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U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

CLIMATE OF THE NORTH SLOPE ALASKA

HAROLD W. SEARBY AND MARCELLE HUNTER

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CLIMATE OF THE NORTH SLOPE

ALASKA

HAROLD W. SEARBY

and

MARCELLE HUNTER

Anchorage, Alaska
February 1971

These Memoranda are available from the Alaska Region Headquarters at the following address:

National Oceanic and Atmospheric Administration
National Weather Service Regional Headquarters
632 Sixth Avenue
Anchorage, Alaska 99501
Attn: Regional Climatologist

1. Freeze-Thaw Cycle in the Coastal Arctic of Alaska - 1968

2. Climate Along a Pipeline from the Arctic to the Gulf of Alaska - 1968

3. Coastal Weather and Marine Data Summary for Gulf of Alaska, Cape Spencer Westward to Kodiak Island - 1969

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CLIMATE OF THE NORTH SLOPE

ABSTRACT

The "North Slope" is defined as that portion of Alaska extending northward from the ridgeline of the Brooks Mountain Range to the Arctic Ocean. New activities and development in this area have created an increasing need for environmental data for ground, air and marine operations. This publication is an effort to compile all available information for those planning North Slope activities.

INTRODUCTION

Long term data records are available from only three locations. These are Barter Island, Barrow and Wainwright. There are approximately nine years of record at Umiat, and six years at Anaktuvuk. Data in the Prudhoe Bay area cover from one to five years and were partially summarized for use here. The largest number of locations with simultaneous data collection operated during 1969, so this one year's data was used in a comparative study of ceilings and visibilities. The map[1] in Figure 1 shows the locations of all data stations, along with selected contours and the approximate location of the ridgeline of the Brooks Range and the beginning point of the foothills of the range.

TERRAIN FEATURES OF THE ALASKA ARCTIC

The Arctic Ocean and Beaufort Sea lie to the north of the Alaskan land mass. The coastline easily exceeds 600 miles in length with a number of offshore islands and narrow spits of land which form lagoons along the coast. The land mass itself is underlain with permafrost. The coastal region is flat marshy soil dotted with thousands of small lakes. This condition extends inland until the ground begins to rise gradually with the approach to the foothills of the Brooks Range, and varies in width from 30 miles or less on the east to a maximum of over 100 miles in the central portion. The lakes exist despite only small amounts of precipitation, because of the low evaporation rate and the impermeability of the ground owing to permafrost. At least one major river (Colville) and dozens of small streams flow northward into the ocean and sea. The mountains of the Brooks Range are generally between 5000 and 7000 feet with a few peaks extending to 8000 and 9000 feet, with the exception that western end of the Range drops off in elevation to 1500 to 3000 feet.

CLIMATE - GENERAL

The general climatic conditions[2] are characterized by relatively cold temperatures both winter and summer, small annual precipitation amounts and strong winds over the coastal plains. The combination of wind and temperature results in equivalent chill temperatures many degrees colder than the actual.

Precipitation is slightly more on the eastern end than the west. Surface winds are strongest along the coast with a persistent easterly flow most of the year. Speeds decrease slowly with distance from the coast, and the direction becomes more variable. Temperature, precipitation and wind are discussed in detail in the following sections.

CLIMATIC CONDITIONS - TEMPERATURE

"North Slope" temperatures are affected by both marine and continental influences. The marine influence, as would be expected is strongest in summer with the greatest effect on the coast and diminishing gradually with distance inland toward the Brooks Range. The distance from the coast to the mountains on the eastern end is 15 to 50 miles[1], in the central portion near 100 miles and on the western end about 50 miles. Because of this variable distance the degree of marine influence varies along the foothills of the Brooks Range. Even in winter when the Arctic Ocean and Beaufort Sea are frozen solid, the temperature patterns indicate some modifying effect along the coast due to marine influences.

A continental climate predominates over the southern portion of the Arctic, which in this case is the northern slopes of the Brooks Mountains. Some modification occurs during the summer months (when the marine influence is the strongest), especially in the extreme eastern and western portions. A comparative look at data for Umiat and the coastal stations shows the greatest extremes of temperature, a characteristic of continental climates, at Umiat[2].

Because equivalent chill temperature relates the effect of wind on heat loss, it is by far the most important temperature value computed in the Arctic. Table 1 gives the equivalent chill temperature for actual temperatures of 0°F or colder and wind speeds of five miles per hour or more. For temperatures above 0°F and wind speeds of less than five miles per hour, the usual five degrees of temperature/five miles per hour increment chart is also presented here as Table 2.

For planning purposes, the percentage probability of occurrence of equivalent chill temperature is given in Figures 2 and 3 and regular temperature in Figures 4 and 5. The two equivalent chill temperature charts were not developed in the same manner. Figure 2 was developed using hourly values of temperature, and corresponding surface wind reports for Barrow[3]. Figure 3, for Non-Coastal areas (*at least 50 miles from coast), was derived by using average temperature and wind conditions at Umiat. Standard deviations derived from averages do not reflect extreme conditions with the same accuracy as actual hourly values of temperature and wind. Figures 4 and 5 were developed using actual hourly values rather than averages. The applicability of all the charts to either the coastal or non-coastal area is valid because of only minor temperature variations from one portion to another. The greatest variation will be within the non-coastal area where terrain begins to influence the temperature.

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*This is an arbitrary figure since it is not possible to establish a dividing line between continental and marine influences.

Vertical distribution of temperature in the Arctic is very consistent. An inversion, or layer of air within which the temperature increases with altitude, almost always exists, though the thickness and intensity of the inversion varies. Figure 6 gives examples of individual summer and winter profiles. Operationally speaking, the depth of the inversion can be important to aviation activities.

CLIMATIC CONDITIONS - PRECIPITATION

If we consider precipitation alone, the Alaska Arctic would be classified as arid. Where measurements of total annual precipitation have been made, the average is about four to six inches. Included in this is the water equivalent of the 12 to 48 inches of annual snowfall. Because of the strong winds along the coast, the catch of snow is probably significantly less than actually occurs. Thus, the annual precipitation may be a bit greater than the coastal records indicate. Data for the area within the Brooks Range itself is restricted to Anaktuvuk Pass, where the average annual precipitation is 10.65 inches, including the annual average of about 63 inches of snow. Based on this single location it is reasonably safe to assume that the higher elevations of the mountains received 10 to 15 inches annually with isolated areas in excess of 15 inches. Summertime rainfall accounts for the greatest portion of the precipitation in this part of the Arctic. Precipitation statistics are found in Tables 3, 4 and 5.

CLIMATIC CONDITIONS - SURFACE WINDS

One of the most significant features of surface winds[4] in the Arctic coastal region is the persistence factor, especially at Barrow. A no wind condition at this station exists only 1.3% of the time. There are locations, such as along the Aleutian Chain and other portions of the northwestern and western coastal area that rival it, but few if any experience more persistent winds. The persistence decreases with distance from coast, and by the time Umiat is reached calm winds occur about 18% of the time. Wind speeds, although strong, do not begin to rival those along the Aleutian chain and some stations along the southwestern coast. The effect of this factor is to create a persistent equivalent chill temperature that is a serious hazard for all outdoor activities during the coldest months. It also causes a continuous problem in winter by creating shifting snow drifts and low visibilities in blowing snow, a problem to the traveler, whether on foot or in a vehicle. Wind direction and speed are given in Tables 6 through 9 for Umiat, Barter Island and Barrow.

FLYING WEATHER

Average values of ceiling and visibility[4] (for all months) for Barrow and Barter Island show reasonably close similarities in weather patterns, but

when viewed month by month rather large differences appear. During the period June through September, ceilings are less than 3000 feet a much higher percentage of time at Barrow than at Barter Island. In constrast, visibilities are low a smaller percentage of the time at Barrow. A review of ceiling and visibility values at Umiat indicates that both are generally better inland than along the coast. Tabular data for the three locations are given in Tables 10, 11 and 12. Detailed values of percentage frequency of occurrence of ceiling vs visibility are given in Tables 13 and 14. These data were compiled for use at Barter Island, but are considered to be acceptable for all of the coastal portion of the Arctic if the user can tolerate an estimated error of ± 15%.

Development of the oil fields in the Arctic brought about the construction of many gravel runways to accommodate the movement of supplies by air. Existing data indicates that on the average flying conditions improve with distance from the coast, but there has been no way to determine the prevalence of simultaneous occurrences in ceiling and visibility at the various new gravel runways. In other words, if conditions at Prudhoe Bay are below the landing minimums, is the weather pattern such that all other runway locations in the area of oil exploration are also below minimums at the same time? Data for the year 1969 were chosen for study because the greatest number of stations were in operation during that year. Briefly, the results of the study showed that although any two locations might experience weather conditions below minimums for six hours out of a 24 hour period, they would not necessarily be at the same time, even during the summer fog months. There was also an indication that the percentage of unfavorable flying conditions became less with distance from the coast, lending support to conclusions made from the longer term averages. Detailed results of the study are graphically presented in Figures 7 through 10. A user of these results should keep in mind that one year of data is not enough to produce results with a high level of confidence. They should be used as comparative figures only, and not as an indication of the percent of time any of the locations will, on the average, be above or below the stated values. The year 1969 was a drought year throughout most of Alaska, and it is likely that not only was there less precipitation but the amount of adverse weather was no doubt less also. Ceiling and visibility conditions determined for Barter Island for 1969 were plotted against a 17 year average (Figure 11) to show how that station deviated from the average.

The relationship of ceiling and visibility to surface wind direction[4] and speed at Barter Island is graphically shown in Figure 12. The graphed data shows a strong correlation between speed and ceiling/visibility, and almost none with direction. Prevailing directions are east or west. Both show a definite deterioration of ceiling and visibility as wind speeds increase. Only with minor exceptions was there a significant change in ceiling and visibility with variations in direction.

SUPPLEMENTAL DATA

Weather conditions[4] not shown in any of the previous figures or tables are found in Tables 15 through 19. They include temperature extremes, snow depths, visibility restrictions by fog, smoke, blowing snow and/or dust and precipitation, sky cover, and the frequency of occurrence of various weather conditions for Umiat, Barter Island and Barrow. Temperature, precipitation and wind direction data for Wainwright[2] are also presented.

HYPOTHERMIA

Hypothermia is defined as a subnormal body temperature[5]. Because of its importance in a cold environment, and the probable lack of knowledge regarding it, considerable space is devoted to hypothermia in the hope that this will encourage those involved in activities in the Arctic to be better prepared in the event of its occurrence.

IMMERSION HYPOTHERMIA

Immersion hypothermia involves a loss of body heat to the water. Medical studies have determined that a person will die if his normal rectal temperature (approximately 99.6°F.) drops below 78.6°F.

The approximate survival time of human beings in the sea is directly related to sea surface temperatures. Immersion hypothermia showing approximate survival time is depicted in Figure 7[5]. The survival time given can be considered only a first order approximation since data records do not incorporate many uncontrollable physiological variables. For example, neither quantitative appraisal nor records have been made of such intangible factors as the physical condition of the individual or his will to survive. The following table relates water temperature to approximate survival time of humans immersed in the sea.

Approximate Survival Time of Humans Immersed in the Sea

Water Temp. (°F.)	Exhaustion or Unconsciousness	Expected Time of Survival
32.5	15 min.	15-45 min.
32.5-40.0	15-30 min.	30-90 min.
40-50	30-60 min,	1-3 hrs.
50-60	1-2 hrs.	1-6 hrs.
60-70	2-7 hrs.	2-40 hrs.
70-80	3-12 hrs.	3-indef.
80	Indef.	Indef.

Survival time also may be affected by body type, body attitude, and physical condition, amount of subcutaneous fat and will to survive. In waters warmer than 70°F. heat production may keep pace with heat loss, and fatigue leading to ultimate exhaustion is then the limiting factor.

There are two principal schools of thought with regard to survival techniques during immersion: 1) vigorous exercise; 2) passive waiting. Vigorous exercise may dissipate heat reserves more rapidly, though with reasonable time limits it may keep muscles warm and prevent their stiffening. Passive waiting maintains heat production by the natural process of shivering as long as the rectal temperature remains between 95.0° and 99.6°F. Passive waiting is somewhat in favor at present.

Two books on the subject of hypothermia have been reviewed by Dr. Mukta M. Webber, Institute of Arctic and Alpine Research, University of Colorado, Boulder. The reviews, reprinted here verbatim, were taken from volume 2, number 3, summer 1970 issue of the publication "Arctic and Alpine Research."

Survival in Cold Water: The physiology and treatment of immersion hypothermia and of drowning. W. R. Keatinge. Blackwell Scientific Publications, Oxford and Edinburgh, 1969. x + 131 pp., illus. Distributed in U.S.A. by F. A. Davis Co., Philadelphia, Pa. 19103, $5.50.

From its title, this book may seem to be beyond the realm of this journal which has had a predominance of papers in the earth sciences. Papers dealing with the physiological aspects of arctic and alpine regions have been scarce, despite the interdisciplinary editorial policy. However, the contents of this book should prove most useful to people working in arctic and alpine regions.

This monograph by Keatinge is of interest to the physiologist studying hypothermia (that is, drop of body temperature below 37°C) and to the nonphysiologist investigator who might be working in cold waters (sea, rivers, and lakes) or using them for transportation. I wish to bring this book to the attention of the latter. Contrary to common belief, many deaths in cold water are caused by excessive loss of body heat rather than drowning. There is also an occasional, sudden death resulting from a reflex involving the vagus nerve which is triggered by a spray of water entering the air passages and causing cardiac arrest.

The author discusses the physiological basis of death due to hypothermia, dangers of cold water immersion, precautions that may be taken before entering cold water, and treatments for cold-water injury. In cold air man controls loss of body heat by clothing where insulation is provided by air trapped in clothing and stagnant air over skin and clothing. On immersion this insulation is lost. However, there is experimental evidence that clothing decreases loss of body heat in water. The author, therefore, suggests that warm clothing, socks, and mitts, and preferably a waterproof covering be worn before immersion in cold water. This is contrary to the common belief that heavy clothing should be removed to facilitate swimming. Body temperature is further maintained by vasoconstriction, the most important mechanism for conserving heat. This occurs particularly in the extremities, thus reducing blood flow and decreasing loss of body heat. Most of the heat, however, is lost from the trunk where such a mechanism does not operate to any great extent. Body fat also acts as an insulator but the presence of fat is incidental (as a food store) rather than an adaptation to cold environment. Obesity is rare in indigenous people of cold climates such as the Eskimo.

It would be logical to think that perhaps an increase in thermogenesis could compensate for heat loss. Shivering and exercise increase heat production but at the same time they reduce tissue insulation by increasing blood flow in the muscles which results in increased heat loss. It is, therefore, advisable to remain still in cold water to conserve heat.

Having discussed the causes of death by cold immersion and the precautions that may be taken to prolong survival, the author devotes a chapter to the treatment of immersion hypothermia and cold injury (frostbite). Immersion hypothermia should be treated by immersing the trunk in water at 40 to 44°C and raising the limbs to prevent oedema. The extremities should be allowed to warm naturally; rapid warming may result in increased oxygen demand before circulation has been restored adequately, thus resulting in tissue death due to anoxia. Frostbite, however, should be treated by immersing the frozen part in water at 40°C. Sudden warming will result in less tissue damage, contrary to the common belief that slow warming is beneficial. Cold injury can result in permanent damage to nerves and muscles.

The most useful chapter for the nonphysiologist is chapter 9 in which the author summarizes the conditions that may cause hypothermia and precautions and treatments that may be taken.

I believe that a majority of scientists and students working in cold regions are unaware of the dangers of cold immersion. Instances of shock and syncope occurring immediately after immersion in cold water are well known and can easily result in death. It is therefore advisable that all personnel working in cold environments should be given special instructions regarding immersion hypothermia and this is where Keatinge's monograph would be most useful. Arctic waters are rarely warmer than a few °C above zero. This means that a person immersed in polar waters is likely to survive at the most for an hour. Death on immersion in water near 0°C occurs when rectal

temperature falls to between 24.2 and 25.7°C. Body heat is maintained in water temperatures below 33°C (called the critical temperature of environment) by increased thermogenesis. Therefore, immersion in water with temperature far above freezing can cause hypothermia.

The book has satisfactory layout and excellent printing and binding in the tradition of Blackwell Publications. The figures are clearly executed and there is an adequate review of literature including some 1968 references. The book also contains a lot of information acquired by the author from his own investigations. The only irritating point of this book is the frequent discontinuity of thought. For example, on page 22 the author does not give an explanation for why an increase in heat production by shivering makes little contribution to the maintenance of body temperature; several pages later (p. 27) he returns to shivering and provides an explanation. This results in loss of interest and annoyance on the part of the reader.

In conclusion, I recommend this book to the readers of *Arctic and Alpine Research* and feel that awareness of information contained in this book may better prepare individuals to conduct themselves in cold waters.

Hypothermia: Killer of the unprepared. Theodore G. Lathrop. The Mazamas, 909 N.W. Nineteenth Avenue, Portland, Oregon 97209. 1969. 13 pp., illus. $0.75.

It was a coincidence that soon after I wrote the above review, this paper was brought to my attention. Since it deals particularly with hypothermia at high altitudes, it seems pertinent to briefly review it here.

The purpose of this paper is to warn and prepare climbers for the cold, wet, and windy conditions that can kill them. Hypothermia can occur at temperatures far above freezing when other factors like wind and evaporation from skin and wet clothing (caused by rain, snow, immersion or perspiration) are involved.

The author, who is a practicing physician and a mountaineer, very wisely advises that one should never overestimate ones strength or that of other members of the party. He stresses the importance of woolen clothing (the only fiber other than spun synthetics that can provide warmth even when wet), wind and waterproof outer garments, a good supply of food, and a tube tent for emergencies. Some of the early symptoms of hypothermia are lack of coordination and impaired judgement. Therefore, when weather conditions begin to deteriorate, it is wise to make camp before signs of hypothermia begin to show. Following this section on precautions, treatment for hypothermia victims is discussed. Briefly, this involves taking the victim to a sheltered place, replacing wet clothes with dry ones, giving warm fluids and foods rich in carbohydrates and warming him up by the best means available, for example, putting him in a sleeping bag which has been previously warmed by another person.

This paper, although written for the layman, contains information necessary for survival in adverse conditions specially at high altitudes and should be read by everyone working in such areas.

MUKTA WEBBER

Institute of Arctic and Alpine Research
University of Colorado, Boulder

For the benefit of most readers the following temperature conversions are given:

44.0°C = 111.2°F	33.0°C = 91.0°F
40.0°C = 104.0°F	25.7°C = 78.3°F
37.0°C = 98.6°F	24.2°C = 75.6°F

Attention is called to Dr. Webber's recommendation, "all personnel working in cold environments should be given special instructions regarding immersion hypothermia and this is where Keatinge's monograph would be most useful". This recommendation should also be extended to the paper by Mr. Lathrop. Undoubtedly many precautions have been considered in establishing the working conditions in the Arctic. It is the accidents or the unanticipated turn of events that the knowledge of treatment for hypothermia is needed.

TIDES

The actual measurement of tides along the Arctic coast is difficult. Tidal stations have been successfully operated year round both on the Canadian and USSR Arctic coasts, but only at Point Barrow[6] has this been attempted in Alaska.

The mean lunar tide range along the northern Arctic coast is approximately one foot. This could easily lead to the conclusion that tides in this area are unimportant to shipping. Actually, only the lunar tide itself can be considered of little consequence. Non-lunar tides resulting from wind and pressure fields occurring at the time of the equinoxes can produce a change in sea level by as much as five feet if persistent over several days. Seasonal changes in the sea water density can also result in variations of sea level as much as three feet in offshore waters. Figure 13 is an example of changes in sea level resulting from changes in wind direction and speed, coupled with a sudden pressure increase as the wind speed dropped. The effect on shipping of a rapid drop in sea level resulting from a sudden decrease in wind speed and a sharp rise in pressure could be serious. The Arctic Institute of Environmental Engineering, University of Alaska, is presently working on this problem and hopes to develop a satisfactory method of using tide gauges at sites along the coast so that better predictions can be made.

SEA ICE

Information available on sea ice, like many other areas of interest in the Arctic region, is limited. Most of the work in this area has been done by the U.S. Navy[7]. The following is a verbatim narrative summary of ice conditions in the Chukchi and Beaufort Seas as published by the Navy Hydrographic Office.

"Chukchi and Beaufort Seas. The waters of the Chukchi and Beaufort Seas are dominated most of the year by winter ice and polar pack ice which includes heavy drift ice from the Arctic Ocean. Of lesser importance is the fast ice which covers the bays and fringes the shores of northern Alaska and Siberia for at least 8 months.

Generally August and September are the months with the least ice. During this period the northwest coast of Alaska should be free of fast ice northward to Point Barrow and practically free of fast ice from Point Barrow eastward to Herschel Island. However, the heavy polar pack never is far off the coast between Point Barrow and Herschel Island and can advance onto the shore at any time. Westward of Point Barrow the pack ice usually lies about 10 miles offshore at Icy Cape; beyond this point the edge of the pack swings northwestward toward Ostrov Geral'd and Wrangel Island. The ice edge then trends southwestward, approaching the Siberian Coast at about the vicinity of Mys Shmidta.

The existence of an open coastal waterway in the Chukchi-Beaufort Sea sector is strongly dependent upon favorable winds. Easterly and southerly winds hold the pack off the coast, whereas northerly and westerly winds force the floes against the shore. Even when the main body of the ice recedes from the coast, drifting marginal floes and bands of fast ice occur in the inshore waters.

The heavy pack ice begins to close in on the coast after about 10 September, and young ice forms along the margins of the drift ice and in any open water that may exist between the pack and the coast by mid-September.

The north-setting current in Bering Strait usually keeps the Alaskan coast ice free throughout September as far north as Cape Lisburne, but before the end of the month the Arctic ice may be expected to begin its expansion and southward movement. Before the first of October the drift ice, which earlier had been along the Siberian shore, may begin to advance around Mys Dezhneva into the western side of Bering Strait.

Ice formation and growth proceed rapidly in early October, and shipping is usually not feasible north of Bering Strait after about 10 October. Prevailing north and northeast winds pile large accumulations of floes against the Siberian shore.

Between Point Barrow and Icy Cape drift ice occasionally recedes from the coast, and young ice which forms in the open water is piled up in heavy masses along the shore when the drift ice returns. Kotzebue Sound and Bering Strait are closed during middle and late October by fast ice. By late October or early November, ice closes Norton Sound. As the formation of ice continues toward midwinter, the ice limit gradually progresses southward until at its maximum, navigation north of the Pribilof Islands becomes impossible for ships other than icebreakers."

The mechanism by which the fast ice and pack ice moves offshore in late summer and back again in late fall is not completely understood. The one obvious factor is the wind, mentioned above. For example there appears to be a correlation between surface wind direction at Barter Island and the offshore movement of the pack ice. It generally remains tight along the shore when the predominant flow is from the west, and moves offshore during most of the time the surface winds prevail from the east. Although the prevailing wind direction at Barrow is easterly all during the year, the general flow pattern from the Bering Sea to the Chukchi Sea develops a strong southerly component from August through September. Because the land area on which Barrow is located is the most northern extension of the Arctic coast it is usually the last to become free of ice, and the first where it returns. Air and surface water temperatures, warmed by the long hours of radiation during the summer also contribute to the breakup of the ice in late summer. The relatively warm water flowing out of the many streams along the coast coupled with air temperatures now above freezing, melt the fast ice along the shore. Because the northward flow of water through the Bering Strait is warmer than the area into which it is flowing, open leads often occur off the northwest coast of Alaska during all months of the year.

Breakup: The breakup begins in June, with scattered leads along the coast from Cape Lisburne to Barrow. At about the same time, a lead begins to form at the mouth of the MacKenzie River. The western lead gradually widens though the portion from Icy Cape to Barrow may be very narrow, or at times non-existent, even well into July. The MacKenzie River lead normally expands rapidly and extends westward along the Alaskan Coast to about the Colville River Delta by mid or late July. The narrow strip of shorefast ice normally disintegrates by late June or early July. The area of Coast from Point Barrow eastward to the Colville Delta is normally the last to break-up because of the prevailing east-northeasterly wind flow. However, even that area of Coast normally has a good lead by the end of July or early August and remains open, with intermittent closures, until about the third week in September.

Any section of the Coast from Cape Lisburne to Demarcation Point is subject to closure by the ice pack during the so-called navigable season which normally extends from early August to September 20. However, such closures are dependent on the anomalies of wind flow and normally do not last more than a few days before a wind shift re-establishes some open water along the coast line.

The variation in ice conditions from season to season is great.

Freezeup: The freezeup cycle begins in late September. At this time the multi-year ice in the polar pack begins to move down on the coast under the influence of prevailing northerly and northeasterly winds. Continual pressure from these northerly winds results in large pressure ridges forming along the shore line and extending many miles east and west.

Figure 14 shows average ice concentrations[7] for the months of March through November and Figure 15 gives a comparison of polar ice pack boundaries along the Alaskan and Canadian coasts for the years 1953 through 1956.

SEA SURFACE CIRCULATION

The pattern of sea surface currents[7] shown in Figure 17a was derived from records of vessel and ice island drifts in the Arctic Ocean. In general, the surface circulation is a slow westerly drift, forming a large clockwise gyre over the major part of the region. This pattern of circulation is largely the result of the anticyclonic system of winds which prevail. Examination of the drift records of icebound vessels and ice islands reveals the course to be irregular, indicating that the surface flow is extremely variable.

In the Bering Strait, the flow is mostly from the Bering Sea into the Arctic Ocean (Figure 17b). A southerly flow occurs at times in the western part of the strait, but it is comparatively insignificant.

WATER TEMPERATURE

The only sea surface temperatures[7] available are for the month of August. This is because of the difficulty of making measurements when the surface is covered with ice. Average August temperatures are shown in Figure 18.

FREEZEUP - BREAKUP

By combining data compiled by the U.S. Navy[7] and the National Oceanic and Atmospheric Administration[2], several years of record are available for locations along the northwest and northern Arctic coasts. Average and extreme dates are shown in Table 20.

REFERENCES

1. United States Department of Interior, Geological Survey Alaska Map E.

2. Climatography of the United States, Nos. 11-48, 86-43 and 60-49, Climatological Data, Alaska, and Local Climatological Data Summaries (published and unpublished). NOAA, Environmental Data Service.

3. Original data prepared by USAF Air Weather Service, 5th Weather Wing.

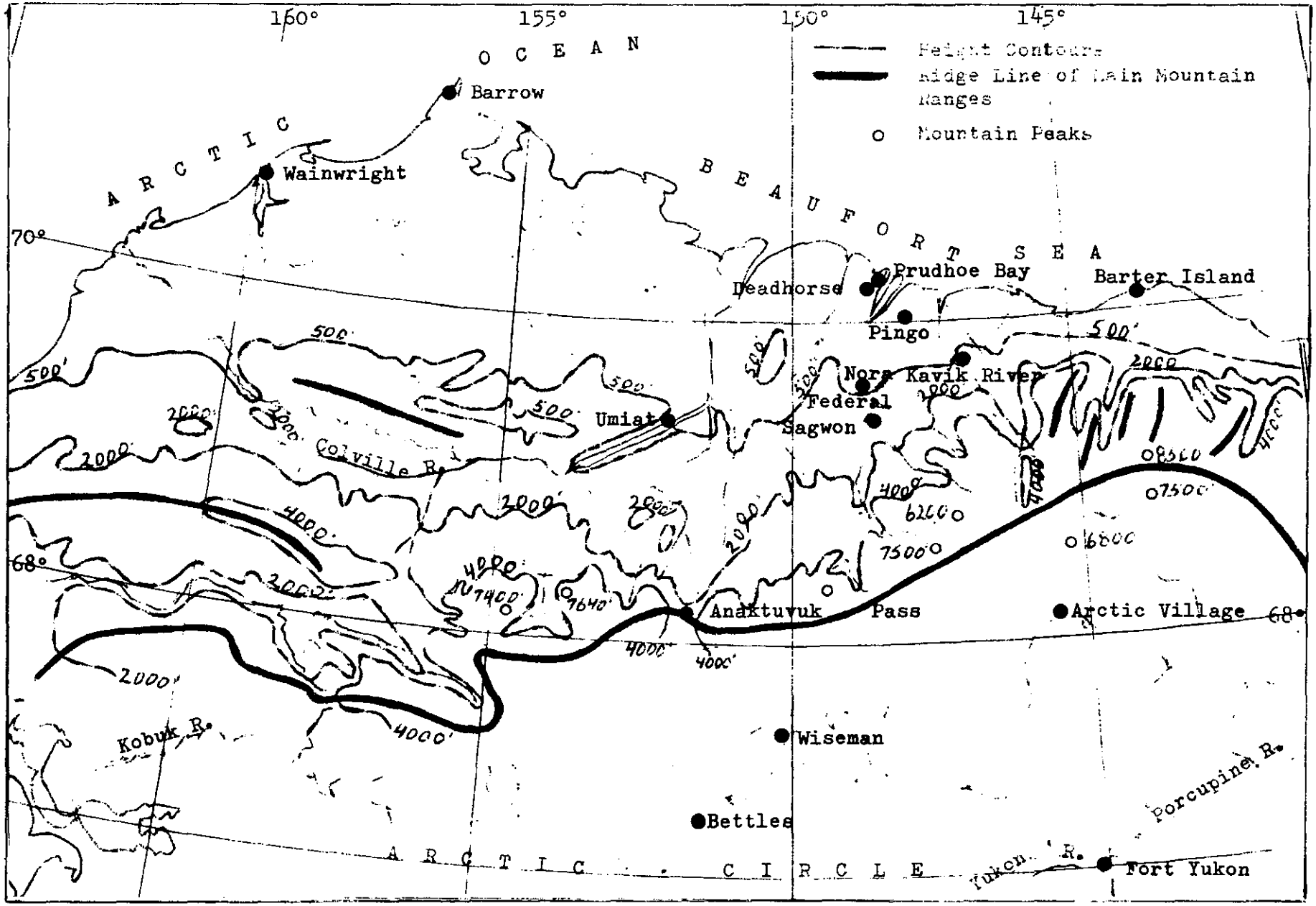
4. USAF Air Weather Service "Uniform Summary of Surface Weather Observations" for Barrow, Barter Island and Umiat.

5. U.S. Navy Hydrographic Office, "Climatological and Oceanographic Atlas for Mariners," Volume II. North Pacific Ocean, 1961. Prepared by Office of Climatology and Oceanographic Analysis Division, U.S. Weather Bureau.

6. "Tides at Point Barrow" found in "The Northern Engineer" Vol. 2, No. 2, summer, 1970. Published by the Arctic Institute of Environmental Engineering, University of Alaska, College.

7. "Oceanographic Atlas of the Polar Seas" Part II Arctic. U.S. Navy Hydrographic Office Washington D.C.

The 500 foot contour is considered to be the beginning of the foothills.



NORTH SLOPE OF ALASKA

Figure 1

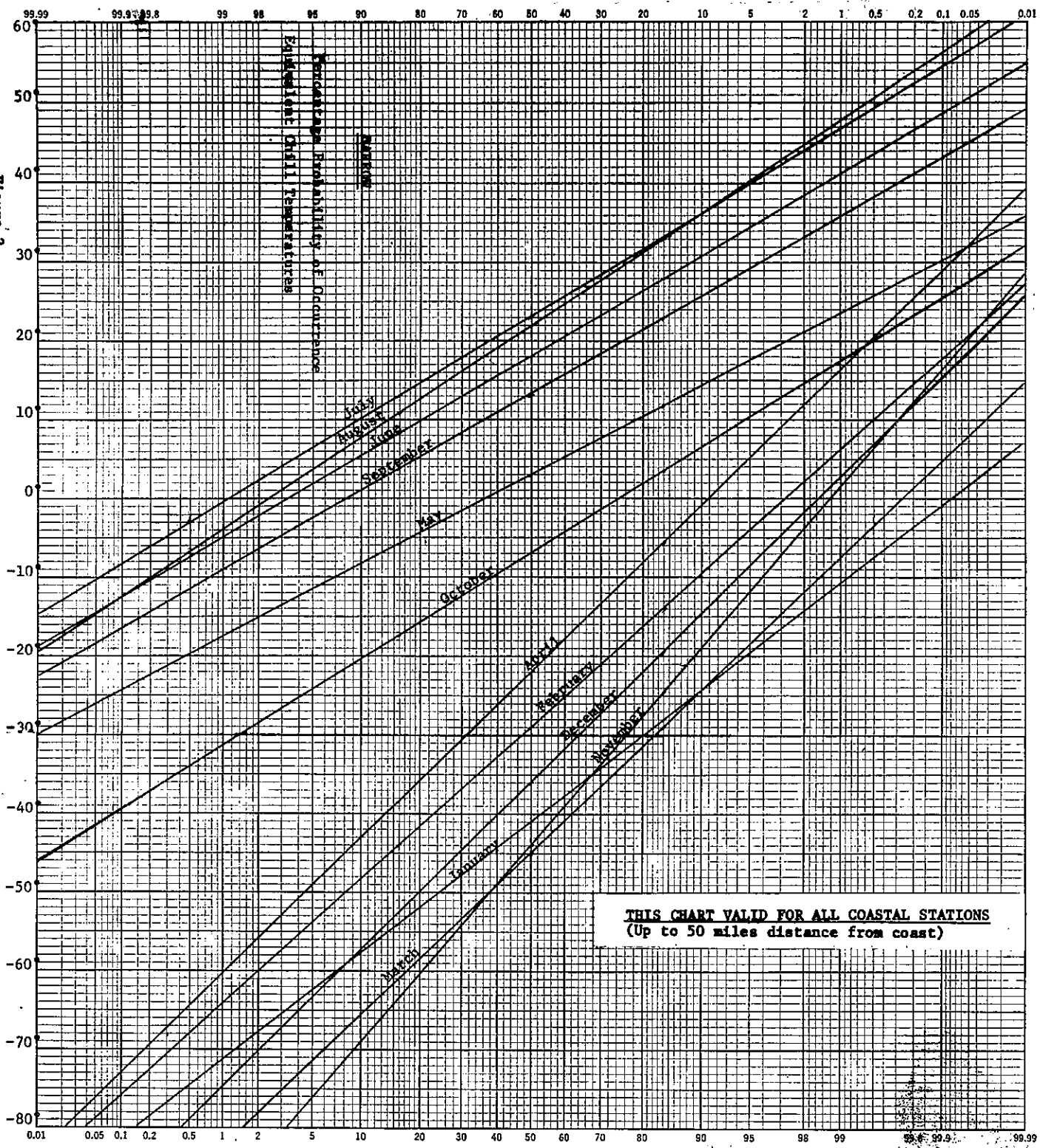

Temperature Probability of Occurrence
Fahrenheit Chill Temperature
Percent
99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80
0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99
July
August
June
September
May
October
April
February
December
November
January
March
THIS CHART VALID FOR ALL COASTAL STATIONS
(Up to 50 miles distance from coast)

Figure 2

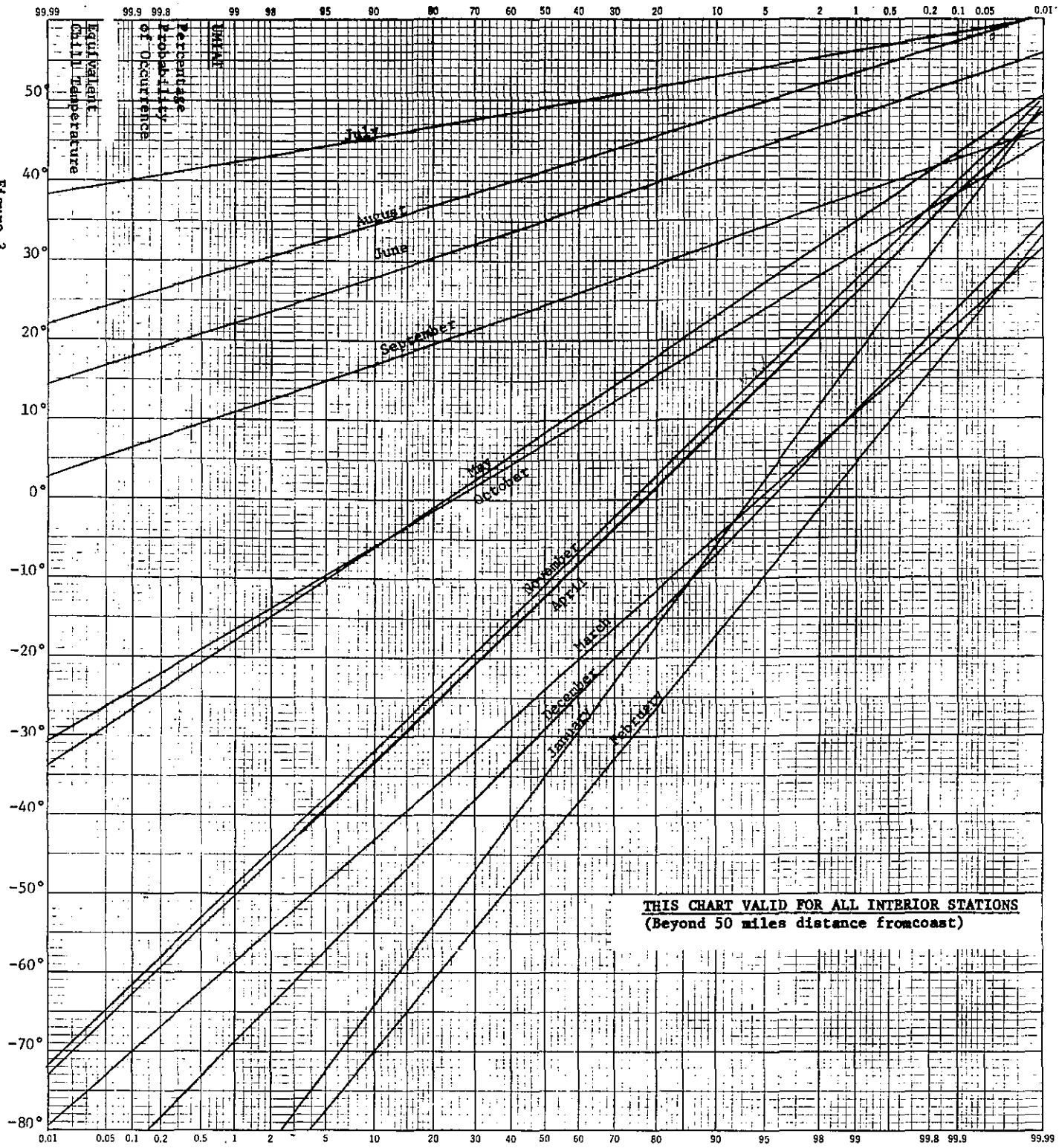

Equivalent Chill Temperature
Percentage Probability of Occurrence
WIND
July
August
June
September
May
October
November
April
March
December
January
February
THIS CHART VALID FOR ALL INTERIOR STATIONS
(Beyond 50 miles distance fromcoast)

Figure 3

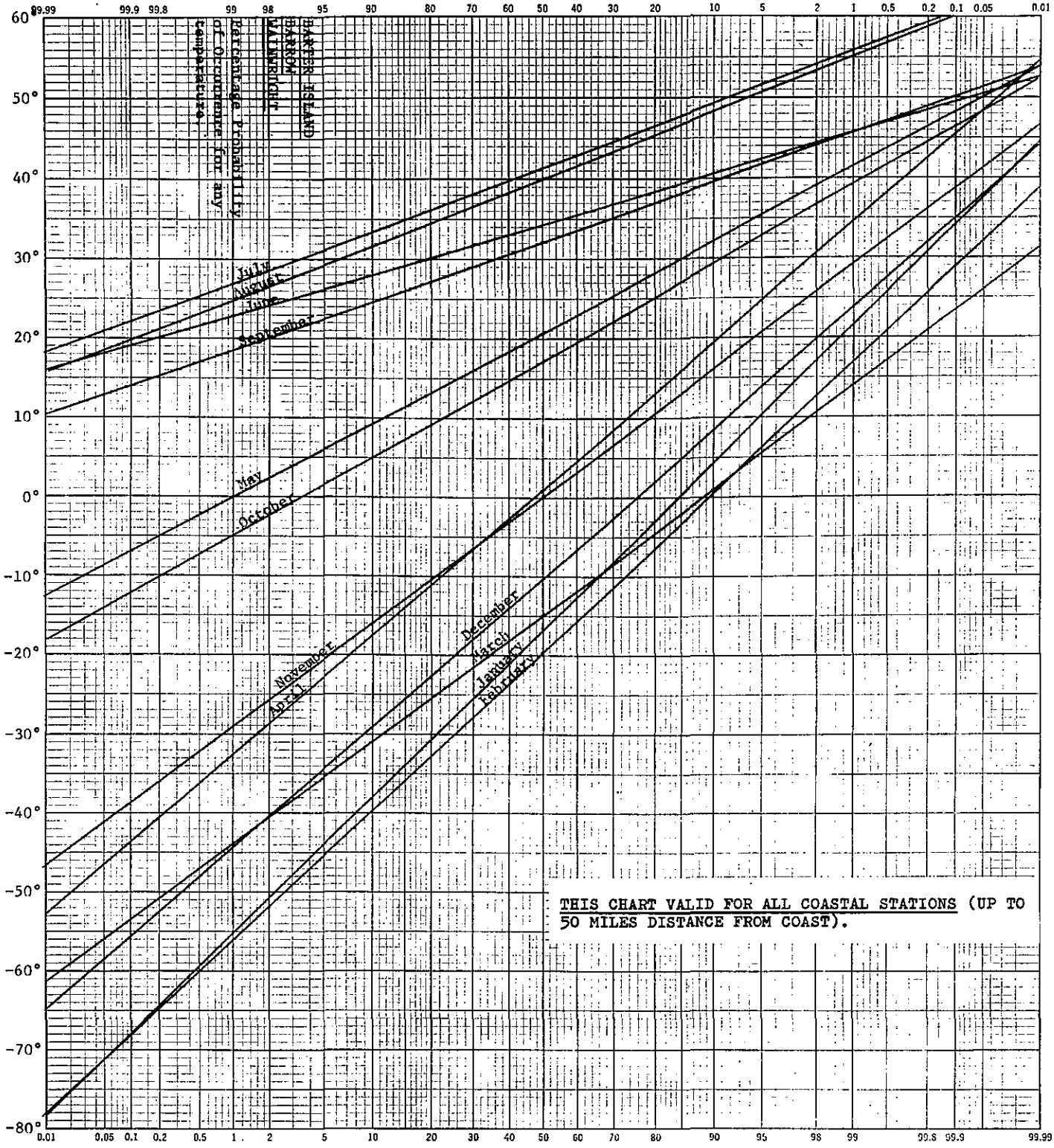

BARTER ISLAND
BARROW
Percentage Probability of Occurrence for any temperature.
July
August
June
September
May
October
November
April
December
March
January
February
THIS CHART VALID FOR ALL COASTAL STATIONS (UP TO 50 MILES DISTANCE FROM COAST).

Figure 4

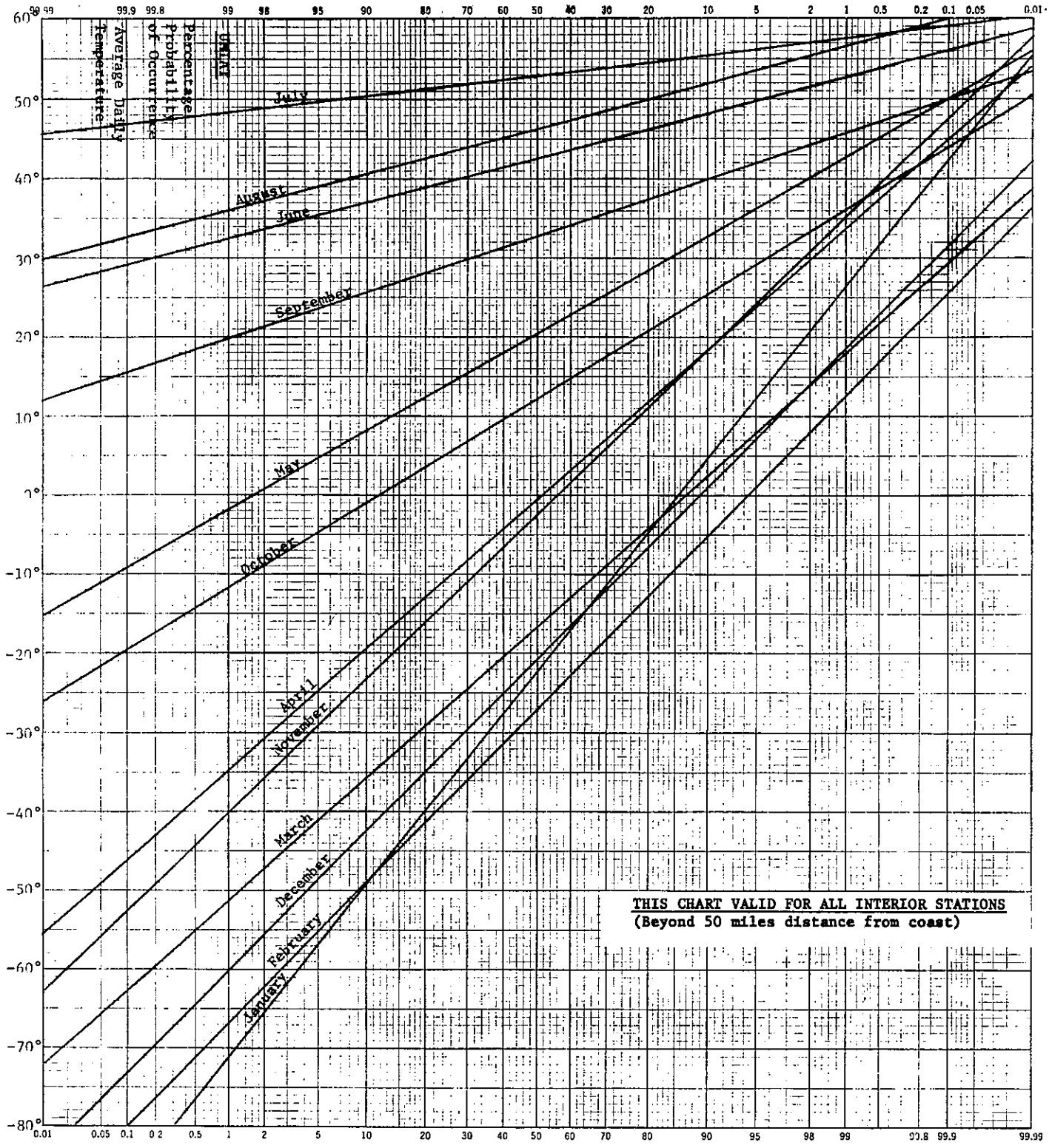

Average daily Temperature
Percentage Probability of Occurrence
UNLIKELY
July
August
June
September
May
October
April
November
March
December
February
January
THIS CHART VALID FOR ALL INTERIOR STATIONS
(Beyond 50 miles distance from coast)

Figure 5

BARTER ISLAND
VERTICAL TEMPERATURE DISTRIBUTION

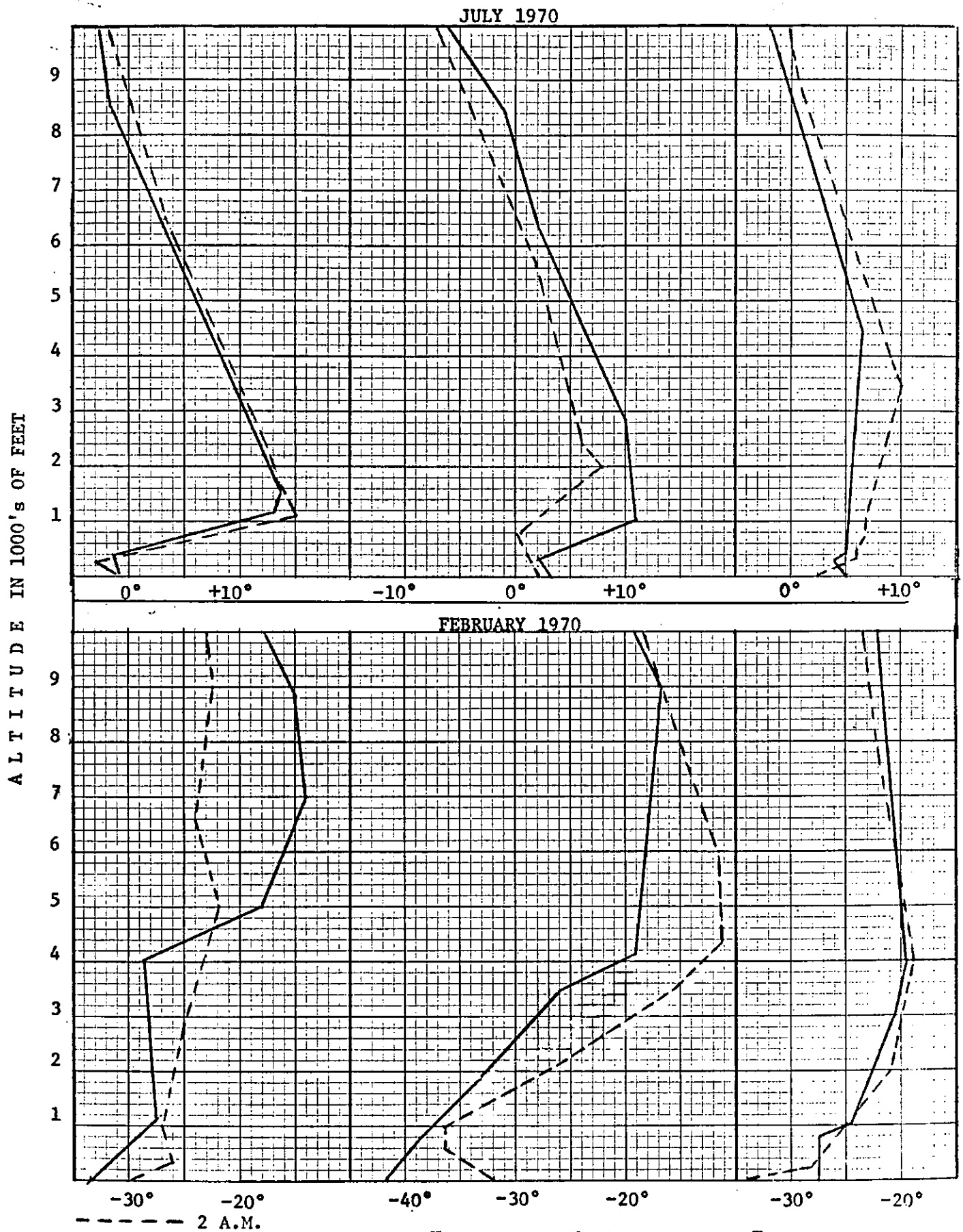


Figure 6

In the [illegible] data presented here, Prudhoe Bay is used as a "control station". The number of hours it meets certain criteria represents the whole, or 100%. A station compared to it will have a percentage frequency of occurrence value representative of the amount of time it meets the same criteria during the same hours.

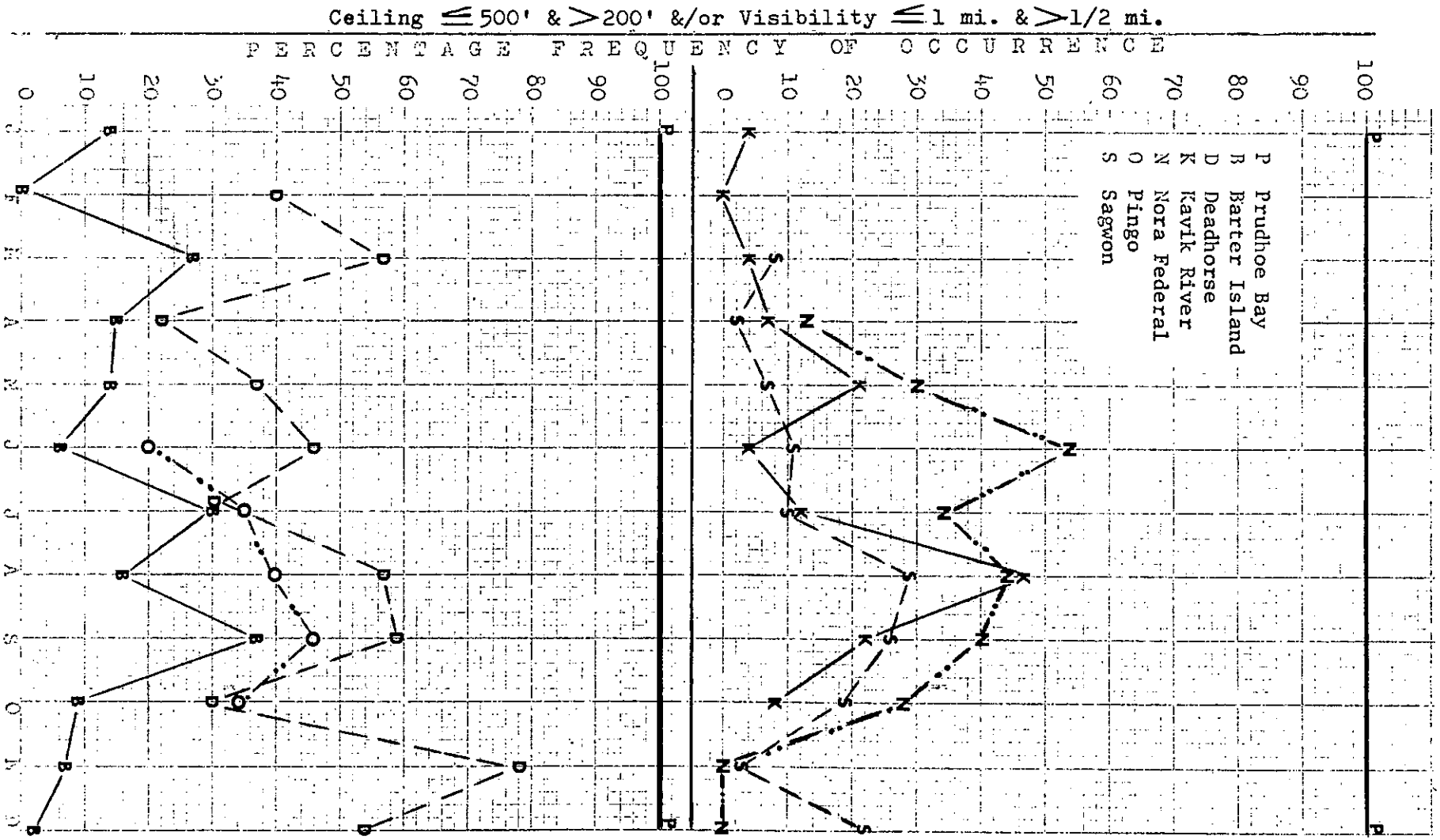


Figure 7

In the graphed data presented here, Prudhoe Bay is used as a "control station". The number of hours it meets certain criteria represents the whole, or 100%. A station compared to it will have a percentage frequency of occurrence value representative of the amount of time it meets the same criteria during the same hours.

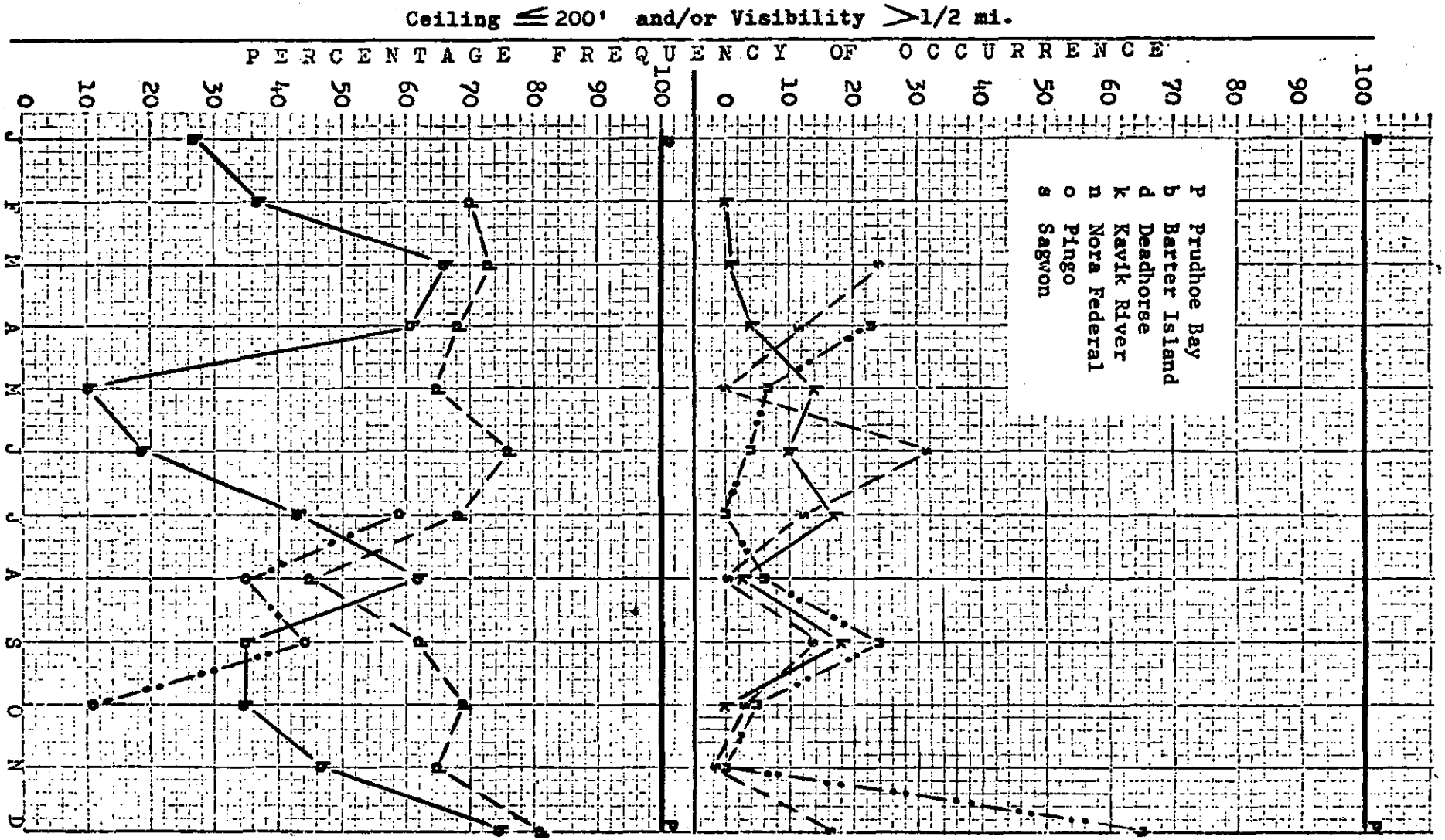


Figure 8

In the graphed data presented here, no control station is used. The percentage frequency values represent the amount of time that a particular station met the specified criteria, compared to the total time that the station operated.

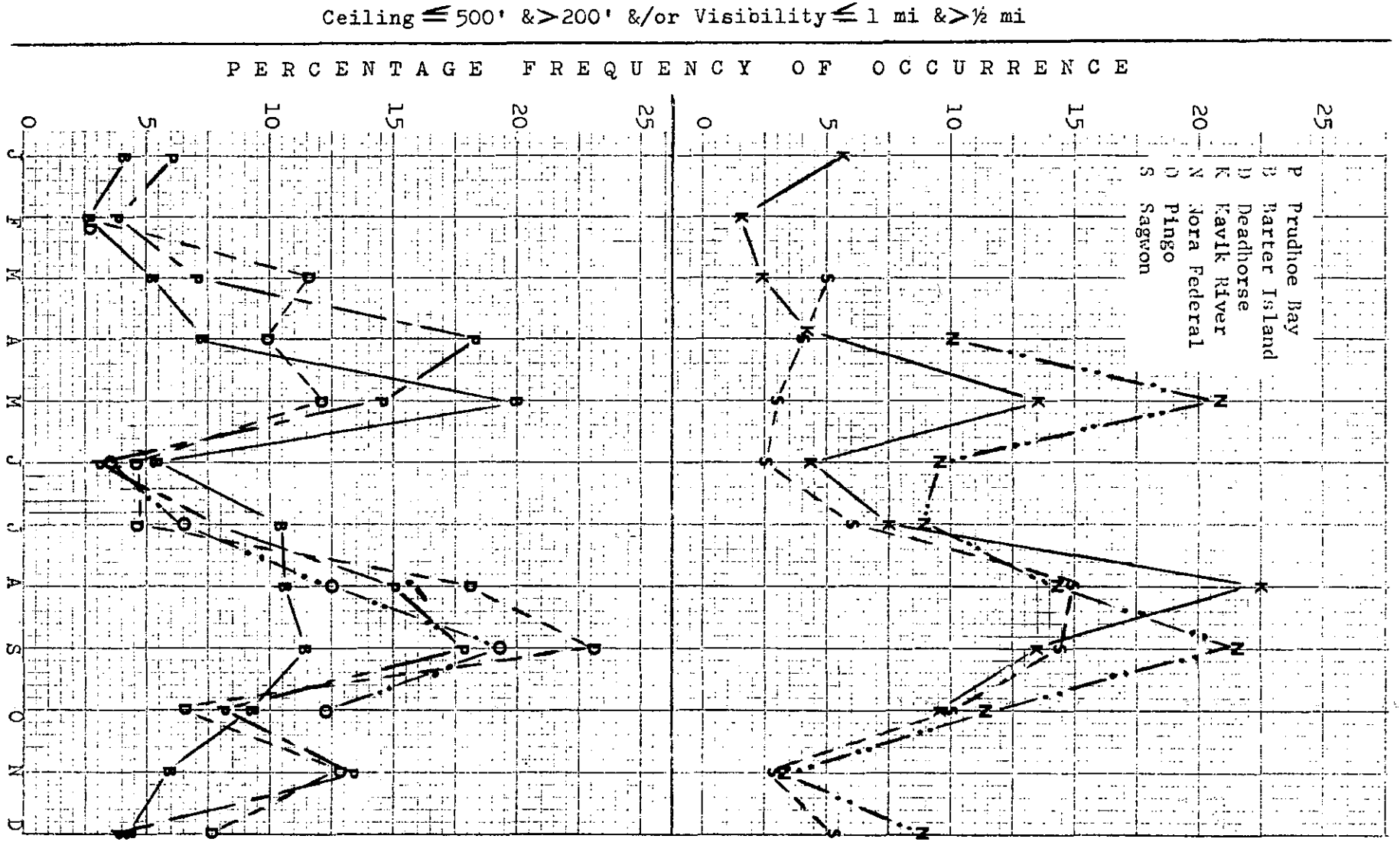


Figure 9

In the graphed data presented here, no control station is used. The percentage frequency values represent the amount of time that a particular station met the specified criteria, compared to the total time that the station operated.

Ceiling $\leq$ 200 ft. and/or Visibility $\leq$ 1/2 mi.

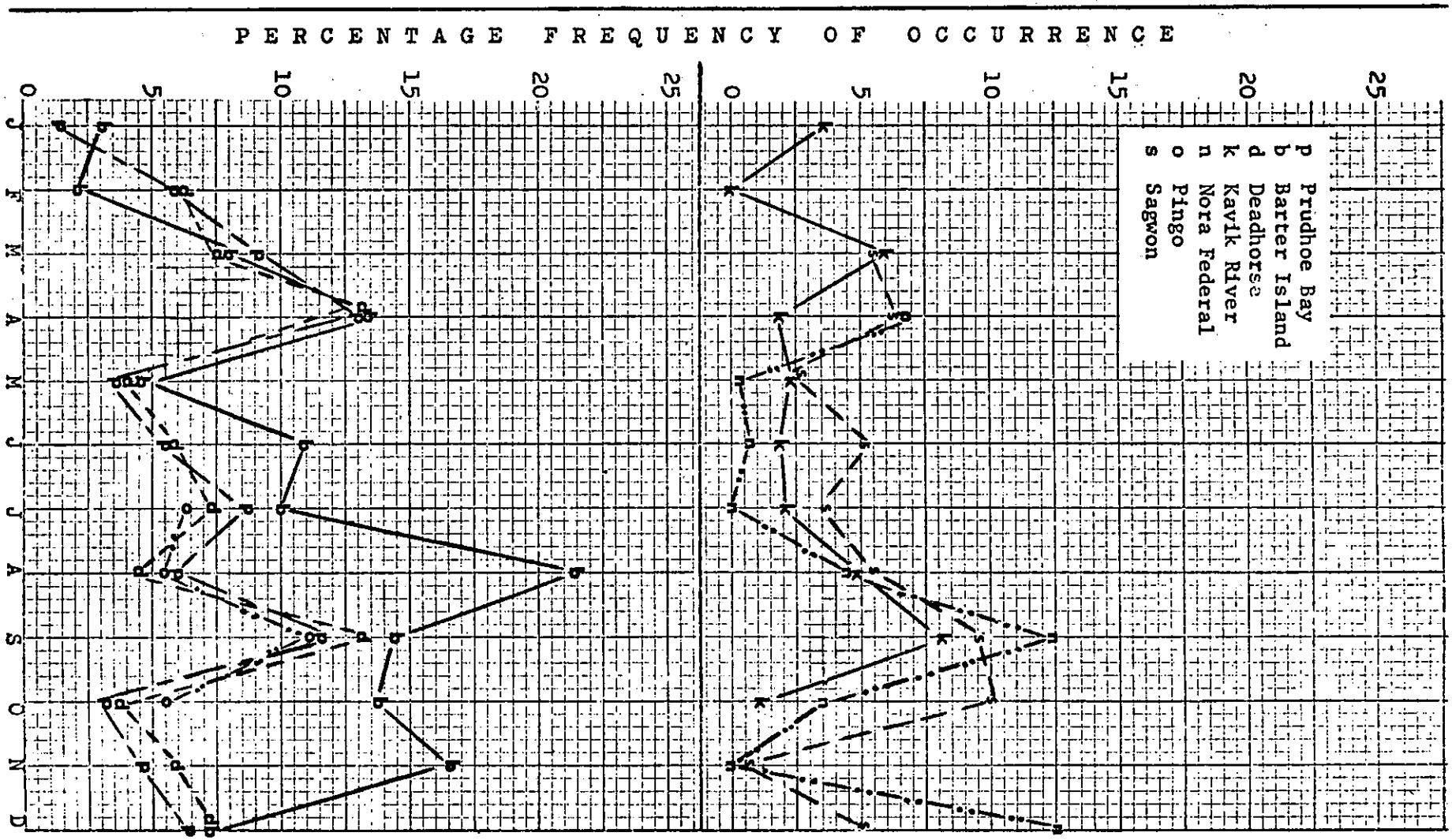


Figure 10

BARTER ISLAND

The solid line represents a 17 year average, the dashed line 1969 only.

Ceiling 500' & 200' &/or Visibility 1 mi. & ½ mi. Ceiling 200' &/or Visibility 1/2 mi.

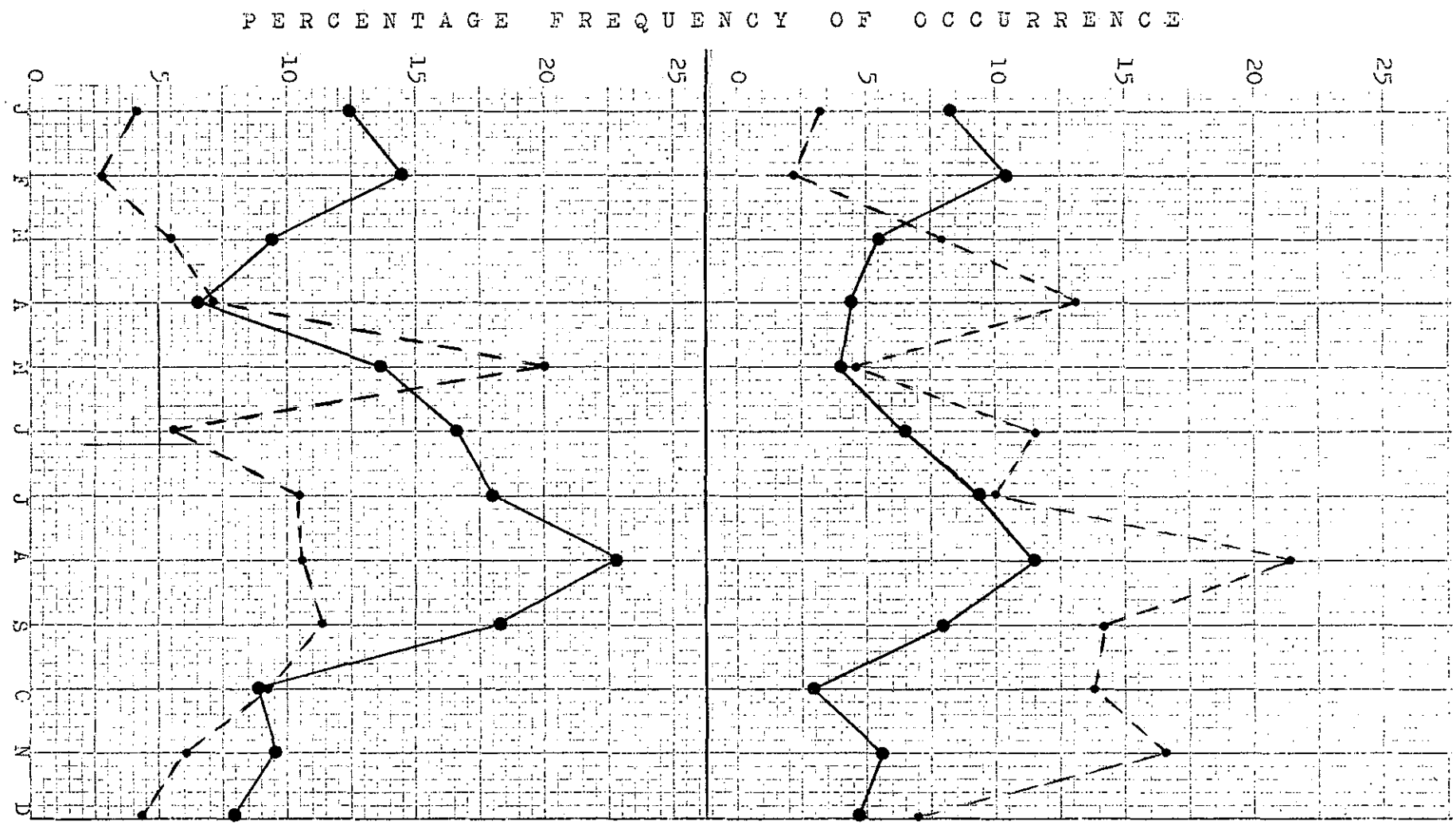


Figure 11

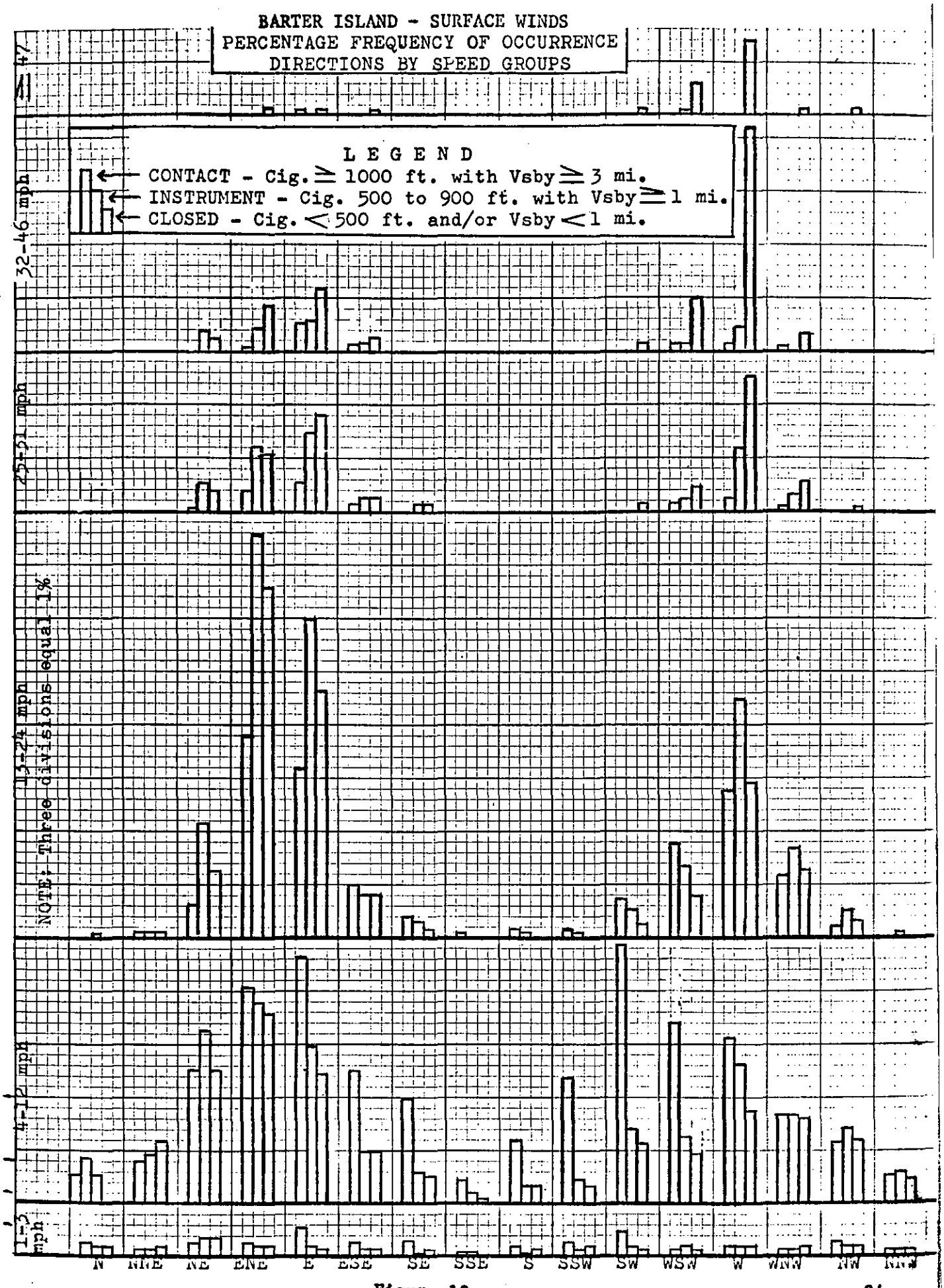
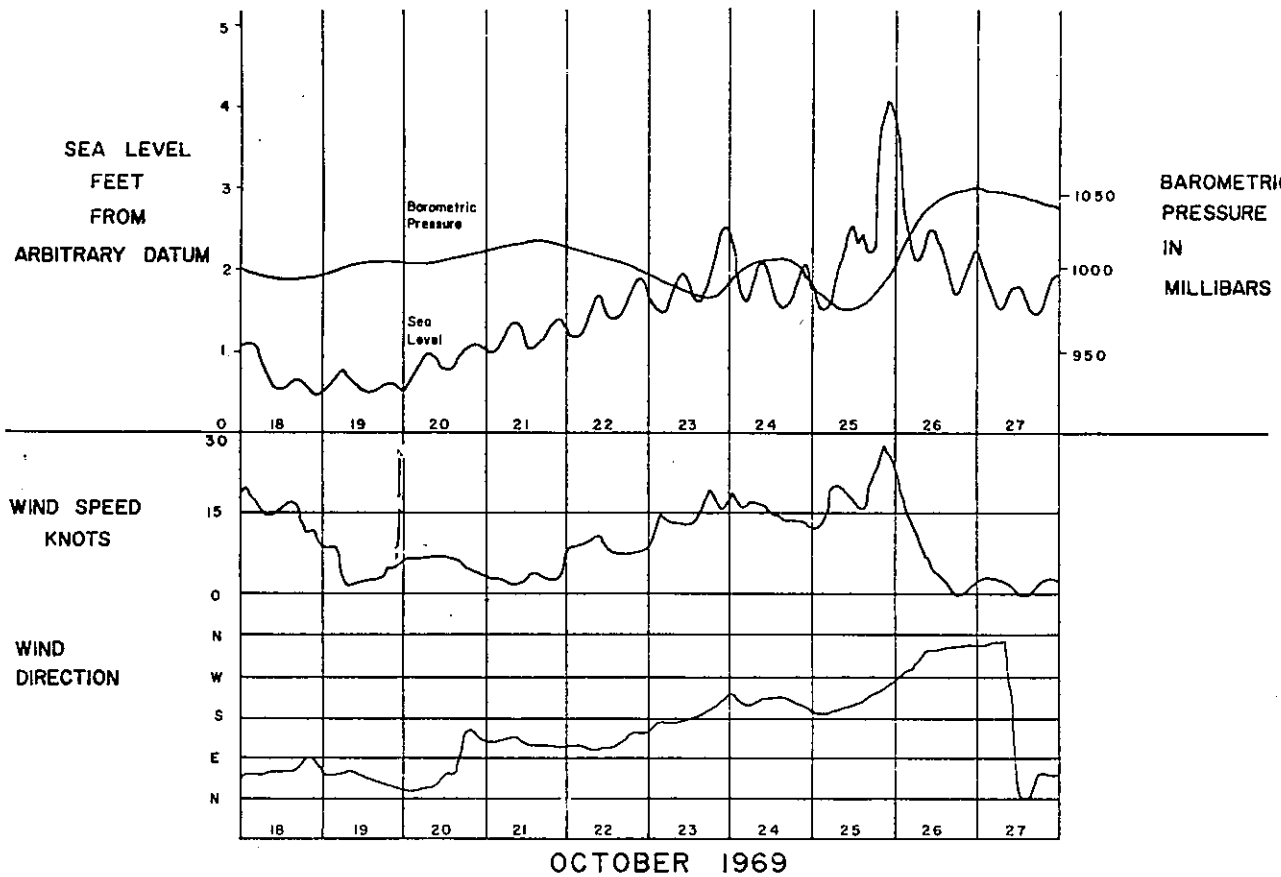

BARTER ISLAND - SURFACE WINDS
PERCENTAGE FREQUENCY OF OCCURRENCE
DIRECTIONS BY SPEED GROUPS
LEGEND
CONTACT - Cig. ≥ 1000 ft. with Vsby ≥ 3 mi.
INSTRUMENT - Cig. 500 to 900 ft. with Vsby ≥ 1 mi.
CLOSED - Cig. < 500 ft. and/or Vsby < 1 mi.
≥ 47
32-46 mph
25-31 mph
13-24 mph
NOTE: Three divisions equal 1%
4-12 mph
1-3 mph
N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW

Figure 12



SEA LEVEL RECORDS FROM ELUIKAK PASS, POINT BARROW, AND WIND AND PRESSURE RECORDS FROM THE WEATHER BUREAU, POINT BARROW, ALASKA

Figure 13

AVERAGE CONCENTRATION AND EXTREMES OF ICE CONDITIONS

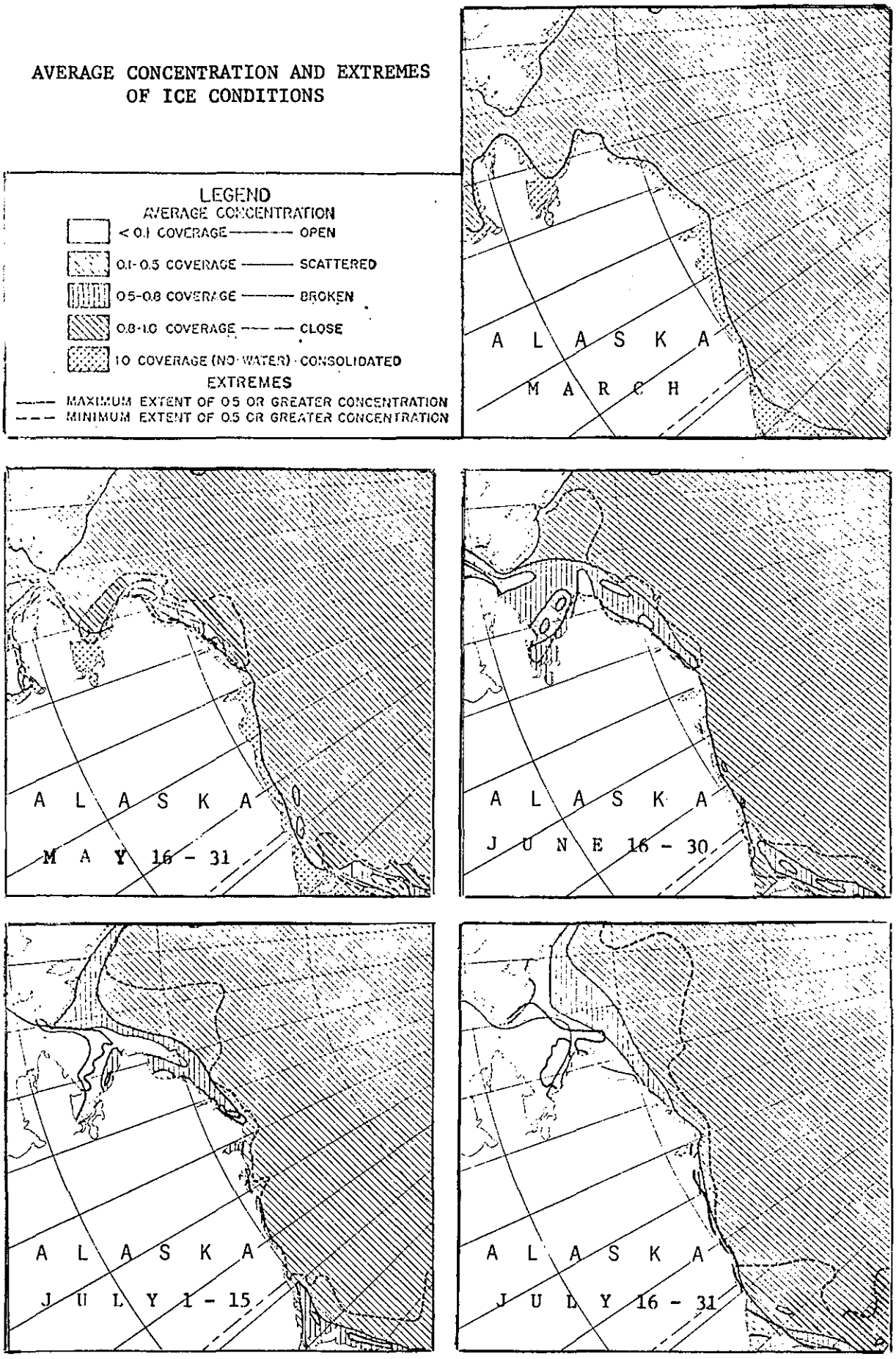


Figure 14

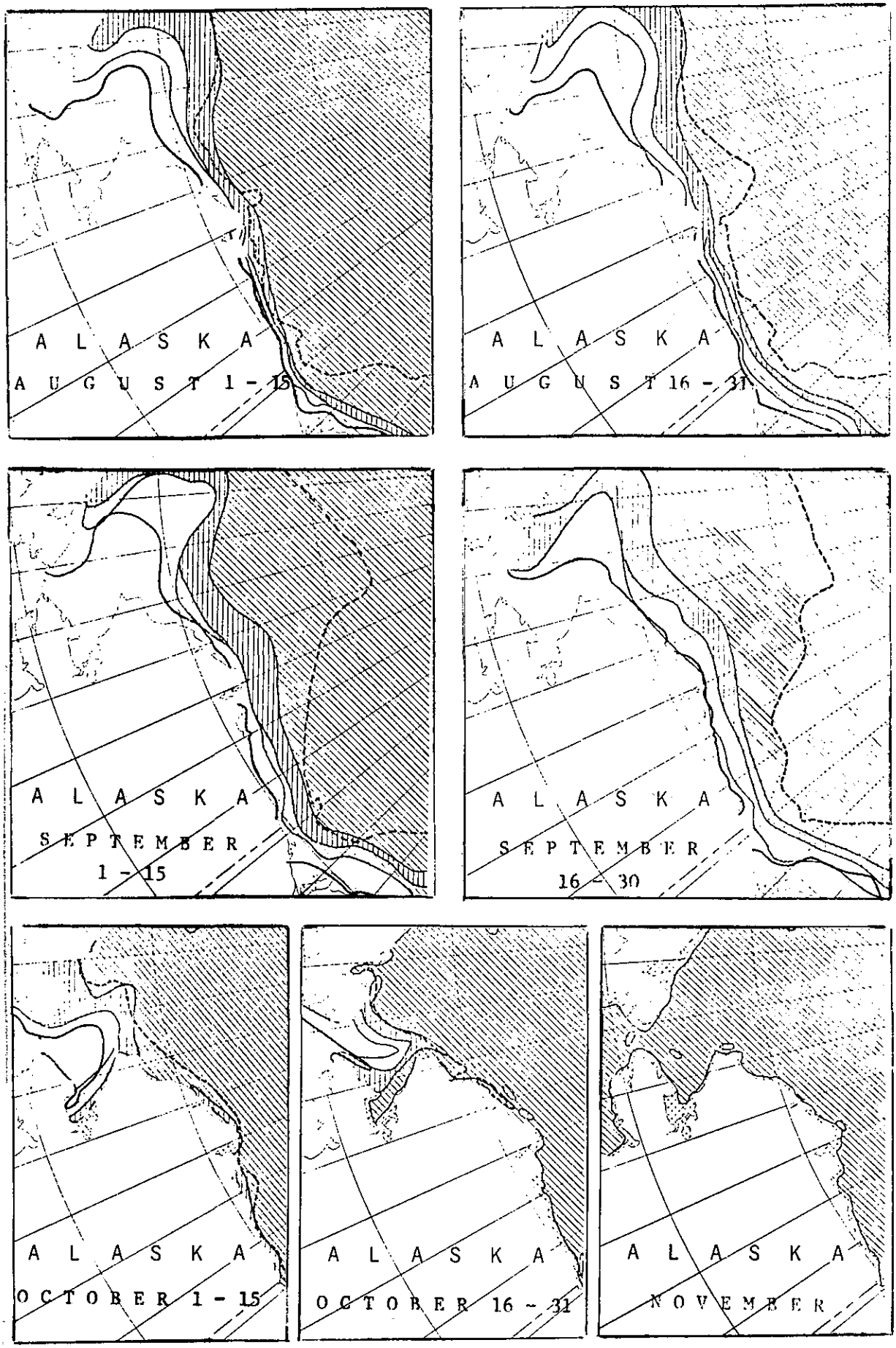


Figure 14 (contd)

COMPARISONS OF POLAR ICE PACK BOUNDARIES ALONG THE ALASKAN AND CANADIAN COASTS FOR THE YEARS 1953 THROUGH 1956

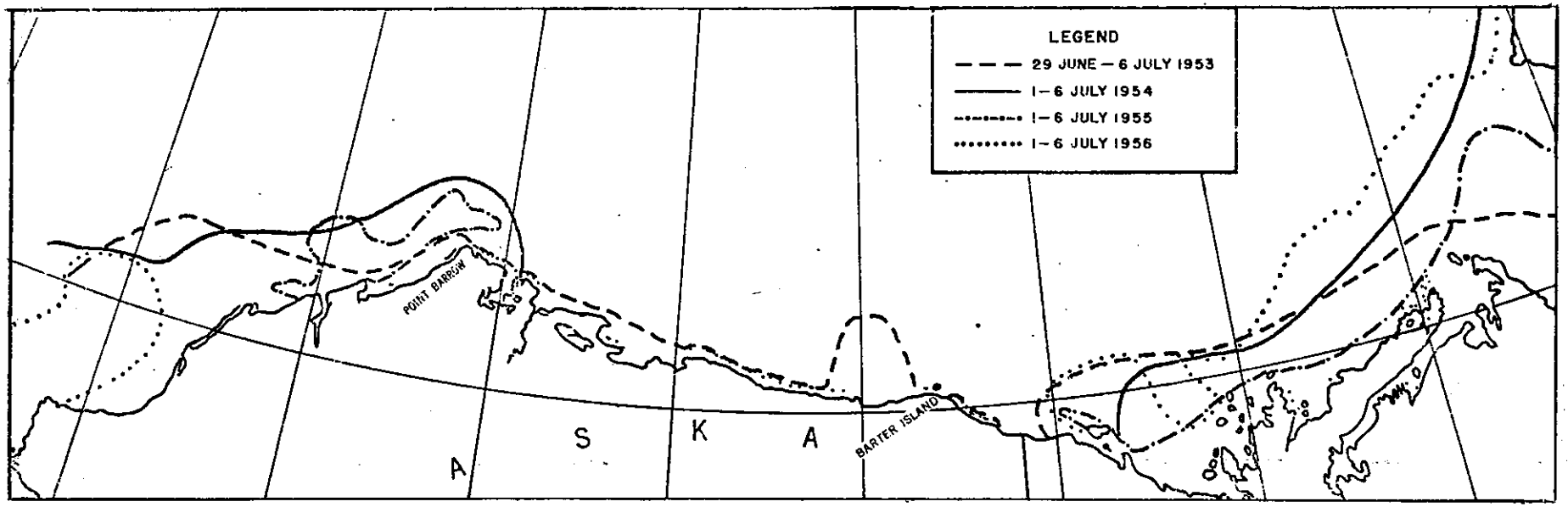


Figure 15

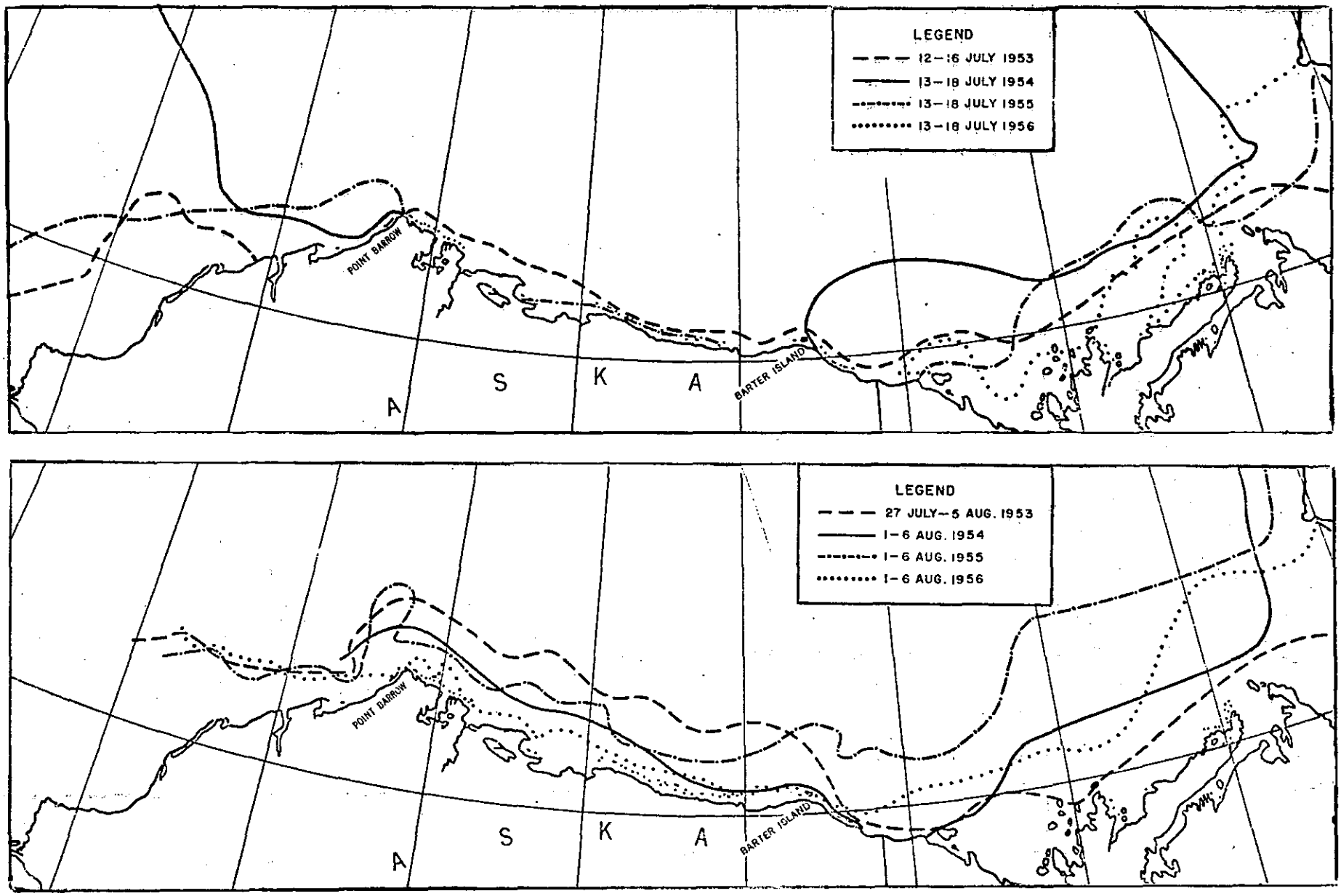


Figure 15 (Contd)

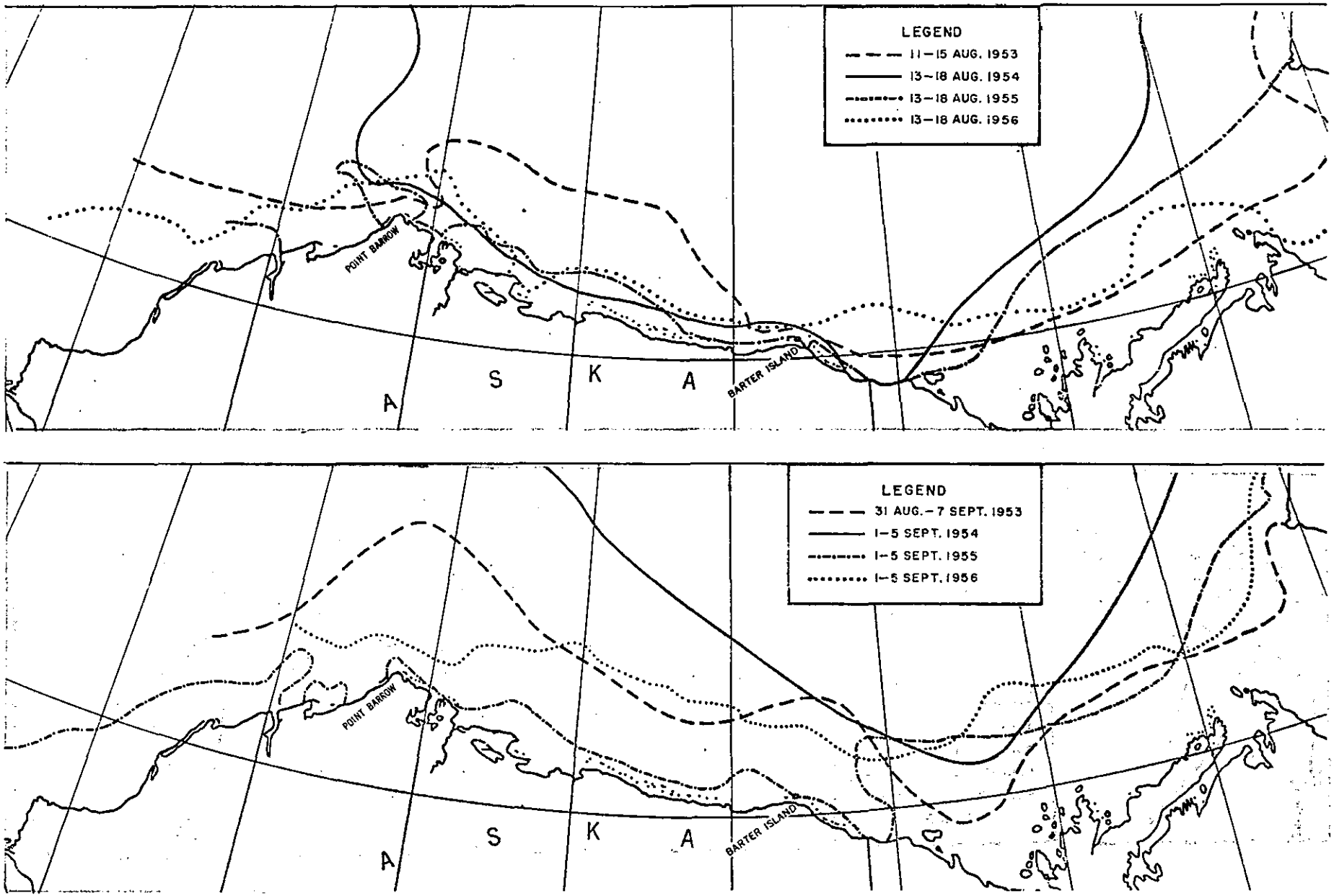


Figure 15 (contd)

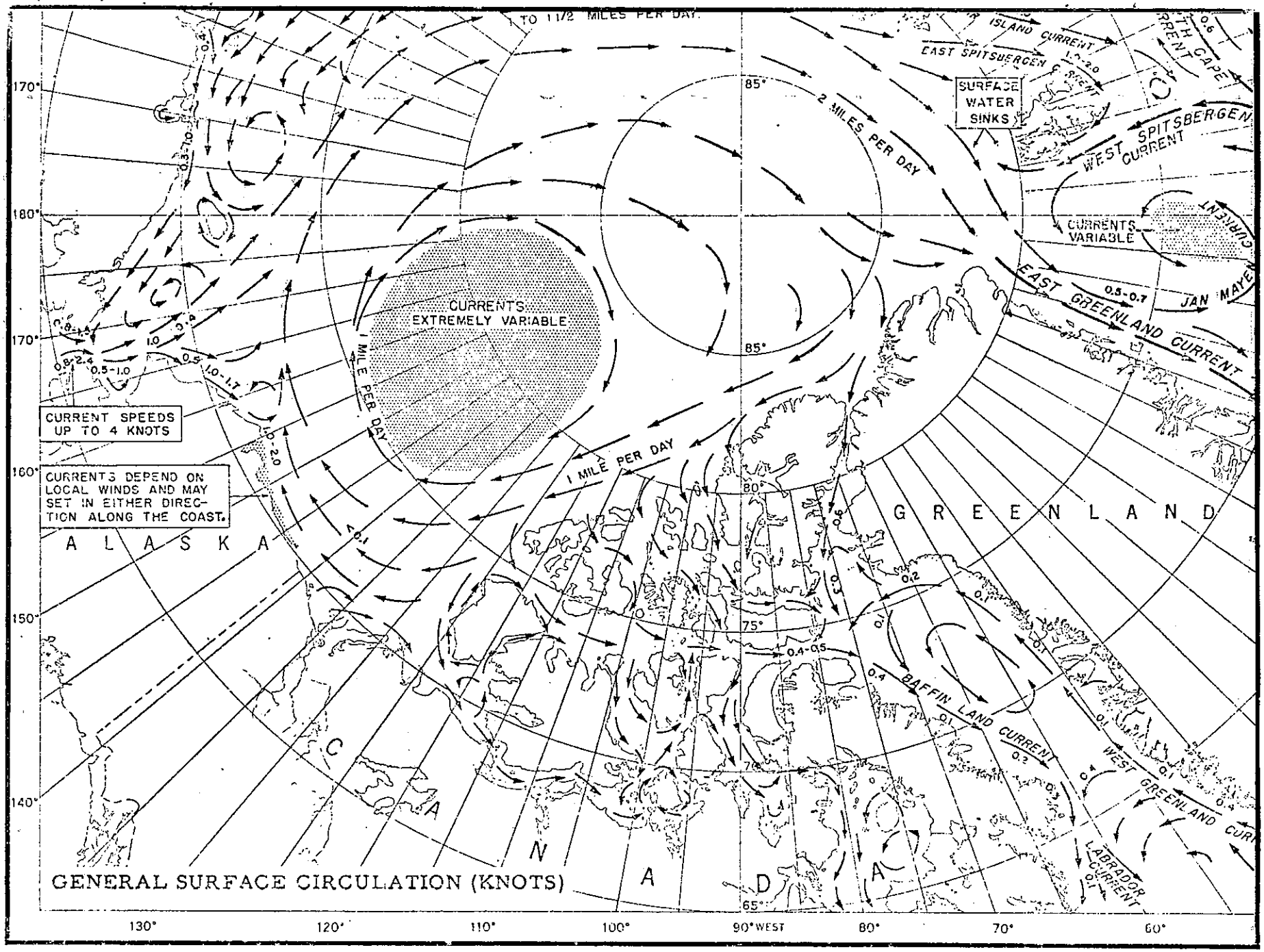
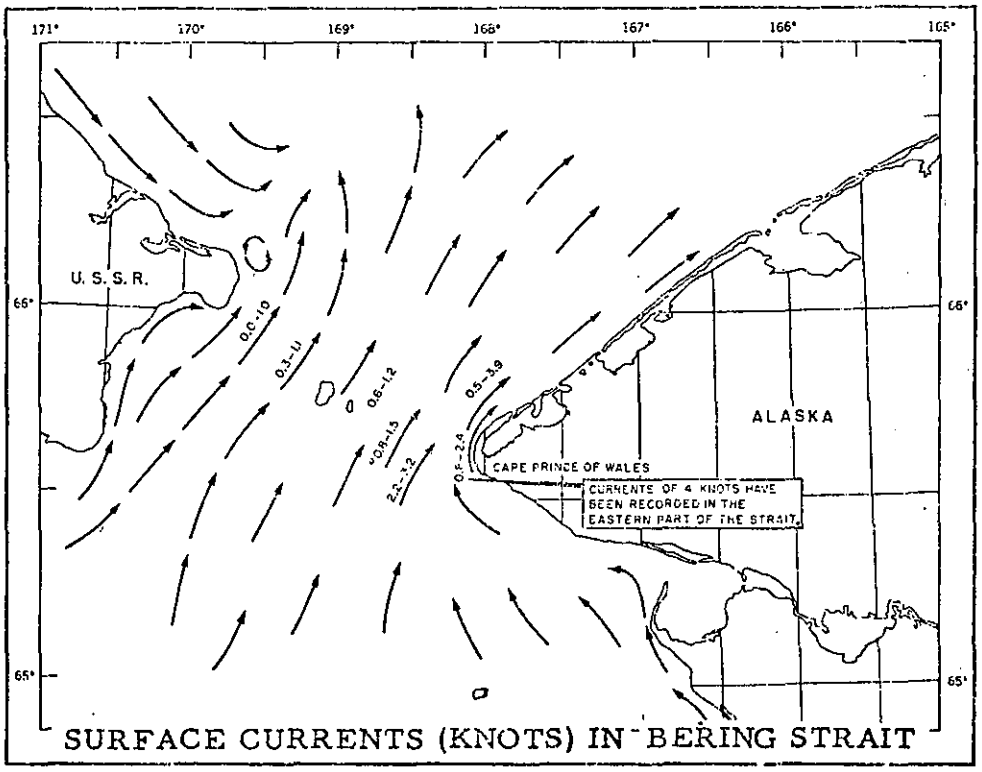
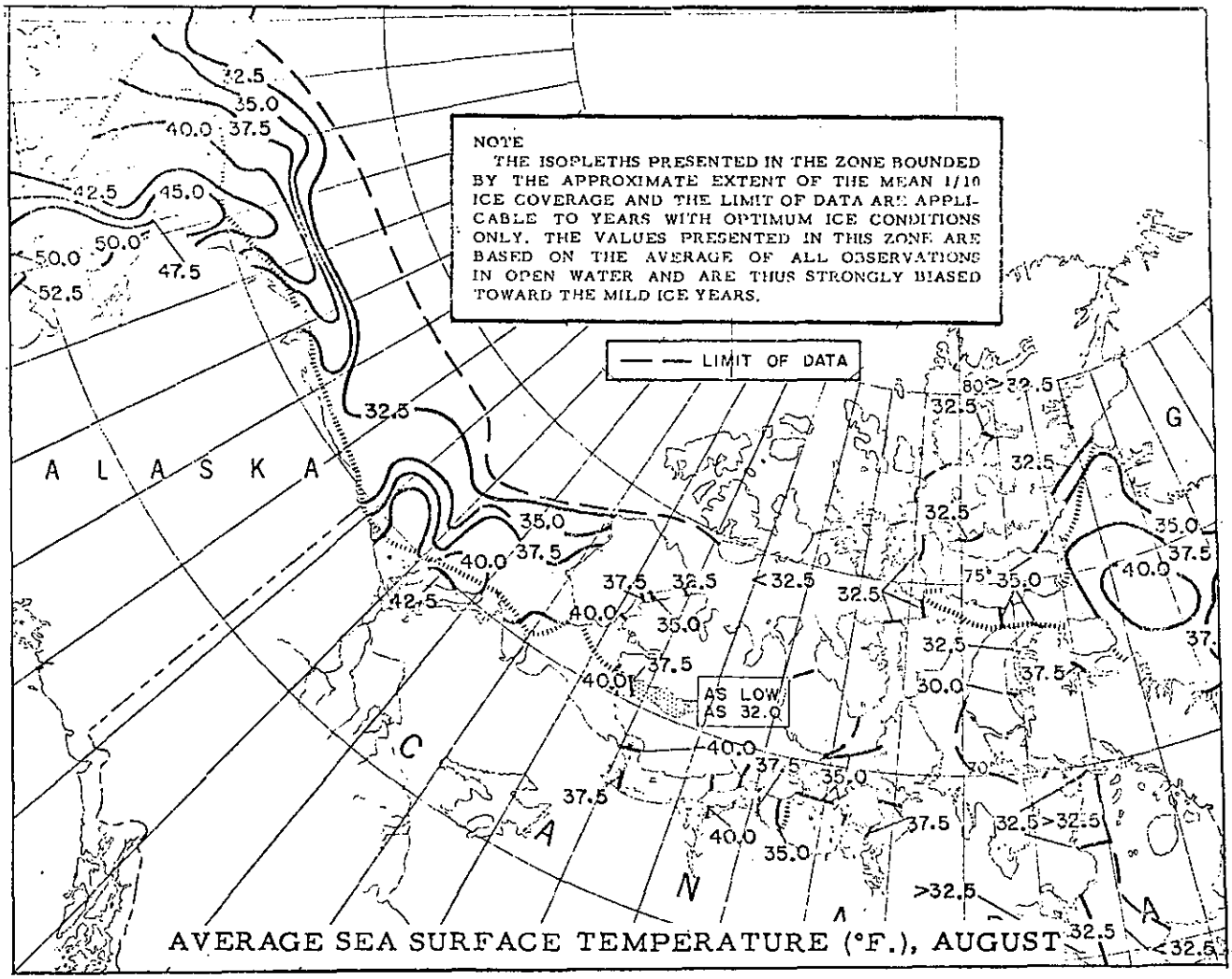

TO 1 1/2 MILES PER DAY
2 MILES PER DAY
1 MILE PER DAY
1 MILE PER DAY
CURRENTS EXTREMELY VARIABLE
CURRENTS VARIABLE
CURRENT SPEEDS UP TO 4 KNOTS
CURRENTS DEPEND ON LOCAL WINDS AND MAY SET IN EITHER DIRECTION ALONG THE COAST.
SURFACE WATER SINKS
ISLAND CURRENT
EAST SPITSBERGEN CURRENT
WEST SPITSBERGEN CURRENT
EAST GREENLAND CURRENT
JAN MAYEN CURRENT
BAFFIN LAND CURRENT
WEST GREENLAND CURRENT
LABRADOR CURRENT
ALASKA
GREENLAND
CANADA
GENERAL SURFACE CIRCULATION (KNOTS)
170°
180°
170°
160°
150°
140°
85°
85°
80°
75°
70°
65°
130°
120°
110°
100°
90° WEST
80°
70°
60°

Figure 16a

Figure 16b



SURFACE CURRENTS (KNOTS) IN BERING STRAIT



AVERAGE SEA SURFACE TEMPERATURE (°F.), AUGUST

Figure 17

COOLING POWER OF WIND EXPRESSED AS "EQUIVALENT CHILL TEMPERATURE"

MPH WIND	TEMPERATURE (°F) → 0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30	-31	-32	-33	-34	-35
5	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39	-40
6	-8	-9	-10	-11	-12	-13	-14	-15	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30	-31	-32	-33	-34	-35	-36	-37	-39	-40	-41	-42	-43	-44	-45
7	-11	-12	-13	-14	-15	-16	-17	-19	-20	-22	-23	-24	-25	-26	-27	-28	-29	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39	-41	-42	-43	-45	-46	-47	-48	-49	-50
8	-14	-15	-16	-17	-18	-19	-21	-22	-23	-25	-27	-28	-29	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39	-40	-41	-42	-43	-45	-47	-48	-50	-51	-52	-53	-54	-55
9	-17	-18	-19	-20	-21	-22	-24	-26	-27	-29	-31	-32	-33	-34	-35	-36	-37	-38	-39	-40	-41	-42	-43	-44	-45	-46	-47	-49	-51	-53	-55	-56	-57	-58	-59	-60
10	-20	-21	-22	-23	-24	-25	-27	-29	-31	-33	-35	-36	-37	-38	-39	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-65
11	-22	-23	-24	-25	-26	-28	-30	-32	-34	-35	-37	-38	-39	-40	-41	-42	-43	-44	-45	-47	-48	-49	-50	-51	-52	-53	-55	-57	-59	-61	-62	-63	-64	-65	-66	-68
12	-24	-25	-26	-27	-29	-31	-33	-34	-35	-37	-39	-40	-41	-42	-43	-44	-45	-47	-48	-50	-51	-52	-53	-54	-55	-56	-58	-59	-61	-63	-64	-65	-66	-67	-69	-71
13	-26	-27	-28	-30	-32	-34	-36	-37	-38	-39	-41	-42	-43	-44	-45	-46	-47	-50	-52	-53	-54	-55	-56	-57	-58	-59	-61	-62	-63	-65	-66	-67	-68	-70	-72	-74
14	-28	-29	-30	-33	-35	-37	-39	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49	-52	-54	-56	-57	-58	-59	-60	-61	-62	-63	-64	-65	-66	-68	-69	-71	-73	-75	-77
15	-30	-32	-34	-36	-38	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-65	-66	-67	-68	-69	-70	-72	-74	-76	-78	-80
16	-31	-33	-35	-37	-39	-41	-42	-43	-44	-45	-46	-47	-49	-50	-51	-52	-54	-56	-58	-59	-61	-62	-64	-65	-66	-67	-68	-69	-70	-71	-72	-74	-75	-77	-79	-81
17	-32	-34	-36	-38	-40	-42	-43	-44	-45	-46	-47	-48	-50	-52	-53	-54	-56	-58	-60	-61	-62	-64	-66	-67	-68	-69	-70	-71	-72	-73	-74	-76	-77	-78	-80	-82
18	-33	-35	-37	-39	-41	-43	-44	-45	-46	-47	-48	-49	-51	-52	-54	-56	-58	-60	-61	-62	-63	-65	-67	-69	-70	-71	-72	-73	-74	-75	-76	-78	-79	-80	-82	-83
19	-34	-36	-38	-40	-42	-44	-45	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-66	-68	-70	-72	-73	-74	-75	-76	-77	-78	-80	-81	-82	-83	-84
20	-35	-37	-39	-41	-43	-45	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-65	-67	-69	-71	-73	-75	-76	-77	-78	-79	-80	-81	-82	-83	-84	-85
21	-37	-38	-40	-42	-44	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-66	-67	-68	-70	-72	-74	-76	-78	-79	-80	-81	-82	-83	-84	-85	-86	-87
22	-39	-40	-42	-44	-46	-47	-48	-49	-50	-52	-54	-56	-57	-59	-61	-62	-63	-64	-66	-68	-69	-70	-72	-74	-76	-77	-79	-80	-81	-83	-84	-85	-86	-87	-88	-89
23	-41	-42	-43	-45	-47	-48	-49	-50	-52	-54	-56	-58	-59	-60	-62	-63	-64	-66	-68	-70	-71	-72	-74	-76	-77	-78	-80	-81	-82	-84	-86	-87	-88	-89	-90	-91
24	-43	-44	-45	-47	-48	-49	-50	-52	-54	-56	-58	-59	-60	-61	-62	-63	-65	-67	-69	-71	-73	-74	-76	-77	-78	-79	-81	-82	-84	-86	-88	-89	-90	-91	-92	-93
25	-45	-46	-47	-48	-49	-50	-52	-54	-56	-58	-60	-61	-62	-63	-64	-65	-67	-69	-71	-73	-75	-76	-77	-78	-79	-80	-82	-84	-86	-88	-90	-91	-92	-93	-94	-95
26	-46	-47	-48	-49	-50	-51	-53	-55	-57	-59	-61	-62	-63	-64	-65	-66	-68	-70	-72	-74	-76	-77	-78	-79	-80	-82	-83	-85	-87	-89	-91	-92	-93	-94	-95	-96
27	-47	-48	-49	-50	-51	-52	-54	-56	-58	-60	-62	-63	-64	-65	-66	-67	-69	-71	-73	-75	-77	-78	-79	-80	-81	-83	-84	-86	-88	-90	-92	-93	-94	-95	-96	-97
28	-48	-49	-50	-51	-52	-53	-55	-57	-59	-61	-63	-64	-65	-66	-67	-68	-70	-72	-74	-76	-78	-79	-80	-81	-82	-84	-85	-87	-89	-91	-93	-94	-95	-96	-97	-98
29	-49	-50	-51	-52	-53	-54	-56	-58	-60	-62	-64	-65	-66	-67	-68	-69	-71	-73	-75	-77	-79	-80	-81	-82	-83	-84	-86	-88	-90	-92	-94	-95	-96	-97	-98	-99
30	-50	-51	-52	-53	-54	-55	-57	-59	-61	-63	-65	-66	-67	-68	-69	-70	-72	-74	-76	-78	-80	-81	-82	-83	-84	-85	-87	-89	-91	-93	-95	-96	-97	-98	-99	-100
31	-51	-52	-53	-54	-55	-56	-58	-60	-62	-64	-65	-66	-68	-69	-70	-71	-73	-75	-76	-78	-80	-81	-83	-83	-84	-86	-88	-90	-92	-94	-96	-97	-98	-99	-100	-101
32	-52	-53	-54	-55	-56	-57	-59	-60	-62	-64	-65	-67	-69	-70	-71	-72	-74	-76	-77	-78	-80	-82	-83	-85	-86	-87	-89	-91	-93	-95	-97	-98	-99	-100	-101	-102
33	-53	-54	-55	-56	-57	-58	-60	-61	-62	-64	-65	-67	-69	-71	-72	-73	-75	-76	-77	-79	-80	-82	-84	-86	-87	-88	-90	-92	-94	-96	-98	-99	-100	-101	-102	-103
34	-54	-55	-56	-57	-58	-59	-60	-62	-63	-64	-65	-67	-69	-71	-73	-74	-76	-77	-78	-79	-80	-83	-85	-87	-88	-89	-91	-93	-95	-97	-99	-100	-101	-102	-103	-104
35	-55	-56	-57	-58	-59	-60	-61	-62	-63	-64	-65	-67	-69	-71	-73	-75	-76	-77	-78	-79	-80	-83	-86	-88	-89	-90	-92	-94	-96	-98	-100	-101	-102	-103	-104	-105
36	-56	-57	-58	-59	-60	-61	-62	-63	-64	-65	-66	-68	-70	-71	-73	-75	-76	-78	-79	-80	-81	-82	-83	-84	-87	-91	-93	-95	-97	-99	-101	-102	-103	-104	-105	-106
37	-57	-58	-59	-60	-61	-62	-63	-64	-65	-66	-67	-68	-70	-72	-74	-75	-76	-79	-80	-81	-82	-83	-85	-88	-90	-92	-94	-96	-98	-100	-102	-103	-104	-105	-106	-107
38	-58	-59	-60	-61	-62	-63	-64	-65	-66	-67	-68	-69	-71	-73	-74	-75	-76	-80	-81	-82	-83	-84	-86	-88	-91	-93	-95	-97	-99	-101	-103	-104	-105	-106	-107	-108
39	-59	-60	-61	-62	-63	-64	-65	-66	-67	-68	-69	-70	-71	-73	-74	-75	-78	-81	-82	-83	-84	-85	-87	-89	-92	-94	-96	-98	-100	-102	-104	-105	-106	-107	-108	-109
40	-60	-61	-62	-63	-64	-65	-66	-67	-68	-69	-70	-71	-72	-73	-74	-75	-78	-79	-82	-83	-85	-87	-89	-91	-93	-95	-97	-99	-101	-103	-105	-106	-107	-108	-109	-110

INCREASING DANGER
Exposed flesh may freeze within one minute.

GREAT DANGER →
Exposed flesh may freeze within thirty seconds.

Table 1

WINDCHILL CHART											
	LOCAL TEMPERATURE (°F)										
WIND SPEED (MPH)	32	23	14	5	-4	-13	-22	-31	-40	-49	-58
	EQUIVALENT TEMPERATURE										
CALM	32	23	14	5	-4	-13	-22	-31	-40	-49	-58
5	29	20	10	1	-9	-18	-28	-37	-47	-56	-65
10	18	7	-4	-15	-26	-37	-48	-59	-70	-81	-92
15	13	-1	-13	-25	-37	-49	-61	-73	-85	-97	-109
20	7	-6	-19	-32	-44	-57	-70	-83	-96	-109	-121
25	3	-10	-24	-37	-50	-64	-77	-90	-104	-117	-130
30	1	-13	-27	-41	-54	-68	-82	-97	-109	-123	-137
35	-1	-15	-29	-43	-57	-71	-85	-99	-113	-127	-142
40	-3	-17	-31	-45	-59	-74	-87	-102	-116	-131	-145
45	-3	-18	-32	-46	-61	-75	-89	-104	-118	-132	-147
50	-4	-18	-33	-47	-62	-76	-91	-105	-120	-134	-148
LITTLE DANGER FOR PROPERLY CLOTHED PERSONS			CONSIDERABLE DANGER			VERY GREAT DANGER					
DANGER FROM FREEZING OF EXPOSED FLESH											

Table 2

SNOWFALL													PRECIPITATION													
MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE OF DAILY AMOUNTS										Inches			MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE OF DAILY AMOUNTS							Inches				
CATEGORIES BELOW ARE IN INCHES													CATEGORIES BELOW ARE IN INCHES												
Month	None	Trace	0.1-0.4	0.5-1.4	1.5-2.4	2.5-3.4	3.5-4.4	4.5-6.4	≧6.5	Mean Monthly Snowfall	Maximum Monthly Snowfall	Mean No. Days with ≧0.1" Snowfall	Month	None	Trace	.01	.02-.05	.06-.10	.11-.25	≧.26	Mean Monthly Precipitation	Mean No. Days with Pcpn ≧.01"	Maximum Monthly	Minimum Monthly	Maximum in 24 Hrs.
J	22	56	13	8	1					3.4	9.2	6.8	J	22	56	4	12	3	3		0.31	7.0	0.88	0.05	0.24
F	24	56	16	4						2.0	4.0	5.9	F	23	56	10	8	2	1		0.20	5.8	0.36	0.03	0.20
M	24	58	15	3						2.2	2.8	5.7	M	24	62	5	8	1			0.18	4.3	0.22	0.13	0.11
A	28	51	14	6	1					4.1	14.5	6.3	A	27	50	8	9	2	3	1	0.41	6.6	1.50	0.10	0.30
M	40	50	6	3	1					1.2	3.5	3.2	M	35	53	5	6	1			0.11	4.1	0.21	T	0.07
J	75	23	2							0.9	4.4	0.8	J	31	45	5	8	5	4	2	0.53	7.3	0.94	0.20	0.36
J	98	2					none	none	none	T	T	0.0	J	41	32	4	9	6	5	3	0.84	8.3	1.68	0.14	0.62
A	84	13	1	1	1					0.4	2.0	0.8	A	22	37	8	11	7	10	5	1.20	12.8	2.26	0.49	0.80
S	45	40	11	3	1					2.0	5.8	4.5	S	20	49	9	13	6	3		0.57	9.3	0.86	0.36	0.41
O	19	44	23	11	2	1				5.6	7.9	11.4	O	17	47	13	13	7	3		0.41	11.4	0.56	0.14	0.36
N	18	50	18	10	3	1				6.7	10.7	9.6	N	18	52	9	14	4	3		0.53	9.1	1.07	0.28	0.27
D	11	61	17	11						4.7	6.5	8.9	D	11	61	8	14	4	2		0.42	8.8	0.65	0.08	0.32
Yr	41	42	11	5	1	*				33.2	14.5	63.9		24	50	7	11	4	3	1	5.71	94.8	2.26	T	0.80

* < 0.5

Precipitation includes water equivalent of snow.

Table 3

BARTER ISLAND

SNOWFALL													PRECIPITATION											
	MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE OF DAILY AMOUNTS									Inches			MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE OF DAILY AMOUNTS							Inches				
	CATEGORIES BELOW ARE IN INCHES												CATEGORIES BELOW ARE IN INCHES											
Month	None	Trace	0.1-0.4	0.5-1.4	1.5-2.4	2.5-3.4	3.5-4.4	4.5-6.4	≥ 6.5	Mean Monthly Snowfall	Maximum Monthly Snowfall	Mean No. Days with Snowfall ≥ 0.1"	Month	None	Trace	.01	.02-.05	.06-.10	.11-.25	≥ .26	Mean Monthly Precipitation	Mean No. Days with Pcpn ≥ 0.01"	Maximum Monthly	Minimum Monthly	Maximum in 24 Hrs
J	45	34	11	6	3	*	1	*	*	6.2	35.0	6.6	J	44	35	5	8	3	4	2	0.40	6.7	4.08	0.01	2.25
F	46	31	15	5	3	*				3.1	15.3	6.4	F	46	32	5	10	3	3	*	0.35	6.2	2.53	T	1.22
M	39	39	17	4	*	*				2.8	15.0	6.6	M	39	39	8	11	2	1	*	0.20	6.6	1.44	T	0.55
A	42	32	21	4	1	*	*			2.7	12.2	7.8	A	40	35	10	12	1	1	1	0.17	7.6	1.22	T	0.44
M	35	45	16	3	1	*			*	3.3	11.1	6.3	M	29	51	9	8	2	1	*	0.25	6.4	1.51	T	0.76
J	68	23	5	3	*	*				1.6	7.3	2.8	J	34	44	4	9	3	5	1	0.51	6.5	2.09	0.06	1.15
J	91	7	1	1	*					0.5	2.5	0.6	J	30	41	4	9	6	6	4	0.88	9.1	2.79	0.15	1.17
A	86	8	3	2	*	*				1.7	7.4	2.0	A	32	333	5	14	5	8	4	1.05	11.1	3.40	0.16	1.11
S	54	25	12	5	2	*	*	1	*	6.2	35.8	6.4	S	27	40	9	12	4	6	3	0.94	9.9	4.91	0.07	2.23
O	27	30	22	16	3	1	*	*	*	9.2	32.1	13.3	O	24	32	9	18	9	7	1	0.84	13.8	3.62	0.12	1.98
N	34	38	17	8	2	*	*			5.5	14.9	8.2	N	34	38	9	11	5	3	*	0.40	8.3	1.50	0.04	0.43
D	38	41	16	4	1		*	*		3.8	12.9	6.5	D	38	41	7	11	2	1	*	0.29	6.5	1.17	T	0.55
Yr	51	29	13	5	1	*	*	*	*	46.6	35.8	73.3		34	39	7	11	4	4	1	6.28	99.3	4.91	T	2.25

* < 0.5

Precipitation includes water equivalent of snow.

Table 4

BARROW

SNOWFALL

Monthly values below are percentage frequency of occurrence of daily amounts. Categories below are in inches.

Month	None	Trace	0.1–0.4	0.5–1.4	1.5–2.4	2.5–3.4	3.5–4.4	4.5–6.4	≥ 6.5	Mean Monthly Snowfall (Inches)	Maximum Monthly Snowfall (Inches)	Mean No. Days with Snowfall ≥ .01"
J	36	48	12	3	1					2.4	11.9	5.1
F	32	49	14	5						2.3	9.4	5.3
M	29	56	14	1						2.0	15.8	4.8
A	37	45	13	5	*					2.2	15.4	5.4
M	18	68	11	3						2.0	12.9	4.4
J	56	38	4	1	1					0.5	6.6	1.6
J	88	11	1	*				None	None	0.7	9.0	0.4
A	71	25	4	*						0.7	4.0	1.4
S	32	48	16	4			*			2.9	7.9	6.2
O	19	40	28	12	1					7.0	21.2	12.7
N	24	44	24	8						3.7	19.0	9.7
D	26	55	17	2						2.8	9.7	5.8
Yr	39	44	13	4	*		*			29.2	21.2	62.8

PRECIPITATION

Monthly values below are percentage frequency of occurrence of daily amounts. Categories below are in inches.

Month	None	Trace	.01	.02–.05	.06–.10	.11–.25	≥ .26	Mean Monthly Precipitation (Inches)	Mean No. Days with Pcpn ≥ 0.01"	Maximum Monthly (Inches)	Minimum Monthly (Inches)	Maximum in 24 Hrs. (Inches)
J	35	50	5	8	1	1		0.18	4.7	1.04	0.00	0.70
F	33	49	9	7	2	*		0.17	5.1	0.81	0.00	0.36
M	28	58	6	6	1	*		0.11	4.1	1.49	0.00	0.71
A	37	47	7	7	2			0.11	4.6	1.36	0.00	0.42
M	15	71	7	6	1	*		0.12	4.3	0.81	T	0.30
J	24	57	6	8	2	2	1	0.36	5.8	1.15	T	0.82
J	34	39	5	12	3	4	3	0.77	8.3	2.44	T	0.86
A	14	41	11	16	6	9	3	0.90	13.8	2.81	T	0.83
S	12	55	12	13	5	1	2	0.64	9.9	1.56	0.01	0.56
O	17	44	13	18	5	3		0.50	12.0	1.65	0.12	1.00
N	24	46	11	16	3			0.23	9.1	1.15	T	0.41
D	27	56	9	7	*	1		0.17	5.3	0.76	0.00	0.26
	25	51	8	10	3	2	1	4.26	87.0	2.81	0.00	1.00

* 0.5%

Precipitation includes water equivalent of snow.

Table 5

WIND - PERCENTAGE FREQUENCY OF OCCURRENCE BY SPEED GROUPS																				EXTREME WINDS (MPH)		
	BARROW							UMIAT							BARTER ISLAND								
	Calm	1 to 3 MPH	4 to 12 MPH	13 to 24 MPH	25 to 31 MPH	32 to 46 MPH	47 MPH and over	Calm	1 to 3 MPH	4 to 12 MPH	13 to 24 MPH	25 to 31 MPH	32 to 46 MPH	47 MPH and over	Calm	1 to 3 MPH	4 to 12 MPH	13 to 24 MPH	25 to 31 MPH	32 to 46 MPH	47 MPH and over	BARROW	UMIAT	BARTER IS.
Jan	1.3	6.1	59.6	27.5	4.0	1.4	0.1	16.4	20.4	47.2	12.6	2.1	1.0	0.2	4.7	6.4	44.0	29.2	7.4	6.8	1.4	56		75
Feb	0.8	7.5	53.4	31.2	4.7	2.3	0.1	15.2	18.2	47.0	16.5	2.3	0.7	0.2	4.0	5.3	43.2	32.8	6.9	6.2	1.7	58		65
Mar	1.2	5.8	60.3	30.9	1.7	0.1	0	19.9	19.6	50.2	10.0	0.4	0	0	4.1	6.7	44.9	32.8	6.5	4.2	0.8	58		77
Apr	1.0	4.6	57.2	33.1	3.8	0.3	0	16.3	17.5	49.4	15.3	0.9	0.5	0	6.1	6.4	47.0	31.2	5.6	3.5	0.2	52		52
May	1.1	3.1	52.3	41.9	1.5	0.1	0	9.2	15.7	50.1	24.6	0.4	0	0	3.4	6.4	48.3	36.7	3.6	1.6	0	43		55
Jun	0.9	2.5	54.9	40.4	1.3	0	0	8.7	14.4	54.3	21.6	0.8	0.2	0	4.8	6.2	53.9	33.1	1.6	0.3	0	38		38
Jul	1.0	3.6	52.5	42.0	0.9	0	0	14.6	14.7	55.4	14.7	0.6	0	0	5.5	5.8	56.6	30.6	1.3	0.2	0	56		40
Aug	0.6	2.7	53.6	37.7	4.2	1.2	0	16.7	16.5	54.5	12.1	0.2	0	0	3.7	5.5	52.8	32.8	3.7	1.5	0.1	47		46
Sep	1.0	3.1	46.1	46.4	3.1	0.3	0	16.1	18.2	51.5	13.9	0.4	0	0	4.6	5.9	47.4	34.3	5.1	2.2	0.4	56		78
Oct	0.8	2.7	49.2	40.6	5.5	1.2	0	27.9	21.2	40.6	9.3	1.0	0	0	3.7	4.5	40.2	33.9	9.8	7.5	0.4	55		58
Nov	0.3	3.8	43.4	42.2	6.9	3.2	0.2	23.7	22.0	38.3	12.9	2.1	0.9	0.1	4.6	5.9	42.0	31.0	9.0	6.6	0.8	63		67
Dec	1.4	6.9	50.4	38.0	2.8	0.5	0	18.2	21.6	48.8	10.0	1.1	0.3	0.1	3.9	6.8	45.9	31.6	6.9	4.0	1.0	70		75
Yr.	0.9	4.4	52.7	37.7	3.4	0.9	*	16.9	18.3	48.9	14.5	1.0	0.3	0.1	4.4	6.0	47.2	32.5	5.6	3.7	0.6	70		78

DATA NOT AVAILABLE

Table 6

UMIAT

WIND DIRECTION
(PERCENTAGE FREQUENCY OF OCCURRENCE)

	J	F	M	A	M	J	J	A	S	O	N	D
N	1.8	1.2	1.5	2.7	2.9	4.7	4.4	3.1	3.3	1.7	1.9	1.5
NNE	.5	.5	.9	2.1	4.5	3.1	5.1	5.0	4.6	4.1	2.8	2.0
NE	2.9	4.6	4.9	9.6	14.4	18.0	14.8	11.1	15.3	7.5	7.9	5.9
ENE	1.5	1.9	2.9	4.8	12.2	12.6	8.6	9.4	10.6	5.2	6.7	2.6
E	6.4	8.9	11.9	11.2	29.4	24.6	16.3	14.5	16.0	12.6	7.5	8.6
ESE	.7	1.2	1.2	1.6	2.2	2.4	2.0	2.5	4.1	1.3	1.3	.9
SE	.8	.8	.8	1.4	1.2	2.0	1.2	1.6	1.5	1.0	.9	.8
SSE	.3	.2	.3	.1	.1	.3	.7	.6	.7	.3	.2	.1
S	.8	.8	.5	.7	.6	.8	1.8	1.3	1.1	.7	.7	.6
SSW	.7	.3	.5	.8	.3	.3	1.5	1.7	.7	.7	.6	.5
SW	6.0	3.0	4.6	5.4	3.2	2.8	5.7	5.1	4.3	6.1	6.6	6.6
WSW	14.1	13.9	9.7	9.7	4.7	3.6	6.2	7.6	7.4	12.0	10.9	11.6
W	41.0	42.6	33.0	26.1	10.0	6.7	6.4	8.8	6.3	13.3	22.8	34.5
WNW	3.3	2.7	3.2	2.9	1.1	2.6	3.0	5.4	2.8	1.6	2.0	2.7
NW	2.6	2.0	3.4	3.5	2.8	4.4	5.2	3.6	3.6	3.1	2.7	2.3
NNW	.2	.4	.8	1.2	1.3	2.5	2.5	2.1	1.6	.8	.6	.7
Calm	16.4	15.2	19.9	16.3	9.2	8.7	14.6	16.7	16.1	27.9	23.7	18.2

WIND SPEED
(MEAN VALUES OF, IN KNOTS)

	J	F	M	A	M	J	J	A	S	O	N	D
N	5.9	6.2	4.9	6.0	5.9	7.0	6.7	6.5	6.2	5.8	9.6	6.7
NNE	5.3	8.6	9.1	8.5	8.8	8.7	9.2	7.4	8.5	11.3	12.1	9.3
NE	7.5	8.5	9.3	9.5	9.6	8.8	8.4	7.4	8.0	9.8	11.2	8.0
ENE	8.8	10.1	9.3	11.8	12.6	12.9	9.3	8.9	9.3	9.1	13.9	9.8
E	6.1	7.1	6.6	7.0	10.0	9.5	7.7	7.2	7.7	6.7	6.7	5.9
ESE	5.7	6.0	6.5	6.7	6.9	6.7	6.6	5.3	7.5	4.7	5.5	5.8
SE	3.0	4.1	3.8	4.1	4.1	5.0	4.1	4.8	4.1	4.3	3.8	3.4
SSE	7.6	2.6	14.2	9.0	2.8	6.9	7.2	9.0	4.5	9.0	10.1	4.3
S	11.5	16.0	6.5	6.3	4.5	5.2	6.5	8.5	4.7	7.1	6.1	5.4
SSW	11.7	12.1	9.9	10.9	8.4	8.9	7.6	10.0	8.3	5.1	10.8	13.4
SW	6.7	6.7	6.5	8.8	5.9	8.3	7.9	7.1	7.6	5.7	5.9	7.4
WSW	11.0	12.8	9.6	10.2	8.8	10.0	9.4	8.7	9.2	7.3	10.6	9.4
W	8.1	8.5	6.3	7.2	6.2	8.7	8.0	6.9	6.3	5.5	5.6	6.9
WNW	12.8	10.0	6.6	10.4	6.7	10.1	9.7	10.5	8.1	6.0	9.0	7.3
NW	8.1	6.5	6.6	7.5	6.3	7.7	8.4	6.9	6.9	5.2	5.6	4.4
NNW	4.9	7.3	6.1	6.7	9.0	7.8	8.3	7.8	6.0	6.3	7.9	8.1
MONTHLY AVERAGE SPEEDS												
	7.0	7.6	5.7	6.9	8.3	8.4	7.0	6.4	6.5	5.1	6.3	6.0

PREVAILING DIRECTION UNDERLINED

Table 7

BARTER ISLAND

	WIND DIRECTION (PERCENTAGE FREQUENCY OF OCCURRENCE)												WIND SPEED (MEAN VALUES OF, IN KNOTS)											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
N	.4	.4	.5	.8	1.8	2.6	2.8	2.5	1.9	.9	.6	.9	5.2	5.7	4.2	4.7	4.7	4.4	4.8	5.1	6.2	7.3	5.0	4.9
NNE	.5	.3	.7	.9	1.5	2.3	3.1	3.0	2.2	1.2	1.0	.5	5.9	4.9	5.6	5.6	5.0	5.2	5.3	5.7	6.2	8.1	6.3	5.6
NE	2.6	2.3	4.3	2.9	7.2	8.7	9.4	8.1	6.6	6.8	4.3	3.9	7.4	7.6	7.6	8.1	7.9	6.6	7.8	8.1	9.6	14.3	11.4	8.1
ENE	10.8	10.6	15.2	13.9	20.1	23.6	21.2	19.8	15.0	13.0	16.2	14.5	12.4	11.7	13.8	12.3	11.3	11.0	10.6	12.4	12.9	17.5	15.0	12.8
E	19.8	18.5	17.5	17.6	29.4	24.3	18.2	20.7	20.0	17.3	18.9	15.7	13.4	12.8	13.3	12.7	13.6	12.0	11.1	13.6	13.8	19.5	17.0	14.9
ESE	5.3	5.3	5.1	5.7	5.1	3.0	4.5	5.7	6.9	7.2	6.7	5.0	8.7	10.0	9.7	9.5	10.1	10.1	9.2	9.3	10.7	11.4	14.2	9.7
SE	3.9	1.1	1.7	2.1	1.1	.9	1.5	1.8	3.0	4.1	3.6	1.6	8.1	5.8	6.5	7.2	6.2	7.2	6.3	6.9	8.5	8.2	7.0	6.5
SSE	.9	.6	.4	.8	.5	.5	.7	.9	1.0	1.2	1.0	.7	9.7	5.6	5.9	6.8	5.1	5.6	6.5	5.9	6.1	5.9	5.4	6.0
S	1.9	1.7	1.5	1.9	.9	.7	1.5	1.4	1.8	4.3	3.3	2.1	7.1	6.3	6.0	6.6	6.4	5.1	6.3	6.1	6.3	6.9	6.4	6.7
SSW	2.2	2.4	2.2	2.0	1.2	.6	.7	1.2	1.7	6.1	4.5	4.2	6.2	6.3	5.6	5.9	5.4	5.3	6.5	6.4	6.4	7.1	7.1	6.8
SW	10.3	8.9	9.2	7.0	4.6	1.3	1.4	1.8	3.1	7.4	8.0	12.0	7.5	7.6	7.3	7.2	7.3	6.4	7.4	8.3	8.0	8.1	7.9	8.6
WSW	12.4	13.3	12.2	11.6	3.9	3.7	3.6	3.7	6.4	8.1	9.4	10.7	15.6	12.0	10.2	9.5	8.6	10.0	10.8	11.4	12.2	13.5	13.6	11.8
W	19.1	24.9	21.3	20.5	10.2	9.3	11.0	11.2	13.6	11.8	13.4	19.5	18.8	19.5	16.5	15.4	12.3	10.5	11.0	11.1	14.1	16.9	15.8	16.7
WNW	4.0	4.8	3.8	4.4	5.2	7.7	7.9	8.9	6.4	4.2	3.0	2.9	15.0	17.7	13.8	13.4	10.7	8.9	9.8	9.6	10.6	13.9	13.4	14.2
NW	1.1	.9	.9	1.4	2.6	4.3	5.0	4.5	4.0	1.9	1.1	1.7	7.7	8.3	6.0	6.9	5.9	6.1	6.3	6.5	7.6	10.2	9.4	9.4
NNW	.2	.1	.3	.4	1.3	1.8	2.0	2.2	1.7	.8	.4	.3	7.2	4.9	5.4	5.0	5.7	5.0	5.2	5.5	6.3	8.0	5.5	5.9
CALM	4.7	4.0	4.1	6.1	3.4	4.8	5.5	3.7	4.6	3.7	4.6	3.8	-	MONTHLY AVERAGE SPEEDS										
													12.4	12.7	11.6	10.7	10.5	9.2	8.9	10.1	10.9	13.3	12.6	11.8

PREVAILING DIRECTION UNDERLINED

Table 8

BARROW

WIND DIRECTION
(PERCENTAGE FREQUENCY OF OCCURRENCE)

	J	F	M	A	M	J	J	A	S	O	N	D
N	3.9	3.4	5.0	3.7	2.1	2.5	4.3	4.3	3.7	2.0	3.1	2.6
NNE	3.8	2.5	4.8	5.3	3.9	3.6	6.1	5.5	5.9	3.7	2.0	3.9
NE	6.2	10.1	11.9	9.4	9.9	6.5	5.8	5.4	7.4	8.3	7.8	11.2
ENE	14.3	17.4	16.0	12.3	22.7	13.4	15.7	9.4	16.2	17.2	23.4	27.7
E	8.2	15.0	12.9	11.4	19.7	10.2	12.9	12.0	14.3	16.8	11.7	15.2
ESE	11.4	7.9	9.1	11.3	13.6	17.4	9.3	11.4	13.9	12.0	7.1	6.3
SE	5.4	3.7	5.4	6.0	5.5	5.2	5.3.	4.8	4.7	8.6	5.9	4.3
SSE	3.1	1.9	2.4	3.7	2.1	2.2	3.6	4.1	5.3	6.5	5.6	2.2
S	3.1	2.3	4.1	4.6	2.1	1.7	2.5	2.8	3.1	5.5	6.4	2.8
SSW	5.2	2.3	4.7	5.0	2.3	2.0	3.2	3.8	2.8	4.3	6.0	3.0
SW	5.4	3.1	3.9	4.4	2.9	3.1	5.2	4.1	2.8	3.0	3.4	3.1
WSW	5.9	2.9	3.3	4.5	3.4	8.5	9.5	7.7	2.7	2.6	3.1	2.7
W	7.6	9.5	5.7	5.7	2.4	6.4	6.5	8.9	4.6	2.2	3.7	4.9
WNW	6.8	9.3	3.9	5.7	1.9	4.5	3.7	7.7	5.8	2.6	4.6	4.6
NW	4.8	5.3	3.3	3.6	2.6	3.6	2.9	3.4	3.1	1.7	3.2	2.4
NNW	3.8	2.4	2.4	2.4	1.6	2.2	2.5	4.1	2.7	2.3	4.5	1.6
Calm	1.2	0.8	1.2	1.0	1.1	0.9	1.1	0.7	1.0	0.6	0.4	1.5

WIND SPEED
(MEAN VALUES OF, IN KNOTS)

	J	F	M	A	M	J	J	A	S	O	N	D
N	8.6	7.3	9.0	9.0	7.2	7.3	7.2	8.0	10.9	11.8	11.8	8.1
NNE	8.4	7.9	11.2	10.6	10.3	8.5	8.6	10.3	11.7	13.3	11.8	9.3
NE	9.9	9.5	10.4	10.1	10.8	10.5	10.8	10.3	11.4	13.1	14.2	11.3
ENE	12.4	14.0	12.4	12.7	13.2	13.2	14.4	15.4	14.3	15.6	17.5	14.2
E	12.5	14.5	11.7	12.8	14.4	14.7	13.3	15.4	14.5	15.8	14.6	12.0
ESE	15.8	13.0	12.4	14.0	13.6	14.2	13.3	13.6	14.1	12.2	12.0	10.5
SE	10.7	8.2	10.4	10.6	11.8	10.5	11.6	10.5	10.2	10.1	9.5	7.7
SSE	8.8	7.8	9.0	9.6	7.6	9.2	11.4	10.3	10.8	9.7	10.9	6.9
S	8.1	8.8	8.6	10.1	8.0	8.9	11.0	10.1	9.6	11.4	11.6	8.2
SSW	10.4	12.1	10.1	12.5	9.5	8.9	12.3	13.1	11.8	11.9	14.6	11.5
SW	9.4	11.8	9.4	10.6	11.0	10.5	12.0	13.3	12.2	13.4	15.2	10.6
WSW	12.5	15.8	12.6	12.7	11.9	12.4	12.7	14.9	12.9	16.0	18.9	12.2
W	13.4	13.0	10.8	11.9	10.5	10.1	11.0	12.6	14.5	14.4	17.0	15.0
WNW	10.9	12.4	10.5	12.6	10.8	9.6	8.9	12.2	15.2	13.5	14.2	14.5
NW	9.3	10.7	7.6	10.1	7.3	8.7	8.5	11.2	12.5	11.4	13.5	11.9
NNW	9.5	9.0	8.4	8.1	8.5	8.4	8.0	10.6	11.7	12.4	12.6	8.1

MONTHLY AVERAGE SPEEDS

J	F	M	A	M	J	J	A	S	O	N	D
11.3	12.0	10.7	11.5	12.0	11.8	11.7	12.6	12.9	13.2	14.3	11.8

PREVAILING DIRECTION UNDERLINED

Table 9

PERCENTAGE FREQUENCY OF OCCURRENCE

UMIAT

	CEILING HEIGHT					VISIBILITY						
	0- 400 ft.	500- 900 ft.	1000- 2000 ft.	2100- 3000 ft.	>3000 ft.	0- 1/8 mi.	3/16- 1/4 mi.	5/16- 1/2 mi.	5/8- 3/4 mi.	1- 2 1/4 mi.	2 1/2 mi.	≥3 mi.
01	2.5	2.1	10.7	4.5	80.2	1.5	.6	1.0	.7	7.3	1.2	87.7
02	4.3	2.9	8.2	4.2	80.4	3.1	1.6	2.0	.8	8.5	1.0	83.0
03	.6	1.9	8.4	4.1	85.0	.2	.4	.8	.4	5.8	.9	91.5
04	2.2	6.3	13.4	5.6	72.5	1.1	.7	1.1	.6	6.8	.6	89.1
05	6.1	14.3	29.5	4.9	45.2	.7	.9	.6	.6	5.5	.4	91.3
06	4.7	11.3	24.0	8.7	51.3	.2	.5	.6	.3	3.4	.2	94.8
07	3.3	6.7	11.5	7.1	71.4	.4	.2	.4	.5	2.2	.3	96.0
08	3.5	10.4	17.5	10.2	58.4	.6	.5	.7	.6	2.8	.4	94.4
09	5.8	15.1	31.6	8.3	39.2	.4	.6	1.3	.7	6.1	.5	90.4
10	6.8	15.3	22.8	6.2	48.9	.8	1.0	2.6	1.3	8.3	.5	85.5
11	4.3	12.0	18.1	7.7	57.9	.8	1.7	2.5	1.1	9.6	.8	83.5
12	3.3	4.8	15.6	6.6	69.7	.7	1.2	1.9	.6	7.7	1.2	86.7
Yr	3.9	8.6	17.6	6.5	63.4	.8	.8	1.3	.7	6.1	.6	89.5

Table 10

PERCENTAGE FREQUENCY OF OCCURRENCE

BARROW

	CEILING HEIGHT					VISIBILITY						
	0-400 ft.	500-900 ft.	1000-2000 ft.	2100-3000 ft.	> 3000 ft.	0-1/8 mi.	3/16-1/4 mi.	5/16-1/2 mi.	5/8-3/4 mi.	1-1 1/4 mi.	2 1/2 mi.	≧3 mi.
01	2.7	4.8	9.0	3.9	79.6	1.5	2.6	2.5	1.4	5.5	.3	86.2
02	3.1	3.8	10.9	3.7	78.5	2.5	1.8	2.9	1.6	8.1	.7	82.8
03	.9	2.9	7.9	5.4	82.9	.3	.5	1.9	1.0	4.8	.3	91.2
04	2.6	7.8	12.4	5.7	71.5	.9	2.0	2.4	1.1	5.0	.2	88.4
05	11.0	29.8	23.3	5.2	30.7	.5	2.0	3.1	1.0	5.6	.1	87.7
06	24.9	21.1	12.8	3.8	37.4	2.5	4.0	4.3	1.8	7.1	.2	80.1
07	16.4	14.9	9.0	4.3	55.4	1.7	2.5	3.8	1.3	5.9	.3	84.5
08	19.4	23.9	19.7	3.9	33.1	1.8	2.3	3.2	1.2	6.0	.3	85.2
09	13.1	31.0	30.9	6.1	18.9	.5	.6	2.1	.8	6.4	.1	89.5
10	7.2	22.1	27.1	8.5	35.1	.8	1.6	2.1	1.5	8.0	.4	85.6
11	4.5	12.0	30.0	7.4	46.1	3.1	2.0	4.4	1.4	8.7	.4	80.0
12	3.8	7.6	17.0	5.2	66.4	1.7	2.5	2.8	.8	8.3	.5	83.4
Yr	9.2	15.1	17.3	5.2	53.2	1.5	2.0	2.9	1.2	6.6	.3	85.5

Table 11

PERCENTAGE FREQUENCY OF OCCURRENCE

BARTER ISLAND

	CEILING HEIGHT					VISIBILITY						
	0-400 ft.	500-900 ft.	1000-2000 ft.	2100-3000 ft.	>3000 ft.	0-1/8 mi.	3/16-1/4 mi.	5/16-1/2 mi.	5/8-3/4 mi.	1-2 1/4 mi.	2 1/2 mi.	≥ 3 mi.
01	5.8	2.9	11.7	5.9	73.7	5.8	3.2	3.6	2.0	7.5	.2	77.7
02	7.7	1.6	8.0	4.9	77.8	8.3	3.0	3.4	2.2	7.7	.1	75.3
03	2.5	1.2	7.3	5.5	80.5	3.7	2.3	3.4	2.5	8.3	.4	79.8
04	2.4	5.4	11.3	5.1	75.8	2.7	2.4	2.9	2.4	8.7	.5	80.4
05	11.1	28.4	20.1	6.5	33.9	1.2	2.8	3.5	2.8	10.5	.7	78.5
06	16.0	18.2	12.3	5.2	48.3	2.5	3.5	4.4	3.0	9.0	.5	77.1
07	17.5	9.5	7.1	5.5	60.4	3.9	5.4	4.6	2.2	5.3	.1	78.5
08	22.7	13.4	10.3	5.0	48.6	5.0	6.5	5.0	2.9	7.4	.2	73.0
09	17.2	15.5	21.9	6.9	38.5	3.0	5.0	5.4	3.1	8.7	.2	74.6
10	6.9	15.0	31.0	9.4	37.7	.8	2.2	3.2	3.0	11.2	.2	79.4
11	5.3	11.2	25.0	6.6	51.9	2.6	3.5	3.0	1.9	10.8	.3	77.9
12	3.7	5.6	14.9	7.4	68.4	3.2	1.9	2.6	1.6	8.4	.2	82.1
Yr	9.9	10.8	15.2	6.2	57.9	3.5	3.5	3.7	2.5	8.6	.3	77.9

Table 12

BARTER ISLAND
PERCENTAGE FREQUENCY OF OCCURRENCE
CEILING VS. VISIBILITY

Due to the cumulative nature of this presentation, it is possible to determine the percentage frequency of occurrence for any given limit of ceiling or visibility separately, or in combination of ceiling and visibility. The totals progress to the right and downward. Ceiling may be determined independently by referring to totals in the extreme right hand column. Also, visibility may be determined independently by reference to the horizontal row of totals at the bottom of the page. The percentage frequency for which the station was meeting or exceeding any given set of minima may be determined from the figure at the intersection of the appropriate ceiling column and visibility row.

Ceiling (Feet)	VISIBILITY (STATUTE MILES)											ALL MONTHS ALL HOURS				
	≥ 10	≥ 6	≥ 5	≥ 4	≥ 3	≥ 2-1/2	≥ 2	≥ 1-1/2	≥ 1-1/4	≥ 1	≥ 3/4	≥ 5/8	≥ 1/2	≥ 5/16	≥ 1/4	≥ 0
2500	47.4	53.1	54.5	55.2	56.5	56.7	57.8	58.3	58.4	59.5	60.2	60.3	61.3	61.5	62.4	63.1
2000	49.0	55.5	57.1	58.0	59.5	59.7	61.0	61.6	61.7	63.0	63.7	63.8	64.9	65.1	66.0	66.8
1800	49.3	56.0	57.6	58.6	60.1	60.3	61.6	62.3	62.4	63.7	64.5	64.6	65.7	65.9	66.8	67.6
1500	50.6	58.1	60.0	61.0	62.8	62.9	64.5	65.3	65.3	66.9	67.8	67.9	69.0	69.3	70.2	71.1
1200	52.1	60.6	62.6	63.8	65.8	66.0	67.7	68.6	68.7	70.5	71.4	71.5	72.7	73.0	74.0	74.8
1000	53.7	63.2	65.5	66.8	69.2	69.4	71.4	72.4	72.5	74.6	75.6	75.7	77.1	77.3	78.4	79.3
900	54.3	64.1	66.5	67.9	70.3	70.5	72.6	73.7	73.8	75.9	77.0	77.1	78.5	78.8	79.9	80.8
800	55.1	65.5	68.0	69.5	72.1	72.3	74.6	75.8	75.9	78.1	79.3	79.5	80.9	81.2	82.3	83.2
700	55.9	66.7	69.3	70.9	73.6	73.9	76.3	77.5	77.6	80.0	81.3	81.4	82.9	83.2	84.4	85.4
600	56.5	67.7	70.4	72.0	74.9	75.2	77.7	79.0	79.2	81.8	83.1	83.3	84.9	85.2	86.4	87.4
500	57.2	68.7	71.6	73.3	76.4	76.7	79.4	80.8	81.0	83.9	85.4	85.6	87.4	87.7	89.0	90.1
400	57.5	69.2	72.2	74.0	77.2	77.5	80.4	81.9	82.1	85.2	86.9	87.1	89.0	89.4	90.8	91.9
300	57.6	69.5	72.6	74.4	77.7	78.0	81.1	82.7	82.9	86.3	88.2	88.5	90.7	91.2	92.9	94.1
200	57.6	69.6	72.7	74.5	77.8	78.1	81.3	82.9	83.1	86.7	88.8	89.1	91.8	92.4	94.6	96.2
100	57.6	69.6	72.7	74.5	77.8	78.2	81.3	83.0	83.1	86.8	88.9	89.2	92.2	92.9	95.9	98.2
0	57.6	69.6	72.7	74.5	77.8	78.2	81.3	83.0	83.2	86.8	88.9	89.2	92.3	93.0	96.1	136921

Table 13

BARTER ISLAND

CEILING VERSUS VISIBILITY

JANUARY

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0		
71.9	74.6	76.5	77.5	79.5	81.5	83.4		1800
73.7	76.7	78.9	80.0	82.1	84.2	86.4		1500
75.0	78.4	80.8	82.0	84.2	86.2	88.5		1200
76.5	80.2	83.1	84.4	86.8	89.0	91.4		1000
76.8	80.6	83.5	84.9	87.4	89.6	91.9		900
77.1	81.0	84.1	85.5	88.0	90.3	92.7		800
77.3	81.3	84.4	85.8	88.5	90.8	93.3		700
77.5	81.5	84.7	86.1	88.8	91.2	93.7		600
77.6	81.7	84.9	86.4	89.2	91.8	94.2		500
77.6	81.9	85.2	86.7	89.6	92.2	94.7		400
77.7	81.9	85.4	87.0	90.0	92.8	95.4		300
77.7	82.0	85.4	87.1	90.3	93.2	96.1		200
77.7	82.0	85.4	87.1	90.3	93.4	96.7		100
77.7	82.0	85.4	87.2	90.5	93.7			0

FEBRUARY

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
72.6	76.0	78.4	79.8	82.2	84.2	85.9
73.6	77.3	79.9	81.4	83.9	86.0	87.6
74.4	78.3	81.2	82.8	85.3	87.5	89.2
74.9	79.0	82.1	83.7	86.4	88.7	90.5
75.1	79.2	82.4	84.0	86.8	89.1	90.9
75.2	79.5	82.7	84.4	87.3	89.6	91.5
75.2	79.5	82.8	84.6	87.5	89.9	91.9
75.3	79.6	82.9	84.7	87.6	90.0	92.0
75.3	79.7	83.1	84.9	87.9	90.3	92.3
75.3	79.7	83.1	84.9	87.9	90.4	92.5
75.3	79.7	83.1	85.0	88.0	90.7	92.8
75.4	79.7	83.2	85.0	88.1	91.0	93.5
75.4	79.7	83.2	85.0	88.1	91.3	94.7
75.4	79.7	83.2	85.0	88.2	91.5	

MARCH

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0		
76.3	80.5	83.6	85.4	87.7	89.9	91.7		1800
77.2	81.7	85.0	86.9	89.3	91.7	93.6		1500
78.3	83.0	86.3	88.3	90.8	93.1	95.1		1200
78.9	83.8	87.3	89.4	92.0	94.3	96.3		1000
79.0	84.0	87.5	89.6	92.2	94.6	96.6		900
79.2	84.2	87.8	89.9	92.6	94.9	97.0		800
79.3	84.2	87.9	90.0	92.7	95.1	97.1		700
79.3	84.3	87.9	90.1	92.7	95.1	97.2		600
79.3	84.3	88.0	90.2	92.9	95.4	97.5		500
79.3	84.3	88.0	90.2	93.0	95.5	97.7		400
79.3	84.3	88.1	90.3	93.1	95.6	97.8		300
79.3	84.3	88.1	90.3	93.2	95.7	98.2		200
79.3	84.3	88.1	90.4	93.2	96.0	98.5		100
79.3	84.3	88.1	90.4	93.2	96.0			0

APRIL

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
72.5	76.1	78.4	79.6	81.2	82.9	83.9
73.8	77.8	80.5	81.8	83.5	85.4	86.5
75.5	79.6	82.4	83.9	85.6	87.6	88.7
77.3	81.8	85.0	86.6	88.7	90.8	92.1
78.0	82.6	85.8	87.4	89.6	91.7	93.1
78.7	83.5	86.8	88.4	90.7	92.8	94.2
79.3	84.1	87.5	89.2	91.5	93.7	95.1
79.8	84.8	88.4	90.3	92.7	94.8	96.4
80.2	85.2	89.0	90.9	93.4	95.8	97.6
80.3	85.5	89.3	91.3	93.9	96.3	98.2
80.4	85.6	89.4	91.5	94.1	96.6	98.7
80.4	85.7	89.5	91.6	94.3	96.9	99.2
80.4	85.7	89.5	91.7	94.4	97.0	99.4
80.4	85.7	89.5	91.7	94.4	97.1	

PERCENTAGE FREQUENCY OF OCCURRENCE
(FROM HOURLY OBSERVATIONS)

Table 14 a-d

BARTER ISLAND

CEILING VERSUS VISIBILITY

MAY

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0	
39.0	40.5	41.4	42.0	42.5	43.2	43.9	≥ 1800
41.7	43.3	44.6	45.2	45.8	46.5	47.2	≥ 1500
46.4	48.5	50.0	50.7	51.3	52.0	52.8	≥ 1200
52.9	55.4	57.3	58.1	58.9	59.7	60.4	≥ 1000
55.9	58.5	60.5	61.5	62.3	63.1	63.9	≥ 900
61.1	64.2	66.5	67.6	68.6	69.5	70.3	≥ 800
66.3	69.8	72.3	73.6	74.7	75.6	76.4	≥ 700
70.1	74.3	77.2	78.7	79.9	80.9	81.7	≥ 600
75.0	80.1	83.4	85.2	86.8	88.0	88.9	≥ 500
77.2	83.0	86.8	88.6	90.5	91.9	92.9	≥ 400
78.3	84.7	88.9	91.1	93.3	95.1	96.1	≥ 300
78.5	85.0	89.5	91.9	94.6	96.9	98.1	≥ 200
78.5	85.1	89.7	92.2	95.4	98.2	99.6	≥ 100
78.5	85.1	89.7	92.2	95.4	98.4		≥ 0

JUNE

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
51.7	52.8	53.7	54.4	55.1	55.7	56.0
53.4	54.8	55.8	56.5	57.3	58.0	58.2
56.1	57.8	58.9	59.7	60.5	61.2	61.4
59.8	61.8	63.0	63.9	64.9	65.6	65.8
61.5	63.6	65.0	65.9	66.9	67.6	67.9
64.0	66.4	67.9	68.9	69.9	70.7	70.9
67.0	69.7	71.4	72.5	73.5	74.3	74.6
69.9	73.3	75.3	76.5	77.7	78.6	78.9
73.4	77.3	79.7	81.1	82.5	83.6	84.0
75.0	79.5	82.4	84.1	85.9	87.2	87.6
76.6	81.7	85.1	87.1	89.5	91.5	92.1
76.9	82.4	86.3	88.6	91.7	94.6	95.4
77.0	82.5	86.6	89.1	92.9	97.0	98.4
77.0	82.5	86.6	89.1	93.0	97.3	

JULY

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0	
65.2	65.8	66.4	66.7	67.4	68.0	68.2	≥ 1800
66.6	67.3	67.9	68.2	68.9	69.5	69.7	≥ 1500
67.6	68.4	69.1	69.4	70.1	70.7	70.9	≥ 1200
69.4	70.3	71.0	71.3	72.1	72.7	73.0	≥ 1000
70.2	71.1	71.9	72.3	73.0	73.7	73.9	≥ 900
71.4	72.4	73.2	73.6	74.5	75.1	75.4	≥ 800
72.7	73.9	74.9	75.3	76.2	77.0	77.2	≥ 700
74.0	75.4	76.5	77.1	78.1	78.8	79.1	≥ 600
76.0	77.9	79.5	80.2	81.4	82.2	82.5	≥ 500
77.2	79.5	81.3	82.4	84.0	85.1	85.5	≥ 400
78.2	80.9	83.2	84.7	87.2	89.0	89.6	≥ 300
78.4	81.3	83.7	85.4	88.7	92.1	93.7	≥ 200
78.4	81.3	83.9	85.6	89.4	95.1	97.8	≥ 100
78.4	81.3	83.9	85.6	89.5	95.4		≥ 0

AUGUST

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
52.5	53.2	53.7	53.9	54.6	55.5	55.8
54.5	55.4	56.0	56.3	57.0	57.9	58.2
56.5	57.5	58.1	58.4	59.1	60.0	60.3
59.4	60.7	61.4	61.8	62.7	63.5	63.9
60.3	61.6	62.4	62.8	63.7	64.5	64.9
62.3	64.0	64.9	65.3	66.2	67.1	67.5
64.4	66.1	67.2	67.7	68.6	69.6	70.0
66.6	68.6	69.8	70.5	71.5	72.6	73.0
69.4	71.9	73.5	74.4	75.6	76.9	77.3
71.2	74.3	76.5	77.6	79.1	80.8	81.2
72.6	76.4	79.4	81.0	83.3	85.8	86.6
72.9	77.0	80.5	82.7	86.1	90.4	92.0
73.0	77.0	80.6	82.9	87.0	93.6	97.6
73.0	77.0	80.6	82.9	87.2	94.2	

PERCENTAGE FREQUENCY OF OCCURRENCE
(FROM HOURLY OBSERVATIONS)

Table 14 e-h

BARTER ISLAND

CEILING VERSUS VISIBILITY

SEPTEMBER

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0	
46.9	47.7	48.1	48.4	49.0	49.6	49.8	≥ 1800
51.6	52.5	53.1	53.4	54.1	54.7	54.9	≥ 1500
57.2	58.4	59.1	59.5	60.1	60.8	61.0	≥ 1200
62.2	64.0	64.9	65.5	66.2	66.9	67.2	≥ 1000
63.7	65.7	66.7	67.3	68.1	68.7	69.1	≥ 900
66.4	68.8	70.0	70.7	71.6	72.3	72.6	≥ 800
68.3	71.1	72.5	73.3	74.3	75.0	75.4	≥ 700
70.1	73.2	75.0	76.0	77.2	78.0	78.3	≥ 600
72.5	76.2	78.4	79.7	81.3	82.4	82.8	≥ 500
73.8	78.2	80.9	82.6	84.5	85.9	86.4	≥ 400
74.3	79.2	82.6	84.9	87.7	89.8	90.3	≥ 300
74.5	79.5	83.4	86.0	90.1	94.2	95.4	≥ 200
74.5	79.6	83.5	86.1	90.6	96.0	99.2	≥ 100
74.5	79.6	83.5	86.2	90.7	96.3		≥ 0

OCTOBER

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
49.3	50.9	51.6	51.8	52.2	52.5	52.7
55.3	57.6	58.7	59.1	59.6	60.0	60.2
62.0	65.0	66.5	67.1	67.8	68.2	68.4
69.4	73.4	75.4	76.3	77.2	77.9	78.1
71.5	75.9	78.1	79.1	80.0	80.7	81.0
74.6	79.4	82.1	83.2	84.2	84.9	85.2
76.3	81.5	84.4	85.7	86.8	87.6	87.9
77.6	83.2	86.5	87.8	89.0	89.9	90.2
78.6	84.6	88.6	90.4	91.8	92.8	93.1
79.0	85.3	89.6	91.7	93.4	94.5	94.8
79.4	85.9	90.6	92.9	95.2	96.5	96.9
79.4	86.0	90.8	93.3	96.1	98.0	98.4
79.4	86.0	90.9	93.4	96.5	99.0	99.7
79.4	86.0	90.9	93.4	96.5	99.1	

NOVEMBER

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0	
55.7	58.5	60.0	60.7	61.7	62.6	62.9	≥ 1800
60.5	64.0	65.8	66.6	67.7	68.6	68.9	≥ 1500
66.1	70.3	72.6	73.5	74.8	75.9	76.2	≥ 1200
71.6	76.5	79.3	80.2	81.6	83.0	83.6	≥ 1000
72.9	78.3	81.2	82.3	83.8	85.2	85.8	≥ 900
74.8	80.6	83.9	85.0	86.6	88.2	88.8	≥ 800
76.2	82.3	86.0	87.2	89.0	90.7	91.3	≥ 700
77.2	83.5	87.6	88.9	90.7	92.5	93.2	≥ 600
77.6	84.0	88.3	89.8	91.8	93.8	94.7	≥ 500
77.8	84.2	88.6	90.1	92.2	94.2	95.3	≥ 400
77.8	84.3	88.8	90.4	92.6	94.9	96.0	≥ 300
77.9	84.4	89.0	90.7	93.1	95.9	97.3	≥ 200
77.9	84.4	89.0	90.7	93.4	97.0	98.7	≥ 100
77.9	84.5	89.1	90.7	93.4	97.0		≥ 0

DECEMBER

≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
69.5	72.6	74.8	75.7	77.1	78.4	79.2
72.6	76.1	78.3	79.3	80.8	82.2	83.0
75.6	79.5	82.0	83.0	84.6	86.0	86.8
78.9	83.1	85.8	86.8	88.4	89.9	90.8
79.5	83.8	86.6	87.7	89.3	90.9	91.7
80.8	85.5	88.6	89.8	91.6	93.2	94.0
81.4	86.2	89.4	90.7	92.6	94.2	95.0
81.7	86.7	89.9	91.2	93.1	94.8	95.6
82.0	87.0	90.4	91.7	93.8	95.4	96.3
82.1	87.1	90.6	91.9	94.1	95.8	96.8
82.1	87.2	90.7	92.1	94.4	96.2	97.1
82.1	87.2	90.7	92.2	94.6	96.4	97.5
82.1	87.2	90.7	92.2	94.6	96.7	97.9
82.1	87.2	90.7	92.2	94.6	96.7	

PERCENTAGE FREQUENCY OF OCCURRENCE
(FROM HOURLY OBSERVATIONS)

Table 14 i-1

PERCENTAGE FREQUENCY OF OCCURRENCE OF WEATHER CONDITIONS

	Thunder-storms			Rain and/or Drizzle			Freezing Rain			Snow and/or Sleet			Percentage Obs. with Pcpn			Fog			Smoke and/or Haze			Blowing Snow			Percentage Obs. with Obstr. to Vision		
MONTH	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat	Barter Is.	Barrow	Umiat
Jan		.0		.2	.1	.1	.1	.7	.3	19.3	29.2	35.5	19.6	29.9	35.7	6.9	12.5		.1	.5		20.2	13.7		26.6	24.7	
Feb			.1					.1		20.4	30.3	37.9	20.4	30.4	37.9	8.0	13.1		.1	.3		22.3	12.6		29.2	25.3	
Mar		.0			.0			.0		19.6	26.7	34.6	19.6	26.7	34.7	9.7	7.9		.1	.2		16.8	10.0		24.9	17.3	
Apr			.1	.3	.1	.3	.1	.3	.2	21.7	27.7	30.0	22.0	28.1	30.3	11.8	9.3		.2	.2		11.5	7.8		22.7	16.7	
May	.0			1.6	.6	1.3	2.4	2.2	1.5	24.7	33.5	21.8	28.3	35.8	24.2	25.1	17.4		.0	.0		3.3	4.0		27.5	21.0	
Jun	.0	.0		8.6	9.1	13.4	1.2	1.4	.3	8.6	12.0	6.1	18.3	22.1	19.5	26.6	26.4		.1	.0		.1	.5		26.7	26.9	
Jul	.1	.1	.2	16.0	14.5	12.5	.2	.4		1.7	3.2	.1	17.8	17.9	12.7	25.3	25.9		.0						25.3	25.9	
Aug		.1		17.1	19.3	18.8	.2	.7	.2	4.2	8.4	4.7	21.5	28.1	22.9	31.5	25.5		.1	.0			.0		31.6	25.5	
Sep				9.6	8.6	10.5	.9	2.2	1.2	16.2	25.5	22.3	26.6	35.6	33.5	26.6	17.7		.0			1.9	.7		28.3	18.2	
Oct				.6	.8	.5	1.9	1.6	1.3	33.1	43.1	37.7	35.3	45.2	39.4	13.5	13.0		.2	.0		10.4	7.7		22.6	20.9	
Nov				.1	.0		.4	.6	.5	29.0	36.7	47.3	29.5	37.3	47.7	9.8	10.5		.1	.0		17.6	16.3		25.0	26.0	
Dec					.0		.0	.1	.2	25.8	33.1	50.5	25.8	33.2	50.6	8.0	10.4		.1	.1		16.6	13.5		23.7	22.5	
Avg	.0	.0		4.6	4.5	4.9	.6	.9	.5	18.7	25.7	26.9	23.8	30.9	32.1	17.0	15.8		.1	.1		9.9	7.2		26.1	22.6	

Not Available

Table 15

SNOW DEPTH														VISIBILITY					SKY COVER					
MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE (BASED ON HOURLY OBSERVATIONS)														PERCENTAGE FREQUENCY OF OCCURRENCE					PERCENTAGE FREQUENCY OF OCCURRENCE OF SKY COVER (BASED ON HRLY OBSERVATIONS)					
CATEGORIES BELOW ARE IN INCHES														Hourly Obsns/w Vsby <1 mi., caused by:					CATEGORIES BELOW ARE TENTHS OF TOTAL SKY COVER					
Month	None	Trace	1	2	3	4-6	7-12	13-24	25-36	37-48	Mean Snow Depth in Inches	Mean No. Days with Snowfall ≧ 0.1"	Fog	Smoke and/or Haze	Blowing Snow and/or Dust	Precip-itation	Total obsns vsby <1 mi.	0-3	4-5	6-7	8-9	10	Avg Sky Cover in Tenths
J							34	66			13.3	31.0	1.1		2.0	.8	3.9	43.2	4.5	5.4	5.9	41.0	5.3
F							18	82			14.5	28.0	2.3		4.8	.5	7.6	46.1	5.3	5.3	7.3	36.0	5.0
M							46	54			14.2	31.0	1.4		.3	.2	1.9	40.0	5.5	7.1	10.0	37.4	5.6
A						7	49	32	12		14.9	30.0	1.9		1.1	.6	3.6	30.7	4.8	8.3	9.9	46.3	6.4
M	9	4	1	1	2	32	38	13			7.5	31.0	2.5		.1	.1	2.7	18.8	2.9	5.5	7.5	65.3	7.8
J	68	11	7	7	4	3					0.5	13.5	1.5			.1	1.6	15.0	6.2	8.6	14.8	55.4	7.8
J	100										0.0	0.0	1.4	.1		.3	1.5	18.9	6.3	9.6	17.3	47.9	7.4
A	95	5									T	0.5	2.1			.2	2.4	11.0	4.3	6.5	13.3	64.9	8.4
S	64	21	5	7							1.4	1.5	2.8		.1		3.1	10.8	3.5	4.8	8.6	72.3	8.6
O	3	9	9	17	16	44	2				4.0	28.5	4.7		.3		5.6	17.3	3.0	5.7	7.3	66.7	8.0
N			1	4	8	30	57	8			7.8	30.0	3.9		1.6		6.1	21.1	4.4	5.8	7.3	61.4	7.3
D						9	54	37			10.4	31.0	2.3		1.7		4.3	33.5	4.8	6.4	6.6	48.7	6.2
Yr	28	4	2	3	3	10	25	24	1	0	7.4	256.0	2.3	*	1.0	.2	3.7	25.5	4.6	6.6	9.7	53.6	7.1

* < 0.5

Table 16

BARTER ISLAND

Month	SNOW DEPTH: MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE (BASED ON HOURLY OBSERVATIONS) CATEGORIES BELOW ARE IN INCHES										Mean Snow Depth in Inches	Mean No. Days with Snowfall ≥ 0.1"	VISIBILITY: PERCENTAGE FREQUENCY OF OCCURRENCE Hourly Obsns/w Vsby <1 mi., caused by:					SKY COVER: PERCENTAGE FREQUENCY OF OCCURRENCE OF SKY COVER (BASED ON HRLY OBSERVATIONS) CATEGORIES BELOW ARE TENTHS OF TOTAL SKY COVER					Avg Sky Cover in Tenths
	None	Trace	1	2	3	4-6	7-12	13-24	25-36	37-48			Fog	Smoke and/or Haze	Blowing Snow and/or Dust	Precip-itation	Total obsns vsby <1 mi.	0-3	4-5	6-7	8-9	10	
J						9	31	37	21	2	15.9	31.0	1.6		12.2	.8	14.6	42.4	5.6	6.6	7.6	37.8	5.3
F						2	17	56	18	7	19.6	28.0	2.0	.0	14.3	.6	16.9	44.3	6.2	5.7	7.4	36.4	5.2
M						1	19	47	20	13	21.2	31.0	2.7	.0	9.0	.2	11.9	42.2	6.3	7.3	9.9	34.3	5.3
A						6	29	29	26	10	19.5	30.0	3.7		5.8	.9	10.4	34.8	5.6	6.6	10.5	42.6	6.1
M			2	2	4	14	25	38	13	2	14.2	31.0	9.0		.8	.5	10.3	14.1	3.2	4.0	8.2	70.5	8.3
J	16	33	12	6	8	7	10	6	2		3.4	15.4	13.0		.1	.4	13.5	15.1	5.0	6.2	13.4	60.4	8.0
J	87	12	1	*							T	0.5	16.1			.1	16.2	15.5	6.1	7.3	15.3	55.9	7.9
A	95	3	2	*							T	0.9	19.1			.3	19.4	9.6	4.5	5.7	14.0	66.2	8.5
S	53	25	9	4	2	2	2	3			1.0	6.6	14.7		.8	.9	16.4	12.2	3.9	4.8	10.3	68.9	8.4
O	7	11	5	8	7	34	20	8			5.3	25.4	5.1		2.6	1.4	9.1	14.8	3.8	4.2	8.1	68.9	8.2
N	*				4	26	46	24			9.4	29.9	3.8		6.5	.7	11.0	27.4	4.4	4.6	7.5	56.1	6.9
D						16	40	35	9		12.4	31.0	2.1		6.4	.8	9.3	38.4	5.4	5.8	7.3	43.0	5.8
Yr	22	7	2	2	2	10	20	23	9	3	10.0	260.7	7.8	.0	4.8	.6	13.2	25.7	5.0	5.7	10.0	53.6	7.0

* < 0.5

Table 17

BARROW

Month	SNOW DEPTH: MONTHLY VALUES BELOW ARE PERCENTAGE FREQUENCY OF OCCURRENCE (BASED ON HOURLY OBSERVATIONS) CATEGORIES BELOW ARE IN INCHES: None	Trace	1	2	3	4-6	7-12	13-24	25-36	37-48	Mean Snow Depth in Inches	Mean No. Days with Snowfall ≧ 0.1"	VISIBILITY: PERCENTAGE FREQUENCY OF OCCURRENCE Hourly Obsns/w Vsby <1 mi., caused by: Fog	Smoke and/or Haze	Blowing Snow and/or Dust	Precip-itation	Total obsns vsby <1 mi.	SKY COVER: PERCENTAGE FREQUENCY OF OCCURRENCE OF SKY COVER (BASED ON HRLY OBSERVATIONS) CATEGORIES BELOW ARE TENTHS OF TOTAL SKY COVER: 0-3	4-5	6-7	8-9	10	Avg Sky Cover in Tenths
J						20	55	25			9.8	31.0	3.5	.1	4.1	.2	7.9	53.2	4.0	4.3	5.3	33.2	4.4
F						2	48	50			12.1	28.0	1.8		6.6	.3	8.7	50.4	3.7	4.8	6.2	34.9	4.7
M							50	50			12.5	31.0	1.0		2.5	.3	3.7	45.8	5.2	5.8	8.7	34.5	5.0
A							50	50			13.7	30.0	3.0		2.7	.6	6.3	41.2	4.2	4.7	7.8	42.1	5.5
M				1		14	55	30			11.4	31.0	6.1		.3	.3	6.6	13.7	2.1	2.8	6.2	75.2	8.4
J	17	34	11	13	6	6	11	2			2.2	14.8	12.4		.1	.1	12.7	13.2	4.1	4.7	10.0	68.0	8.3
J	94	6									T	0.0	9.4				9.4	13.3	4.6	5.6	14.3	62.2	8.2
A	90	10									T	0.0	8.3			.1	8.4	4.7	1.8	2.8	8.5	82.2	9.3
S	52	38	3	4	3						0.2	3.5	3.7		.1	.3	4.1	4.4	1.7	2.1	6.8	85.0	9.3
O		12	9	29	13	24	13				3.2	27.2	3.4		1.7	1.0	6.1	11.0	3.0	4.1	8.3	73.6	8.6
N				7	2	44	43	4			6.6	30.0	3.6		6.8	.5	10.8	21.0	3.8	4.8	7.4	63.0	7.6
D						33	57	10			8.7	31.0	2.5		5.2		7.8	40.4	4.0	4.3	5.9	45.4	5.7
Yr	21	8	2	5	2	12	32	18			6.7	257.5	4.9	*	2.5	.3	7.7	26.0	3.5	4.2	8.0	58.3	7.1

* < .05

Table 18

STATION	Record Years	TEMPERATURE EXTREMES (°F.) J	F	M	A	M	J	J	A	S	O	N	D
Barter Island	22	39/-51	34/-59	36/-50	43/-37	52/-16	67/15	75/24	72/24	64/7	46/-21	37/-51	35/-51
Umiat	9	30/-62	28/-63	35/-52	40/-46	55/-22	74/18	85/30	82/24	63/-6	45/-20	43/-53	31/-56
Barrow	49	35/-53	32/-56	33/-52	42/-42	45/-18	70/4	78/22	76/20	62/1	43/-21	39/-40	34/-55
Wainwright	25	38/-50	35/-56	36/-49	43/-43	45/-16	69/14	80/22	76/21	70/2	43/-19	37/-46	31/-50
		CLIMATOLOGICAL DATA - WAINWRIGHT											
PRECIPITATION (") Mean	25	0.13	0.09	0.15	0.28	0.19	0.22	1.37	1.94	0.48	0.74	0.18	0.08
Greatest Month	25	0.62	0.37	0.80	2.65	1.11	1.19	6.61	9.29	1.73	4.45	0.56	0.34
Greatest in 24 Hrs.	25	0.21	0.11	0.35	2.07	1.05	0.50	4.00	4.00	0.60	2.05	0.17	0.19
SNOW Mean	15	1.2	0.9	1.5	2.3	1.1	T	T	T	1.0	1.5	1.3	1.0
Greatest Month	15	4.9	3.0	5.7	6.3	5.0	0.6	2.0	1.0	4.1	11.8	3.2	5.7
Greatest Depth on Ground	15	12	12	19	21	15	15	3	4	7	8	11	12
PREVAILING WIND DIRECTION	6	E	E	E	E	E	E	E	W/SW	E	E	E	E
MEAN NO. OF DAYS Pcpn .10" or more	13	*	*	*	*	*	1	2	4	2	2	*	*
Temperature Max. 70°	24	0	0	0	0	0	0	1	*	*	0	0	0
Max. 32°	24	31	28	31	29	23	3	0	1	8	27	30	31
Min. 32°	24	31	28	31	30	30	18	7	8	22	30	30	31
Min. 0°	24	28	27	30	21	3	0	0	0	0	5	18	29

* < 0.5 T Trace, an amount too small to measure

Table 19

STATIONS	FREEZEUP				BREAKUP			
	Earliest	Latest	Average	Years Data	Earliest	Latest	Average	Years Data
ALASKAN CHUKCHI SEA:								
Point Hope - Lagoon	10/6	12/1	10/25-29	6	5/30	7/2	6/10-16	5
Point Hope - Ocean	11/21	11/21	. . .	1	6/19	7/8	6/25-7/1	2
Point Barrow	9/3	12/19	10/1-5	26	6/15	8/22	7/17-23	24
Wainwright	9/16	10/25	10/3-7	8	6/7	7/26	6/23-29	8
Point Lay	10/15	11/27	11/7-11	4	5/20	7/9	6/11-17	3
Kivalina	10/15	11/1	10/20-24	5	5/15	5/26	5/19-25	5
Kotzebue	10/2	11/5	10/19-23	13	5/17	6/8	5/27-6/2	10
Selawik	10/3	10/30	10/17-21	6	5/13	6/7	5/25-31	6
Deering	10/3	10/29	10/14-18	4	5/13	6/11	5/24-30	3
Candle	10/10	10/20	10/16-20	4	5/11	5/27	5/17-23	7
Shishmaref	10/24	12/4	11/4-8	12	6/9	7/6	6/18-24	12
Prince of Whales - Cape	10/8	12/24	11/21-25	10	5/15	6/17	5/23-6/3	10
BEAUFORT SEA:								
Barter Island	9/20	10/25	10/5	6	7/22	8/4	7/28	4

Table 20