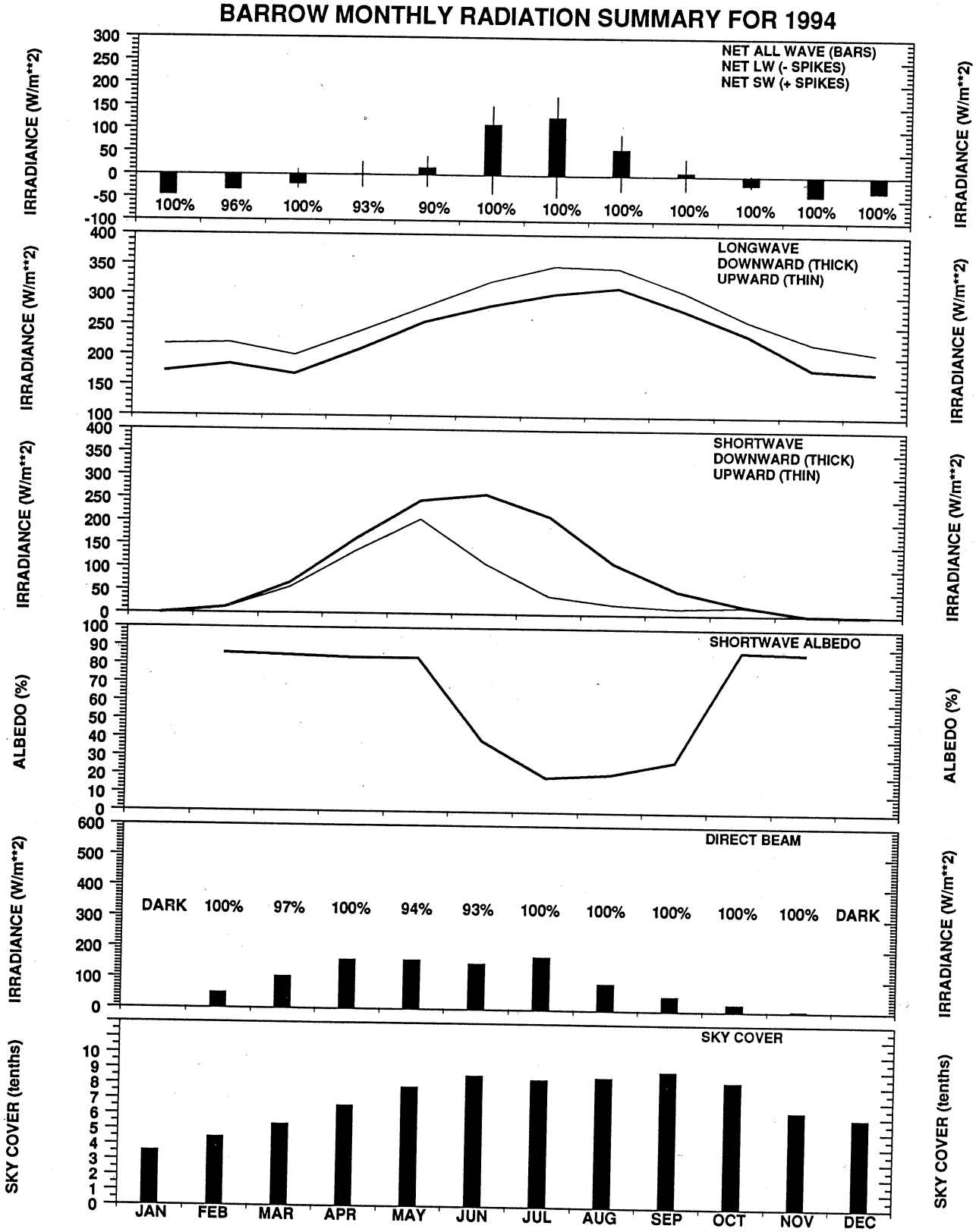
BARROW MONTHLY RADIATION SUMMARY FOR 1994
NET ALL WAVE (BARS)
NET LW (- SPIKES)
NET SW (+ SPIKES)
100% 96% 100% 93% 90% 100% 100% 100% 100% 100% 100% 100%
LONGWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE
DOWNWARD (THICK)
UPWARD (THIN)
SHORTWAVE ALBEDO
DIRECT BEAM
DARK 100% 97% 100% 94% 93% 100% 100% 100% 100% 100% DARK
SKY COVER
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
IRRADIANCE (W/m**2)
ALBEDO (%)
SKY COVER (tenths)

Figure 8a

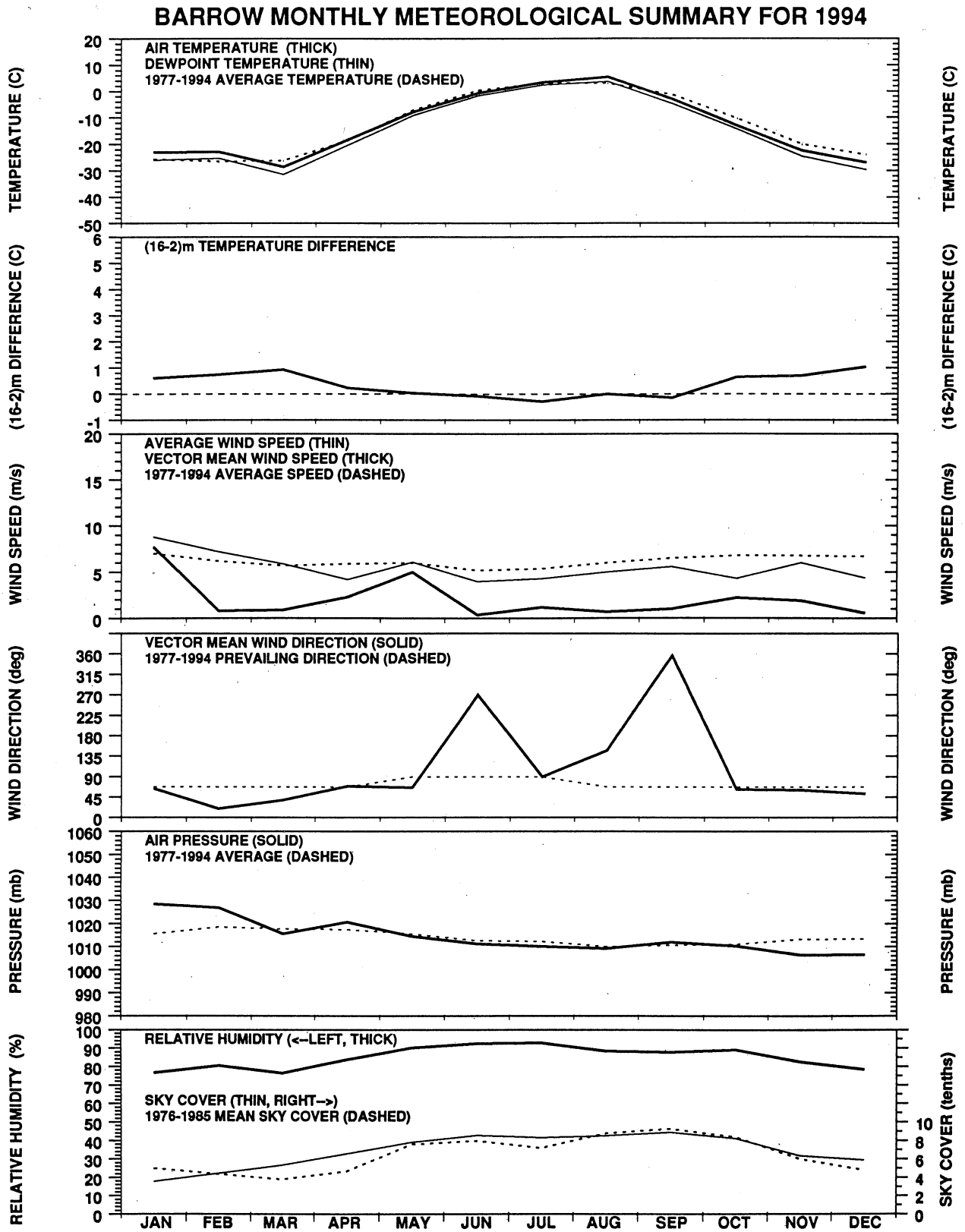
BARROW MONTHLY METEOROLOGICAL SUMMARY FOR 1994
AIR TEMPERATURE (THICK)
DEWPOINT TEMPERATURE (THIN)
1977-1994 AVERAGE TEMPERATURE (DASHED)
TEMPERATURE (C)
(16-2)m TEMPERATURE DIFFERENCE
(16-2)m DIFFERENCE (C)
AVERAGE WIND SPEED (THIN)
VECTOR MEAN WIND SPEED (THICK)
1977-1994 AVERAGE SPEED (DASHED)
WIND SPEED (m/s)
VECTOR MEAN WIND DIRECTION (SOLID)
1977-1994 PREVAILING DIRECTION (DASHED)
WIND DIRECTION (deg)
AIR PRESSURE (SOLID)
1977-1994 AVERAGE (DASHED)
PRESSURE (mb)
RELATIVE HUMIDITY (<--LEFT, THICK)
SKY COVER (THIN, RIGHT-->)
1976-1985 MEAN SKY COVER (DASHED)
RELATIVE HUMIDITY (%)
SKY COVER (tenths)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Figure 8b

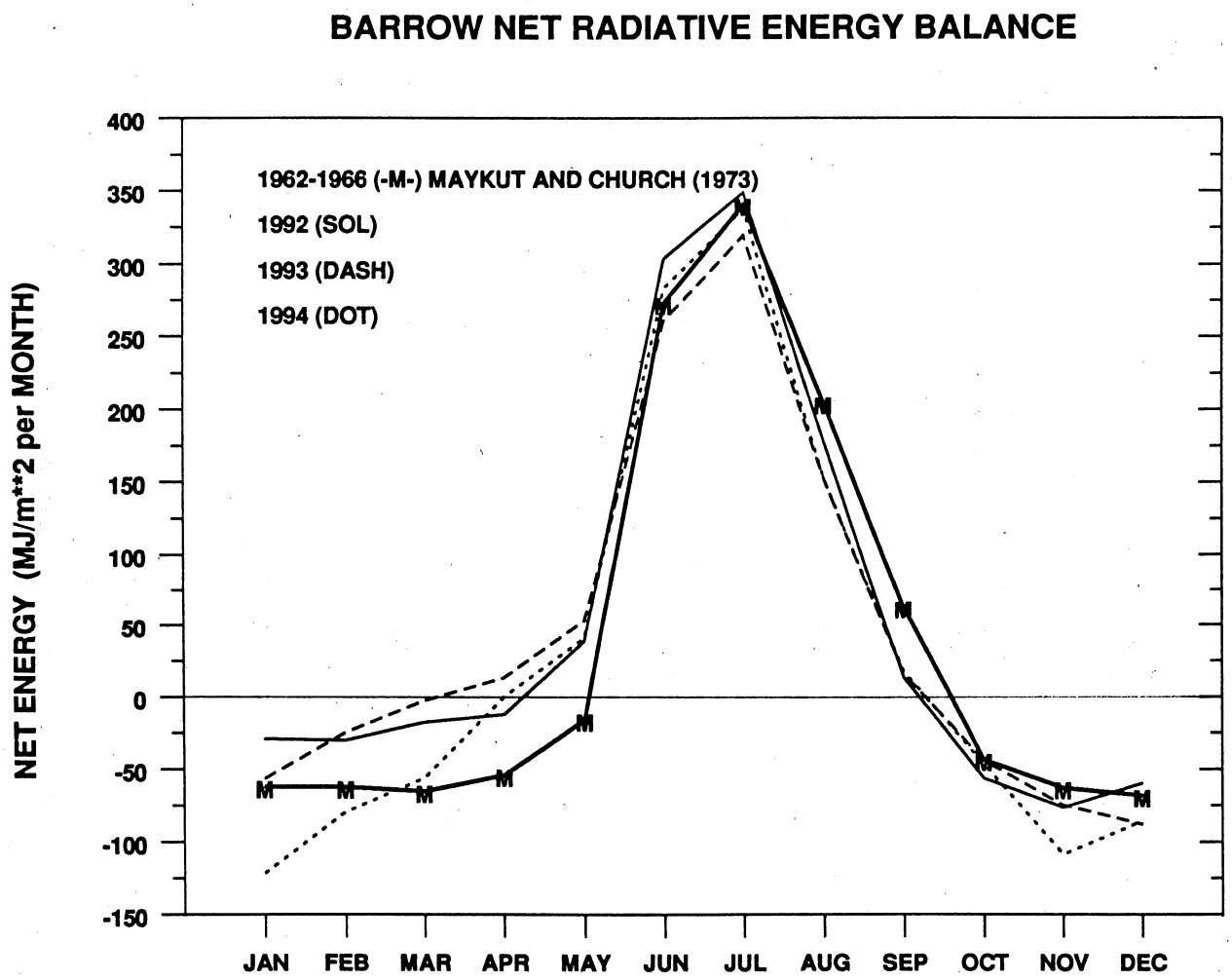

Figure 9. Annual cycles of the surface net radiative energy balance at BRW for 1992, 1993, and 1994 compared with an average cycle for 1962-1966 (adapted from Maykut and Church, 1973). Note the enhancement during the springtime on average in recent years.

Monthly Wind Roses

Monthly mean distributions of surface winds at BRW are shown for 1992, 1993, and 1994 in Figures 10, 11, and 12, respectively (January-June labeled a, and July-December labeled b). These "wind roses" resolve vector winds into 16 compass directions, N, NNE, NE, ENE, E, ESE, etc., with radial distance being proportional to the frequency (%) of occurrence of winds within ±11.25° of each direction. Wind speed is resolved into three classes: $0.5 \leq WS < 5$ m s^{-1}, 5 to 10 m s^{-1} and ≥ 10 m s^{-1}. The percentage of calm ($WS < 0.5$ m s^{-1}) is also given.

BARROW MONTHLY WIND ROSES FOR JANUARY - JUNE 1992

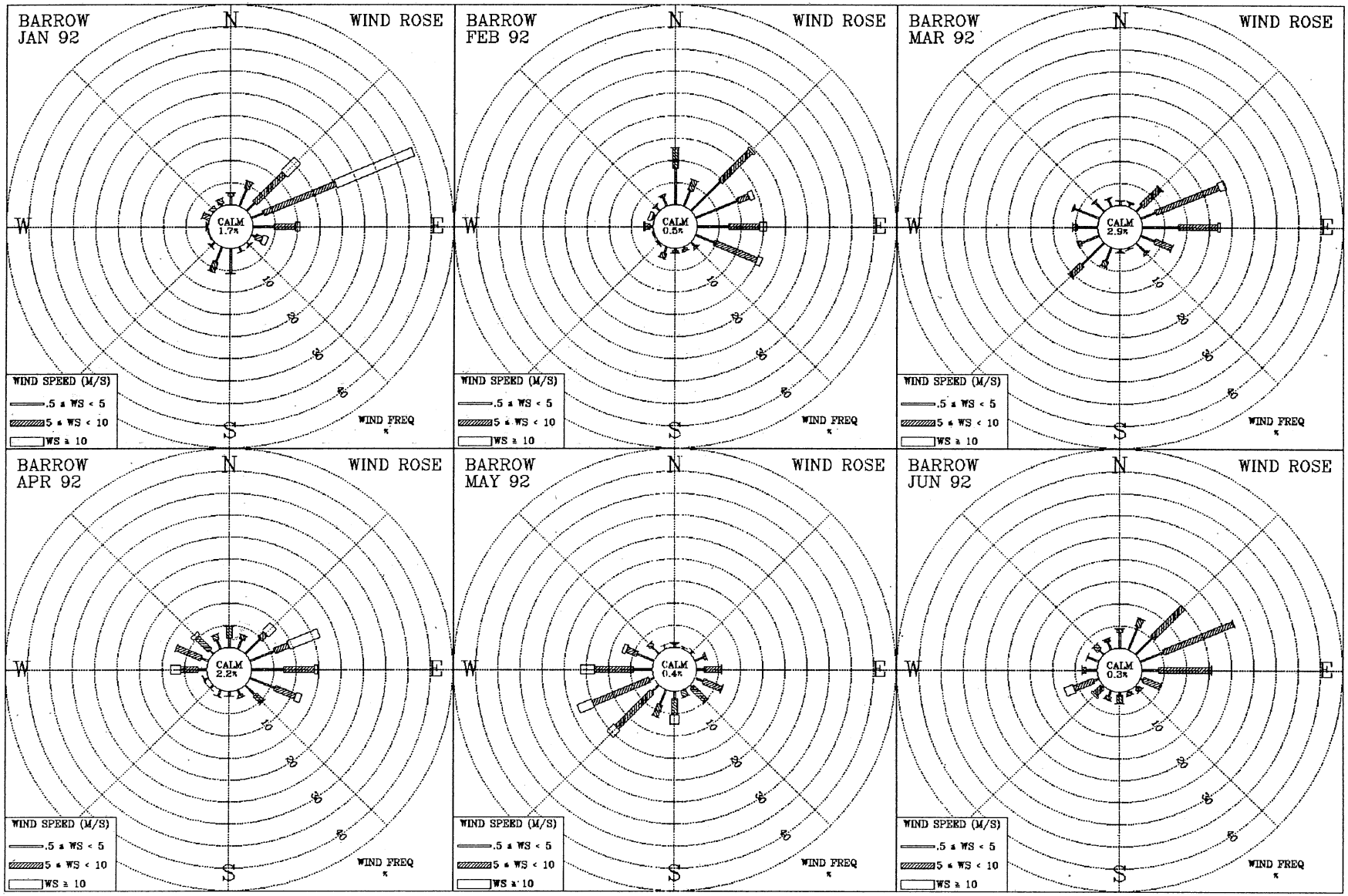

Figure 10a

BARROW MONTHLY WIND ROSES FOR JULY - DECEMBER 1992

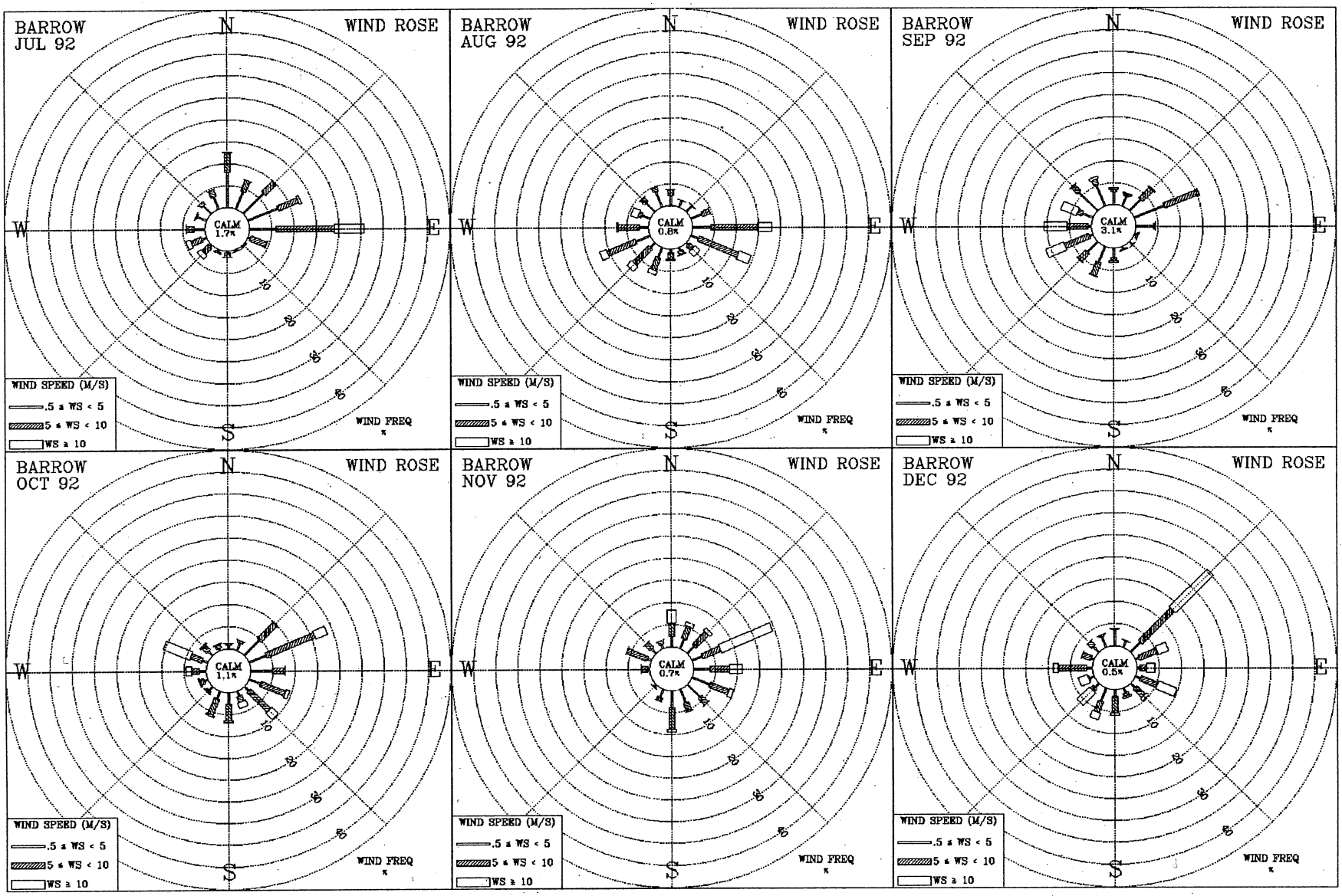

Figure 10b

BARROW MONTHLY WIND ROSES FOR JANUARY - JUNE 1993

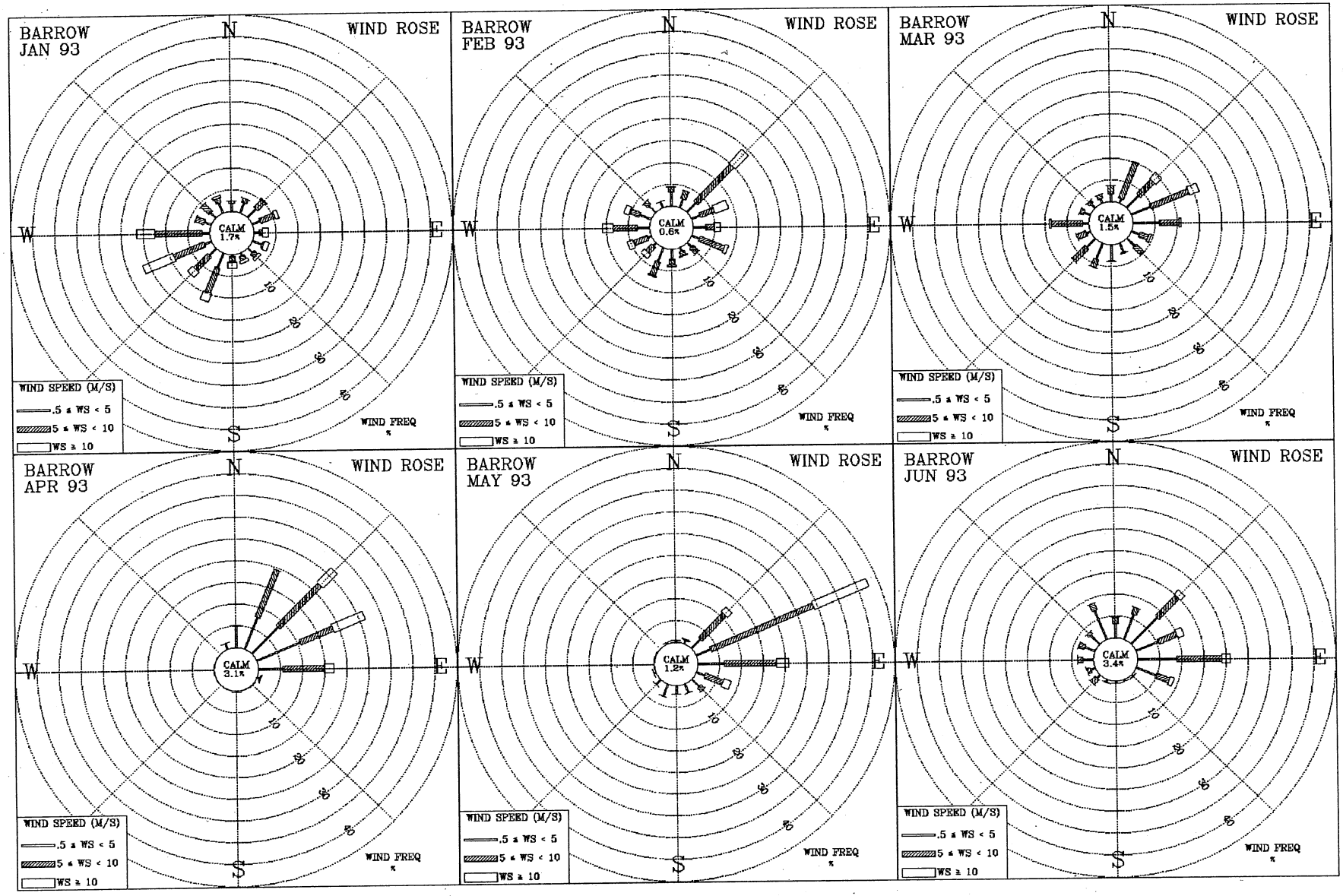

Figure 11a

BARROW MONTHLY WIND ROSES FOR JULY - DECEMBER 1993

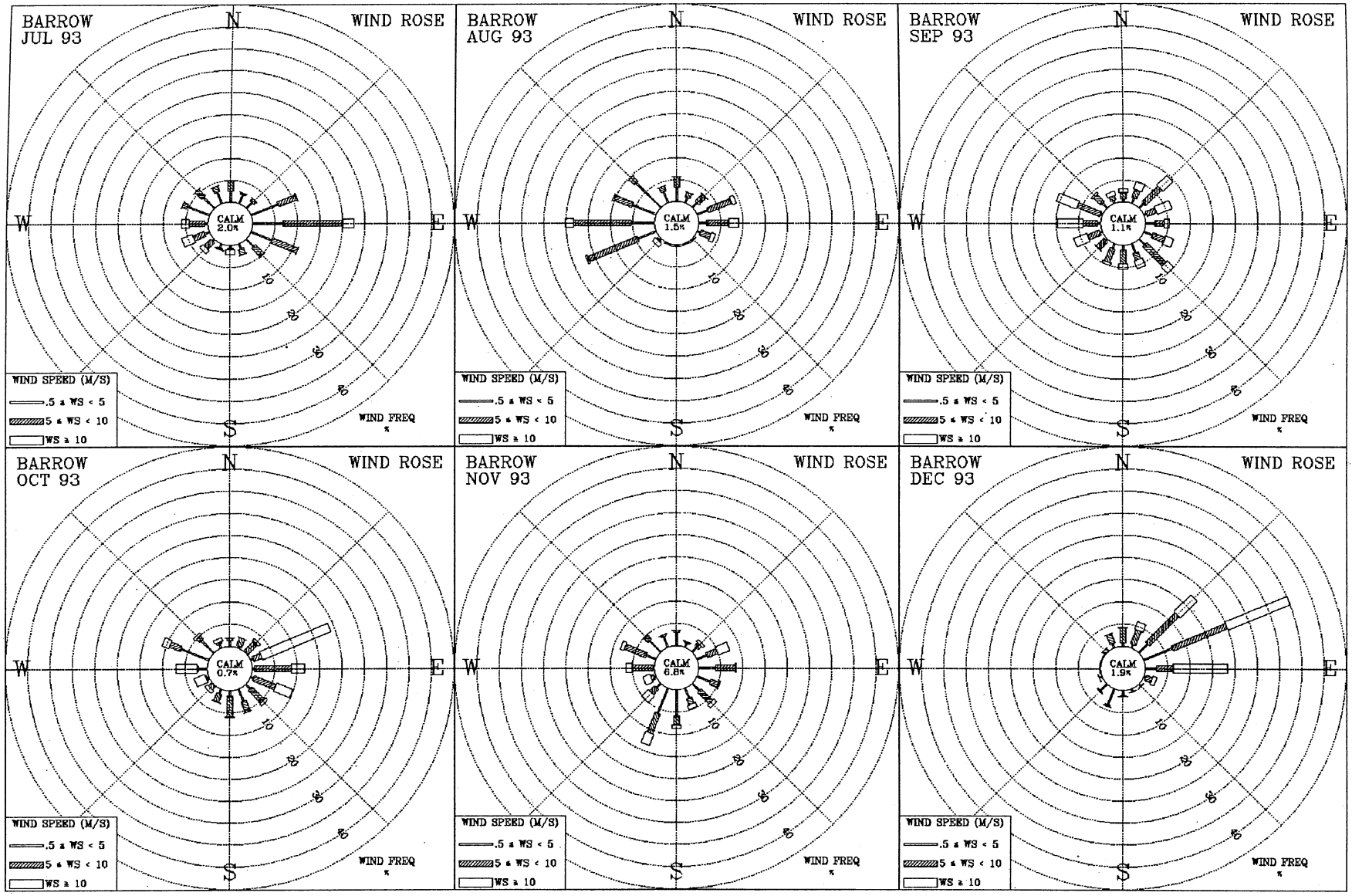

Figure 11b

BARROW MONTHLY WIND ROSES FOR JANUARY - JUNE 1994

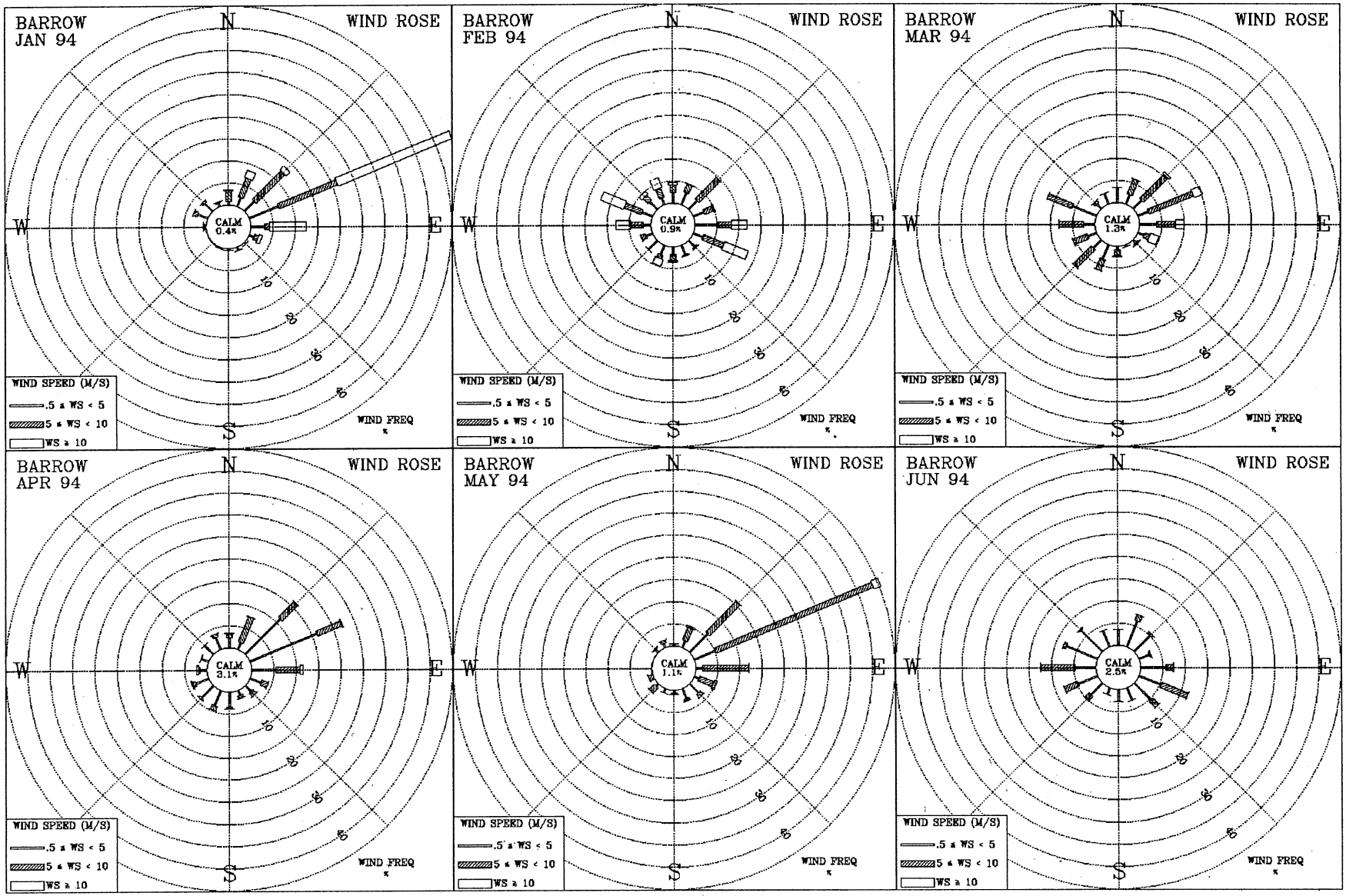

Figure 12a

BARROW MONTHLY WIND ROSES FOR JULY - DECEMBER 1994

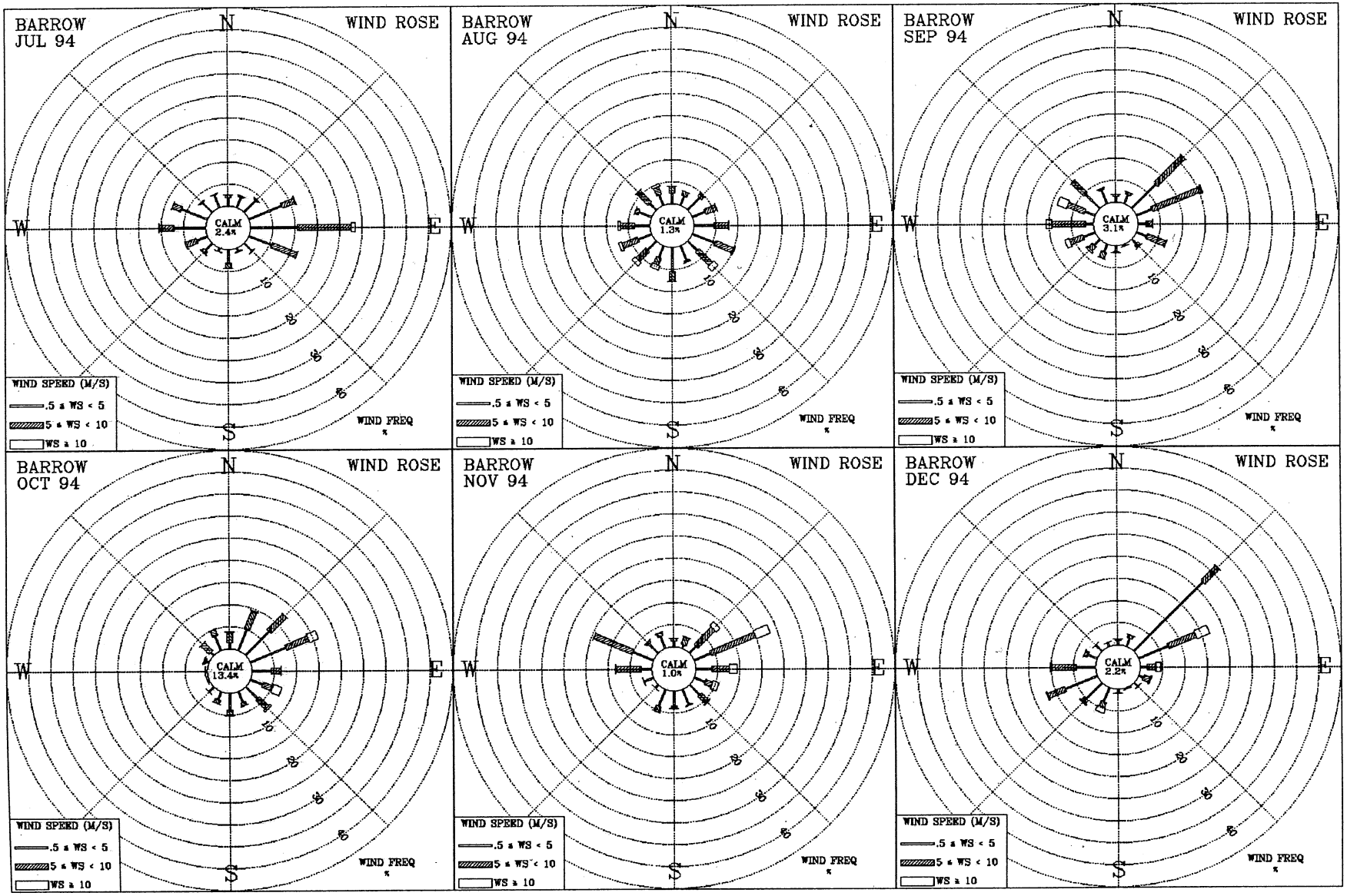

Figure 12b

Multiyear Wind Roses

Multiyear distributions of surface winds at BRW based on the 1977-1994 station record are shown in the wind roses in Figure 13 (January-June labeled a, and July-December labeled b). By comparing individual monthly wind distributions from 1992-1994 with their corresponding multiyear average, we can easily identify anomalous months. May 1992 and January 1993, for instance, both show winds 180° out of sector from the prevailing east-northeast winds. January 1994 shows an unusually persistent (30% occurrence), intense ($\geq$10 m s^{-1}) wind from the east-northeast. It is very likely that these anomalies reflect perturbations in synoptic weather patterns. In conjunction with the analysis of other data, identifying anomalies in the surface wind field may help explain the variations we see in the radiation balance at Barrow.

BARROW MONTHLY WIND ROSES FOR JANUARY - JUNE 1977 - 1994

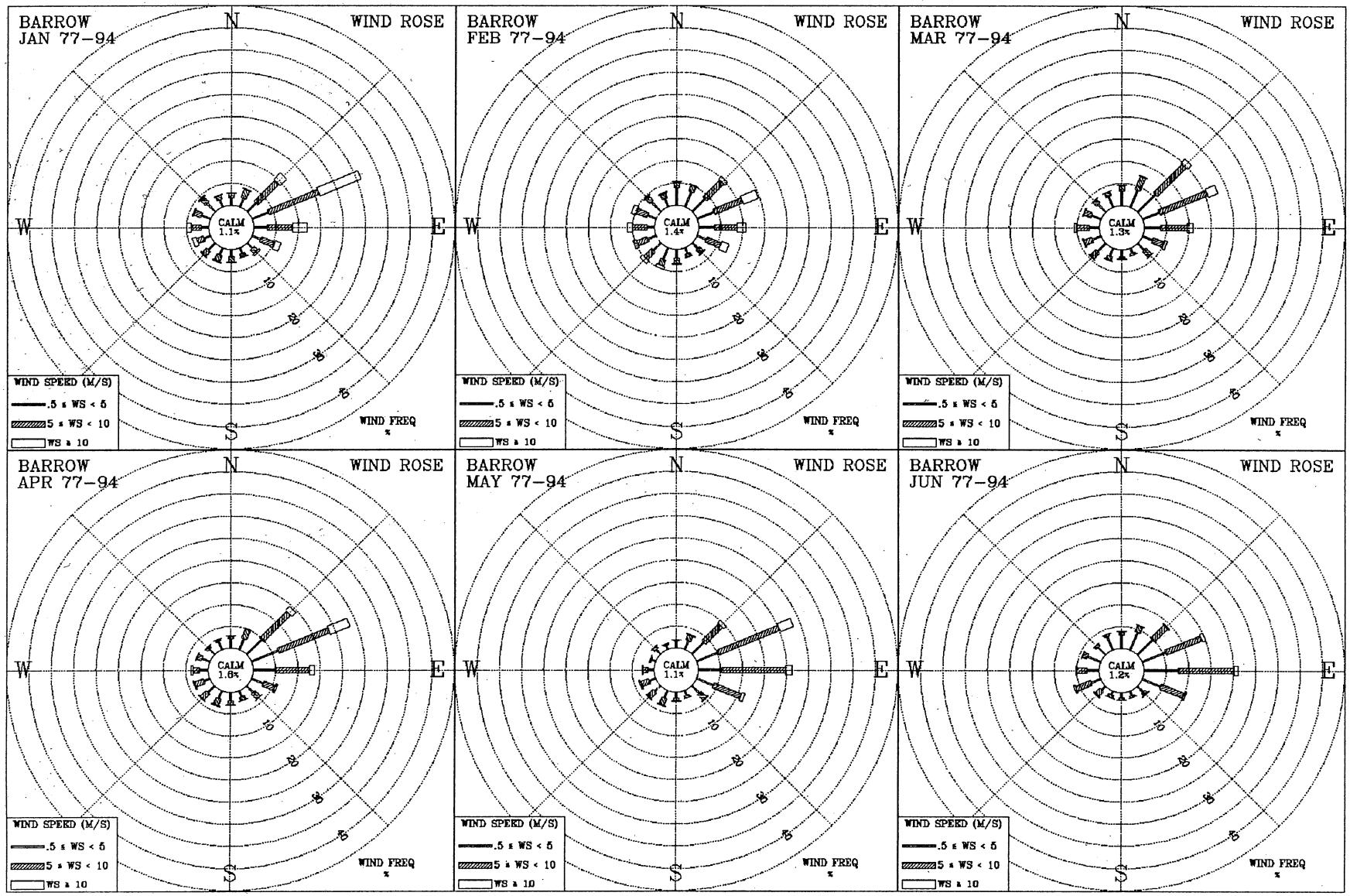

Figure 13a

BARROW MONTHLY WIND ROSES FOR JULY - DECEMBER 1977 - 1994

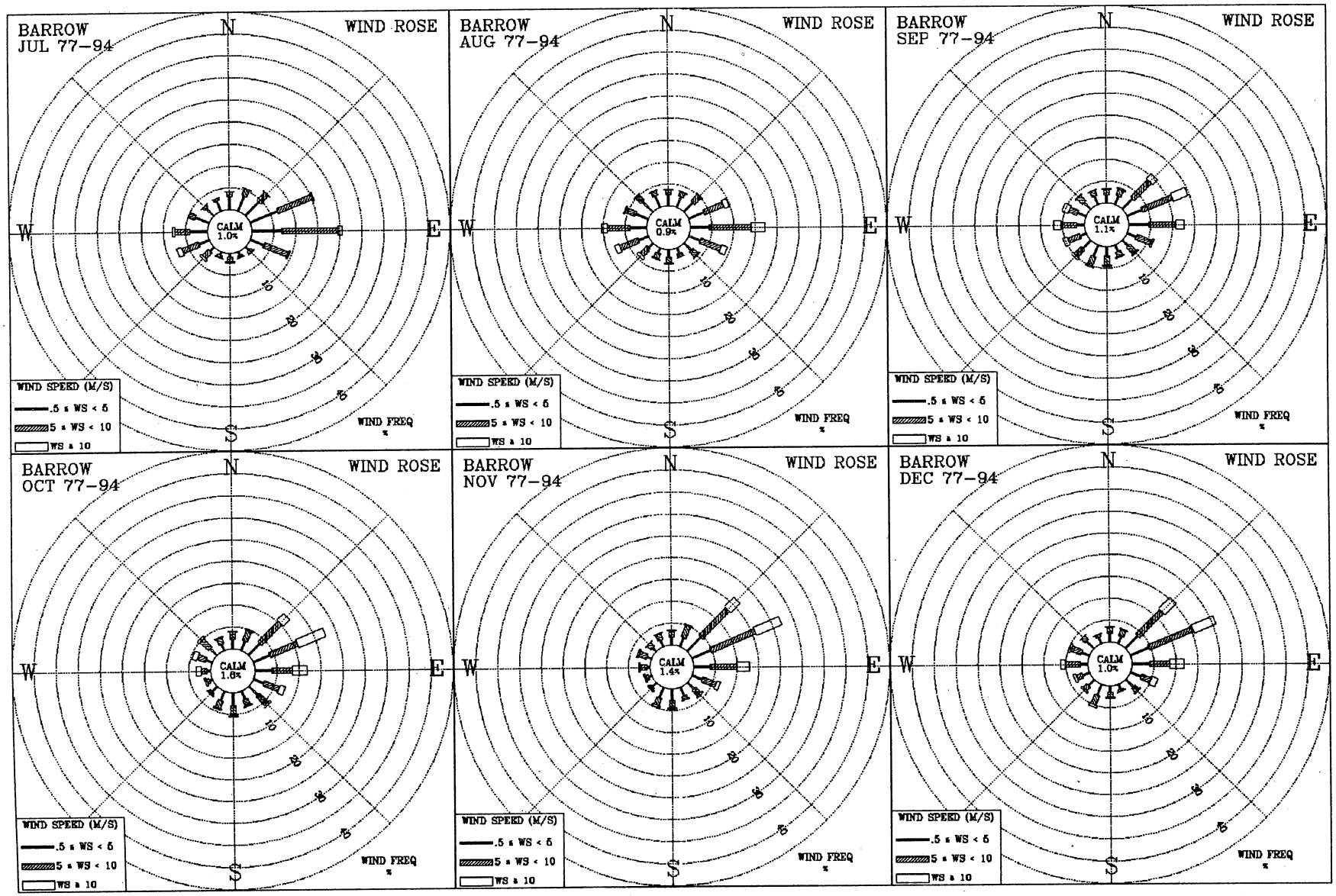

Figure 13b

*U.S. GOVERNMENT PRINTING OFFICE:1996-774-018/00146