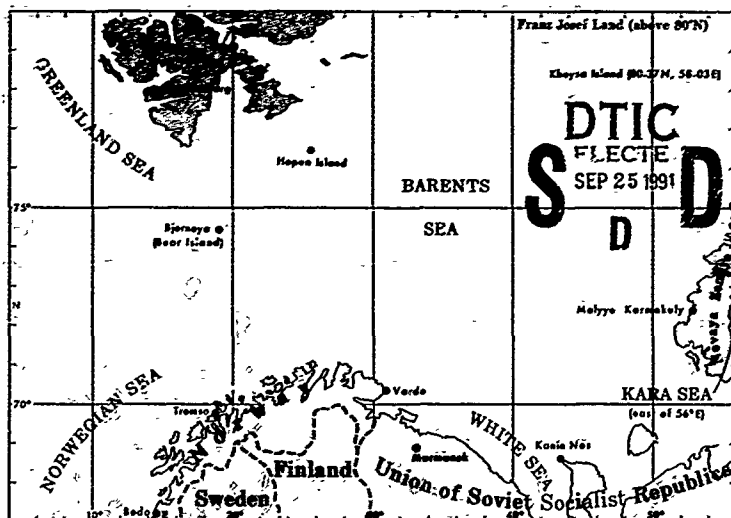




U.S. NAVY REGIONAL CLIMATIC STUDY OF THE BARENTS SEA AND ADJACENT WATERS

OCTOBER, 1990



PREPARED BY
NAVAL OCEANOGRAPHY COMMAND DETACHMENT
ASHEVILLE, NC

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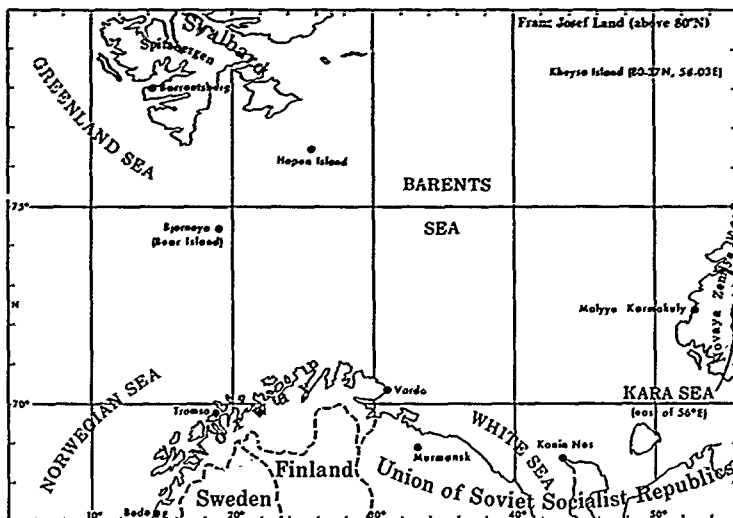
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U.S. NAVY REGIONAL CLIMATIC STUDY OF THE BARENTS SEA AND ADJACENT WATERS

The U.S. Navy Regional Climatic Study of the Barents Sea and Adjacent Waters was prepared for the Commander, Naval Oceanography Command (CNOC) by the Officer in Charge, Naval Oceanography Command Detachment, Asheville, NC. The work was performed in Asheville at the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC). The surface marine and coastal station statistics presented in this study were made possible through programs designed at NCDC and funded primarily by CNOC in support of U.S. Navy's continuing marine climatology requirements.

Special acknowledgement is given to the following meteorologists of NCDC's Global Climate Laboratory (GCL): William A. Brower, Jr., for serving as project leader and climatic analyst; Phala L. Franks, for performing the computer processing and editing of marine data; H. Lawrence Nicodemus, for development and production of the Station Climatic Summaries; and Michael J. Changery, for performing an editorial evaluation of the text, isopleth analyses, and graphics products. Specific acknowledgment is also made to GCL's Ronald G. Baldwin, computer programmer/analyst, for production of the computer-generated graphic presentations, and Michael G. Burgin and Scott J. Miller, meteorological technicians, for their drafting skills in preparation of this publication for printing.

Geographical Coverage

This climatic study covers the Barents Sea and adjacent waters between 67° and 80° north latitudes and 04° and 56° east longitudes. Figure 1 shows the Area and the locations of 10 coastal and island stations for which climatic statistics are presented.

Climatic Data and Summaries

Surface marine statistics are presented on monthly charts in the form of graphs, tables, and isopleth maps. Statistics include the means or percent frequency of occurrence of threshold values for wind, visibility, clouds, precipitation, air and sea surface temperatures, ocean waves, and sea ice. The marine statistics, for other than sea ice, are based on 773,000 hourly observations taken from NCDC's Tape Data Family 1129 (TDF-1129). These observations were collected by ships of various registry frequenting the marine Area over the period 1854-1987.

Many of the ships' observations are presently transmitted over the Global Telecommunications System, captured and archived. Other observations are digitized from ship log forms by various participating members of the World Meteorological Organization, and exchanged under international agreement among the various maritime nations of the world. Although data for this study dates from 1854, most of the observations have been collected in the past 40 years, which is significant because recent observations contain more elements than pre-1948 reports. The density of observations is greatest along major shipping routes which, in the Area, connect all the major ports of the region through the shipping corridors of the Barents, Norwegian, and Greenland Seas.

The TDF-1129 data were subjected to thorough computer and visual quality control to eliminate duplicate observations and exclude questionable elements detected during internal consistency and extreme value checks. The edited data were computer summarized and plotted by 1° latitude by 2° longitude quadrangles and subjectively analyzed by a meteorologist in order to produce isopleth maps. Subjective adjustments were made to the analyses when data biases or insufficient observations were evident. Consistency checks were also made in the sets of monthly patterns for each element and among elements, as well as comparative checks with other marine atlases and publications.

Computer graphs and tables of visibility, wave heights, and wind roses are also presented by quadrangle on monthly charts. The legends on the charts contain detailed instructions on how to read the graphics. The graphs and tables represent the objective compilation of available data. These data were not adjusted for suspected biases (low observation count, heavy weighting of observations taken during relatively short time intervals, biases in coding of observations from various source decks, etc.); hence, differences may be found when comparing the graphical data with the isopleth analyses. The total number of observations for a given quadrangle should always be considered when interpreting the data because there may not be a sufficient number for the calculation of climatically representative statistics.

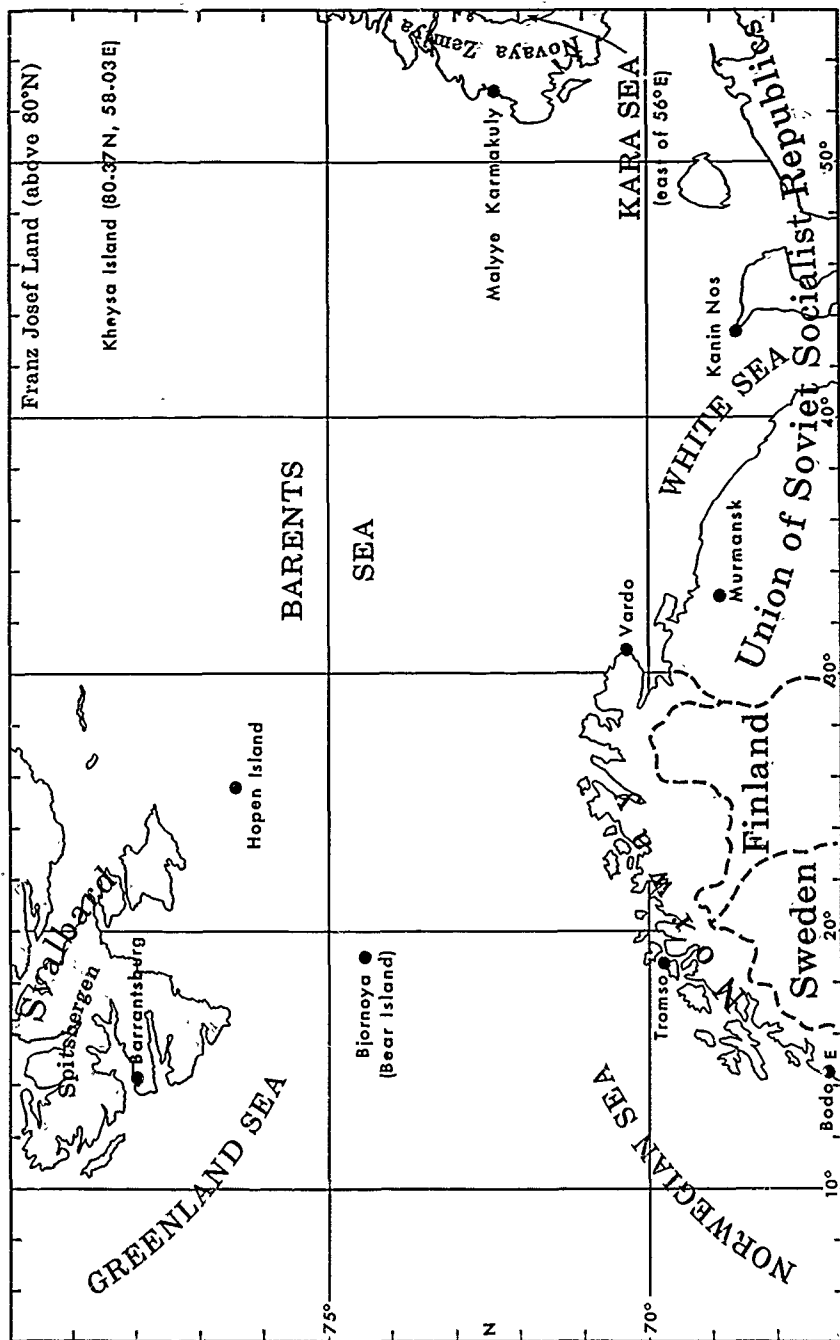


FIGURE 1. STUDY AREA LOCATOR MAP

Sea ice in the Area throughout the year restricts shipping, and the collection of marine observations, to ice-free waters. For this reason, sea ice statistics are presented along with the marine isopleth parameters. The ice statistics were taken from U.S. Navy's Sea Ice Climatic Atlas: Volume II Arctic Ice East (NAVAIR 50-1C-541). The mean ice edge is displayed on all isopleth charts, and additional ice information is included with the isopleth charts for sea surface temperature and wave heights. The degree of statistical confidence is low for all isopleth analyses extending beyond the mean ice edge, the area having little or no data. Isopleth analyses beyond the mean ice edge were based principally on extrapolations of weather patterns identified by isopleth analyses over ice-free waters and during warmer months, the area and time of greater data availability, and other marine and continental atlases and publications.

The ice isopleths presented give the percent probability of ice extremes and concentration for the Barents Sea and adjacent waters. Actual concentration boundaries, under the influence of changing synoptic meteorological and oceanographic situations, may vary widely from the averages. An isopleth label, therefore, does not explicitly define the conditions on either side of the line since presence of sea ice is discontinuous in nature and regions of 80% mean ice concentration may be bordering regions of 20% ice concentrations with no intermediate region of 50% ice concentration. However, the inherent continuity of persistence of sea ice features permit an isopleth presentation to provide meaningful information. The sea ice data were derived from digitized weekly analyses of sea ice conditions based primarily on satellite imagery (90%) supplemented by ship and shore reports and aerial reconnaissance. These weekly polar sea ice analyses have been operationally produced by the U.S. Navy/NOAA Joint Ice Center (JIC) since 1972. In 1981, JIC initiated a Sea Ice Digitization Program to digitize the weekly polar ice maps as they become available. NCDC was funded by the U.S. Navy to design software and digitize all weekly ice concentration charts available since 1972, and produce polar ice atlases based on data through 1982. The Antarctic Ice Atlas was published in 1985, and the Arctic West and the Arctic East Atlases in 1986. Ice data for 1990 are presently being digitized.

Station Climatic Summaries (SCS) are presented in tables for the 10 coastal and island stations shown in Figure 1. Table 1 lists the station name, location coordinates, and period of record for the hourly (telecommunications) data which were processed for each of the stations. Data for these 10 stations were taken from the edited digital files of the U.S. Air Force's Environmental Technical Applications Center (ETAC) in Asheville, NC.

TABLE 1. Climatic Summary Stations

WMO NO.	STATION NAME	LAT (°N)	LONG (°E)	PERIOD OF RECORD
01025	Tromsø/Langnes, Norway	69-41	18-55	1973-1989
01028	Bjornoya Island, Norway	74-31	19-01	1973-1989
01062	Hopen Island, Norway	76-30	25-04	1973-1989
01098	Vardo, Norway	70-22	31-06	1973-1989
01152	Bodo, Norway	67-16	14-22	1973-1989
20046*	Kheysa Island, USSR	80-37	58-03	1973-1989
20107	Barentsburg, USSR	78-04	14-13	1973-1989
20744	Malye Karmakuly, USSR	72-23	52-44	1973-1989
22113	Murmansk, USSR	68-58	33-03	1973-1989
22165	Kanin Nos, USSR	68-39	43-18	1973-1989

* Station located just NE of Area (where no marine data exist)

A word of caution. The intent of this atlas presentation is to gather and present existing data on climatological conditions within the marine and near coastal areas of the Barents Sea and adjacent waters. The data are presented without discussion and interpretation. Given the information presented in the introductory text, legend descriptions on all charts, and numbers of observations displayed with the graphics presentations, the user should be able to assess the degree of statistical confidence in the presented climatology for a given month and location. As stated earlier, because little or no data were available within the ice-covered waters of the Area, the degree of statistical confidence must be considered low for all marine statistics extending beyond the mean ice limit displayed on each isopleth chart. In addition, after the marine isopleth analyses were completed and artwork begun, it was decided to include climatological statistics for the 10 coastal and island stations in order to present a better climatological picture of the Area. Differences, therefore, may be found when comparing the station tabular data with the marine isopleth analyses.

Physical Features

The Barents Sea, a major outlying sea of the European sector of the North Polar Basin, is bordered on the south by northern Norway and Russia and the White Sea and on the east by the great archipelagoes of Novaya Zemlya, which separates the Area from the Kara Sea, and on the north by Svalbard and Franz Josef Land and the Arctic Ocean. The straits sandwiching Bjornoya (Bear Island), an island midway between Norway and Spitsbergen defining the western limit of the Barents Sea, connect the Barents Sea with the neighboring deep waters of the Greenland Sea to the west and the Norwegian Sea to the southwest. West and southwest beyond the Area lie the islands of Greenland and Iceland. The Barents Sea covers a relatively shallow continental shelf fringing the Eurasian landmass. This shelf floor, which is covered by sand, silts, and a sandy-silt mixture, is 750 miles across and is a part of the widest shelf in the world. The Barents Sea's area is 542,000 square miles--about the size of the Gulf of Mexico--and has an average depth of 750 feet, with a maximum of 2,000 feet within the east-west oriented Bear Island Trench located south of that island. Numerous minor relief features, probably caused by glacial action, are scattered throughout the Area. Although no true submarine canyons are known in the Area, glacial-type submarine valleys extend seaward from the mouths of many fiords. Nearly all seismic activity occurs west of the Area along the Mid-Atlantic Ridge, running north through Iceland, Jan Mayen, and west of Svalbard to the polar regions. Figure 2 provides some general bathymetry information.

Surface currents in the Norwegian, Greenland, and Barents Sea are generally counterclockwise. Seasonal location of sea ice in the Area varies greatly from year to year but never completely disappears. A permanent tongue of polar pack ice west of the Area prevents direct access to the Greenland coast from the Area throughout the year. The ice-free waters of the Area afford the shortest shipping route from European Russia to the North American continent. The eastern end of the important North Sea route to the Barents Sea, although ice-free on the average only from late June into late October, is via the Baltic-White Sea Canal. In no portion of the Area does the surface water reach a temperature at which an individual can be considered reasonably safe from the effects of cold water--survival times are exceedingly limited. Tides are principally semidiurnal, with the progression generally northward in the Norwegian and Greenland Seas and eastward in the Barents Sea. Spring tide ranges are greatest along the Norwegian and Russian coasts, the maximum range of 28 feet occurring at the mouth of Russia's Mezen' River in the White Sea. Tidal currents may reach speeds of 3.5 knots in places along the Norwegian and Russian coasts and present difficulties to navigation. The most direct great circle air routes between Russia and North America cross the Area.

The Area's western mainland coast eastward to Cape Svyatoy at about 40° longitude is elevated with abrupt shores. East of Kanin Peninsula the Russian coast within the Area is lowlying, with a number of shallow bays and inlets. The bleak coasts of the various archipelagoes are steep and high; glaciers frequently plunge down to the sea and moraines (glacier-carried debris) accumulate in the hollows.

General Circulation and Climate

The climate of the Area is influenced throughout the year by seasonal variations in three polar air masses and their associated wind regimes and intervening zones of interaction--the Arctic air with polar easterlies to the north, the Eurasian continental air and Atlantic maritime air with mid-latitude prevailing westerlies to the south, and the Arctic front embedded in zones of relatively low pressure located between the cold Arctic and milder maritime air. Other controls on the climate of the Area include the decrease in solar insolation in polar regions compared to that in the regions of the westerlies to the south, relatively stable climate over the ice-covered Arctic Seas, seasonally variable climate over the Eurasian continent, warm and cold ocean currents, and ice-free waters. The combined influences produce a climate within the Area ranging from polar in the northern portion to near temperate in the southwest. The polar regime is typified by generally persistent but weak polar easterlies and relatively fair weather associated with high pressure. The southern portion is typified by relatively intense but variable westerlies associated with migratory extratropical cyclones originating west of the Area and moving through the Area along the Arctic front. Continental influence is present along the Eurasian coast. The result is a bleak climate with low air and water temperatures, fog, ice, rough seas, and sudden and long continuous storms. Figure 3 shows the mean sea-level pressure distribution in January and July for the area 30-80N, 20W-90E.

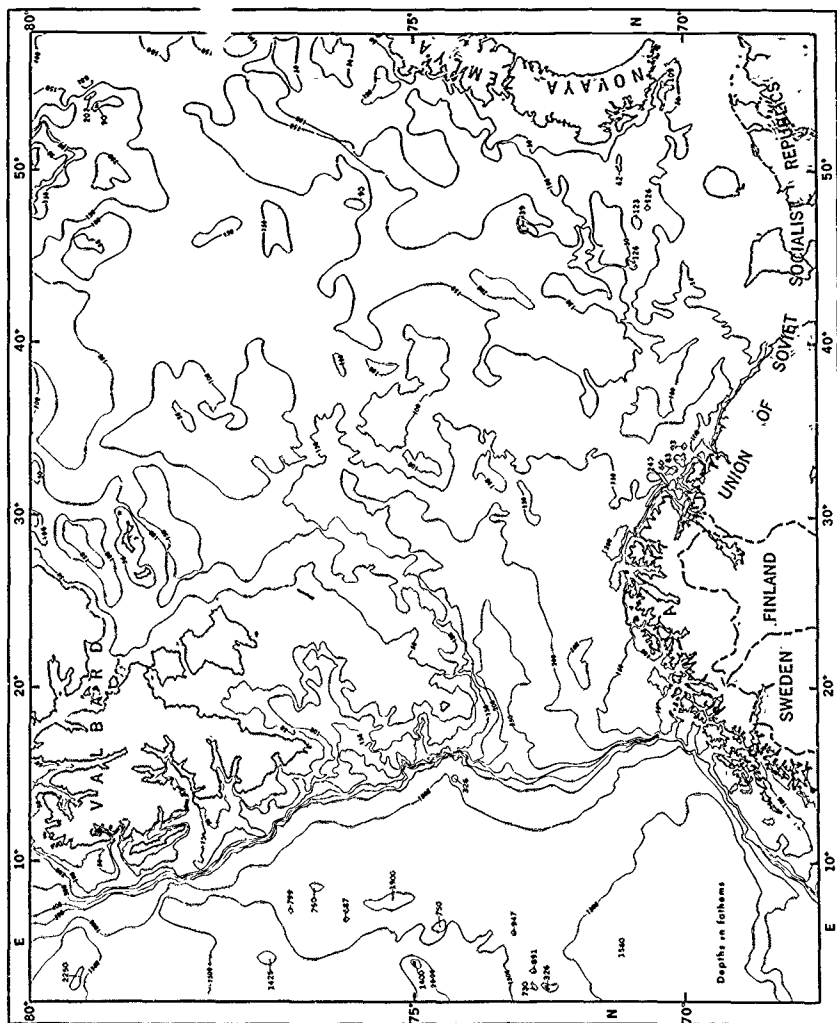


FIGURE 2. BATHYMETRY CHART

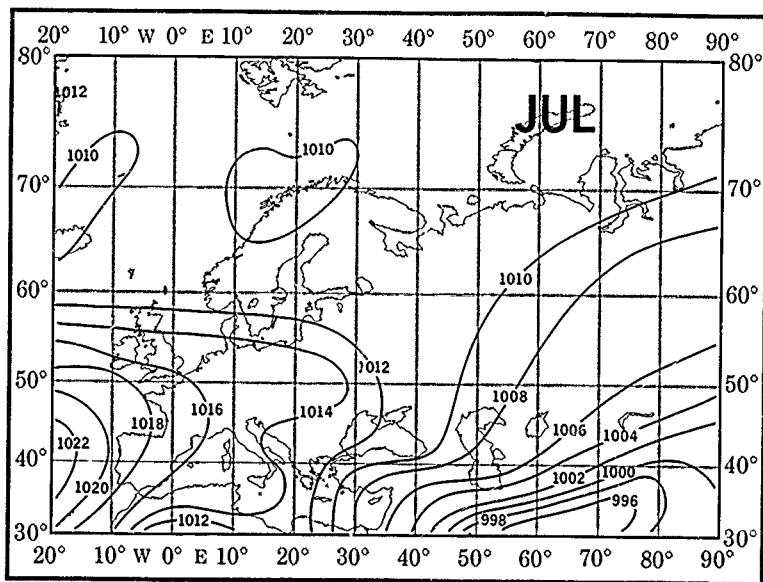
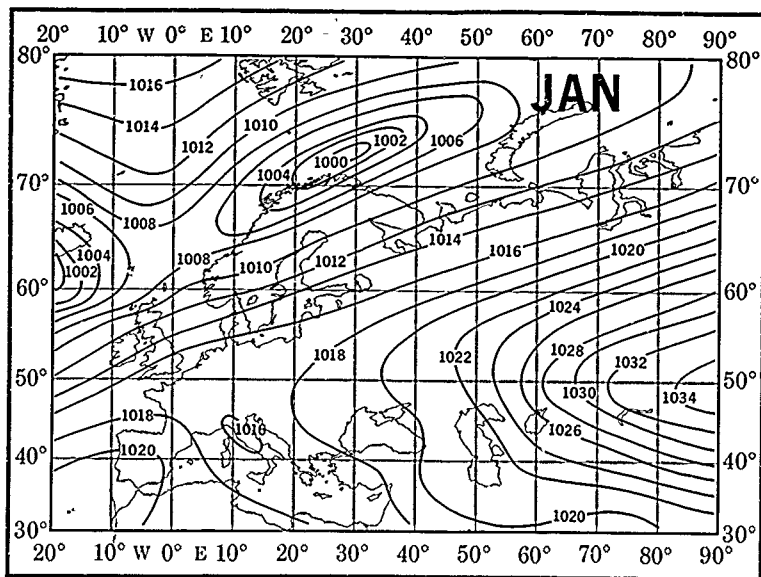


FIGURE 3. JANUARY AND JULY MEAN SEA-LEVEL PRESSURE

Both the Arctic and Eurasian continental polar air masses, which develop over surface ice and snow, are highly stable and typified by intense cold, and relatively dry, fair weather associated with high pressure. The continental high is most intense during winter and the Arctic front is well defined and in general extends eastward within the Area from Bear Island to the northern tip of Novaya Zemlya. In summer, an increase in insolation and the consequent surface heating on the Eurasian continent result in relatively low pressure and, as the Arctic high expands, the Arctic front becomes diffuse and is generally found to the south along the Russian coast. The northwestern tongue of the relatively warm Atlantic polar maritime air mass, which is actually returning Arctic or polar continental air modified by passage over water, continually influences the Area's southwestern waters and coastal regions of Norway and western Russia. The Arctic front, a semi-permanent, semi-continuous front, extends in a northeasterly direction from the deep semi-permanent Icelandic Low south of Iceland across the Barents Sea and beyond. Winter storms, which grow along the front, move generally from Iceland along northern Norway to the Barents Sea and, on occasion, continue eastward along the north coast of Siberia. Cyclonic intensity is greatest in the Norwegian Sea, decreasing along the axis of the pressure trough eastward to Novaya Zemlya. A vigorous variation in weather associated with the frequent passage of cyclonic depressions along the front is typified by increased wind speed, cloudiness, precipitation and, in ice-free waters, sea state.

Although air masses and the intervening zones of interaction are significant in determining the climate of the Area, the path and age of the air mass, as well as the nature of the source, govern its characteristics. Also important, because of its effect on stability, is the contrast in temperature between the air mass and the surface over which it travels. The most pronounced variation of these factors occurs between winter and summer; the intervening seasons are transitional. Long periods of severe cold and the high percentage of snow result from frequent outbreaks of extremely cold air from the north. The relatively high temperature, persistent cloudiness, strong winds, fog, and fairly frequent precipitation can be attributed to the invasion of warm, moist air from southerly sources. This vigorous variation is a response to the frequent passage of cyclonic depressions along the Arctic front.

Two Arctic air masses originating during winter over ice in high latitudes having almost complete lack of insolation make up the very cold air to the north of the Arctic front. The Greenland/Polar Basin air quickly becomes modified to Arctic maritime air as it moves southward over relatively warm waters and only fresh outbreaks over these waters result in unusual instability. Severe turbulence and showery precipitation of cold rain or snow are associated with such southward air mass displacements. The second air mass, which originates over Novaya Zemlya/Polar Basin northeast of the Area, undergoes relatively little modification as it moves southward over the underlying ice pack, and such storms are generally considered the most severe type along the Arctic front. Generally, less variation in air masses is experienced during the short summer period when a flat and less extensive pressure field and fewer intense depressions result in a weak circulation pattern. Also the distinction between polar maritime and Arctic air becomes less pronounced because, under the influence of almost continuous insolation, their source regions become fairly uniformly mild, humid, and semi-maritime. Air masses formed over the Arctic pack ice, however, retain their extreme winter characteristics which contrast sharply with the warmer and more moist air from the southwest.

The Arctic pack ice plays an important role all year in the climate of the Area. Although heat is conducted through the ice from the relatively warm waters beneath, this ice-covered region acts very much like a large landmass in winter. During outbreaks of cold, dry Arctic air, the pack ice helps to maintain the original characteristics of the Arctic air as it travels over the ice. Weather is generally fair and clear and very cold. However, when maritime air is advected over the pack ice, widespread regions of fog and low clouds are quickly formed.

The maritime regions south of the ice limits exhibit seasonal moderation, whereas the continental regions south of the Area cause extreme seasonal variability off the coasts of Eurasia. Along the Norwegian and Russian coasts, where the continental effect is present, mean temperatures are slightly higher in summer and lower in winter than in the region of westerlies to the north. In summer, when the continent of Asia becomes a warm source, air masses invading from the southeast become stable over the relatively cold water. Polar continental air quickly becomes modified into polar maritime air after passing over the ice-free waters for two or three days. The southeast Barents Sea and White Sea area also come under the influence of rather intense low pressure systems forming on the polar front over northwest Europe during the warmer months.

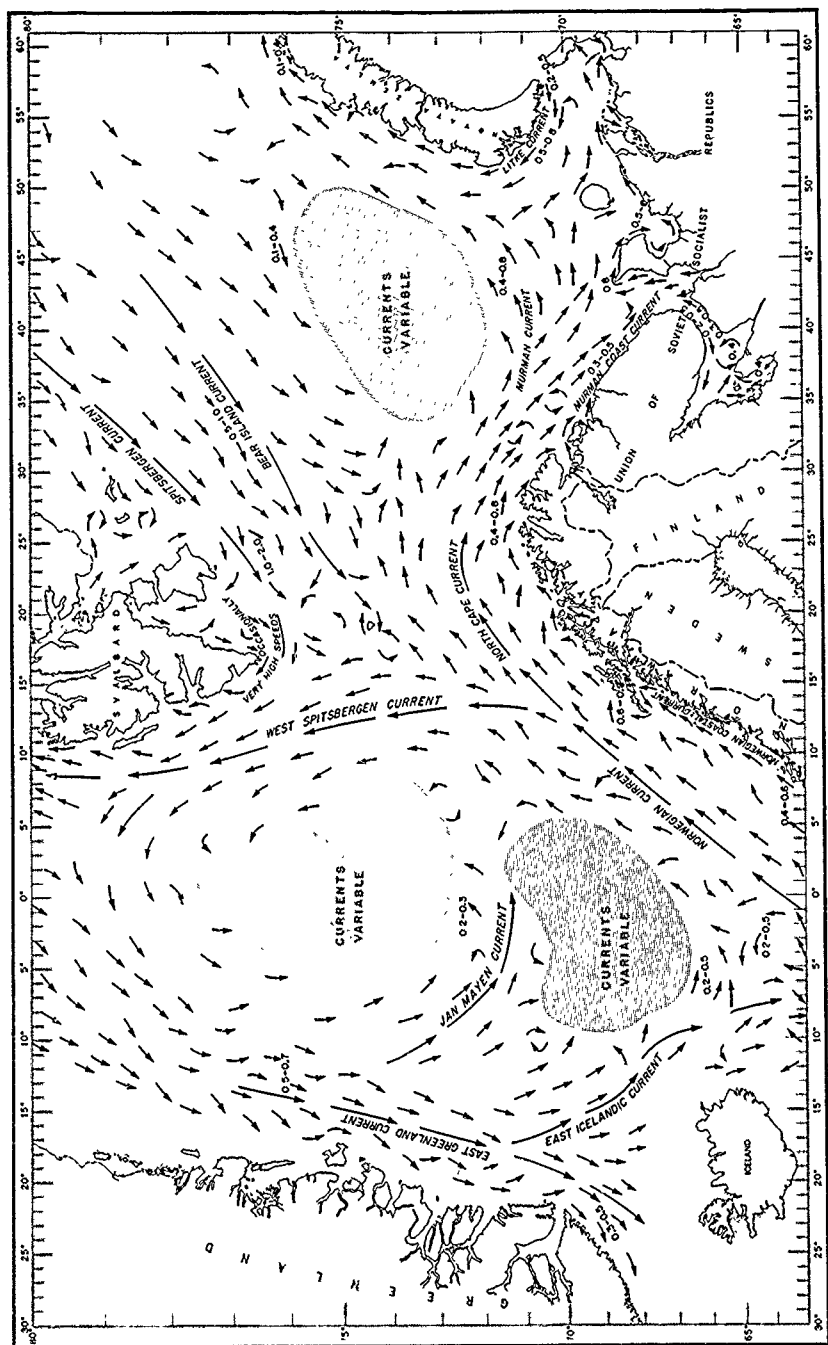


FIGURE 4. SURFACE CURRENTS (KNOTS)

isopleths are presented: the scalar mean speed and the percent frequency of winds less than 11 knots, from 11 to 21 knots, from 22 to 33 knots, and greater than or equal to 34 knots. Also given are wind roses for 1° latitude by 2° longitude quadrangles.

Visibility

Visibilities are difficult to measure at sea because of the lack of distance reference points. Climatically, many low visibility observations are probably missed because the observer is too busy with other duties (a contrasting form of fair weather bias). However, the coarseness of visibility (code) intervals helps to minimize the problem, thereby permitting the summarized data to be relatively consistent.

Clouds

A survey of the cloud data (total and low cloud amount) from the surface marine observations data base shows that the number of total cloud reports are significantly greater than that of low cloud amounts. This is because many of the early marine observations contain only total cloud amount. For the two presentations (total cloud amount $\leq 2/8$, and low cloud amount $\geq 5/8$), only those observations reporting both total and low cloud amounts were summarized. This helps eliminate problems introduced as a result of different size data sets (N-count). The use of satellite data helps to bolster confidence in the total cloud analyses because they show fairly close agreement with those observed on the surface (U.S. Department of Commerce and United States Air Force, 1971).

Ceiling and Visibility

Aircraft-type ceilings are not available from marine observations. The ceilings are estimated from the height of the lowest cloud when low clouds cover more than half the sky. When the sky is totally obscured by rain, fog, dust, or other phenomena, the total obscuration is considered a ceiling with a height of zero. Mid-range ceiling and visibility charts (ceiling less than 1000 feet and/or visibility less than 5 nautical miles; ceiling less than 8000 feet and/or visibility less than 10 nautical miles) and low-range ceiling and visibility charts (ceiling less than 300 feet and/or visibility less than 1 nautical mile; ceiling less than 600 feet and/or visibility less than 2 nautical miles) are presented.

Wave-Heights

Wave-heights have been recorded in consistent quantitative code since the late 1940s. The reluctance of many observers to take wave observations in the earlier years and the difficulty in estimating waves, especially in confused seas, make wave observations one of the least commonly observed elements. The observations are also subject to biases. Generally, the heights are too low, the periods too short, and the sea-swell discrimination poor (Quayle, 1980). The data in this study have not been adjusted for the suspected biases, but were processed through a quality control procedure wherein an internal check was made between wind speed and sea height. The data were also matrix-arrayed and apparent erroneous outlier data values were deleted from both the sea and swell data. Wave-height presentations include isopleth maps showing percent frequencies of wave-heights ≥ 3 feet and ≥ 8 feet. In addition, wave-height tables by quadrangle show frequencies by six wave-height categories. In these presentations, the higher of the sea or swell was selected for summarization. If heights are equal, the wave with the longer period was selected.

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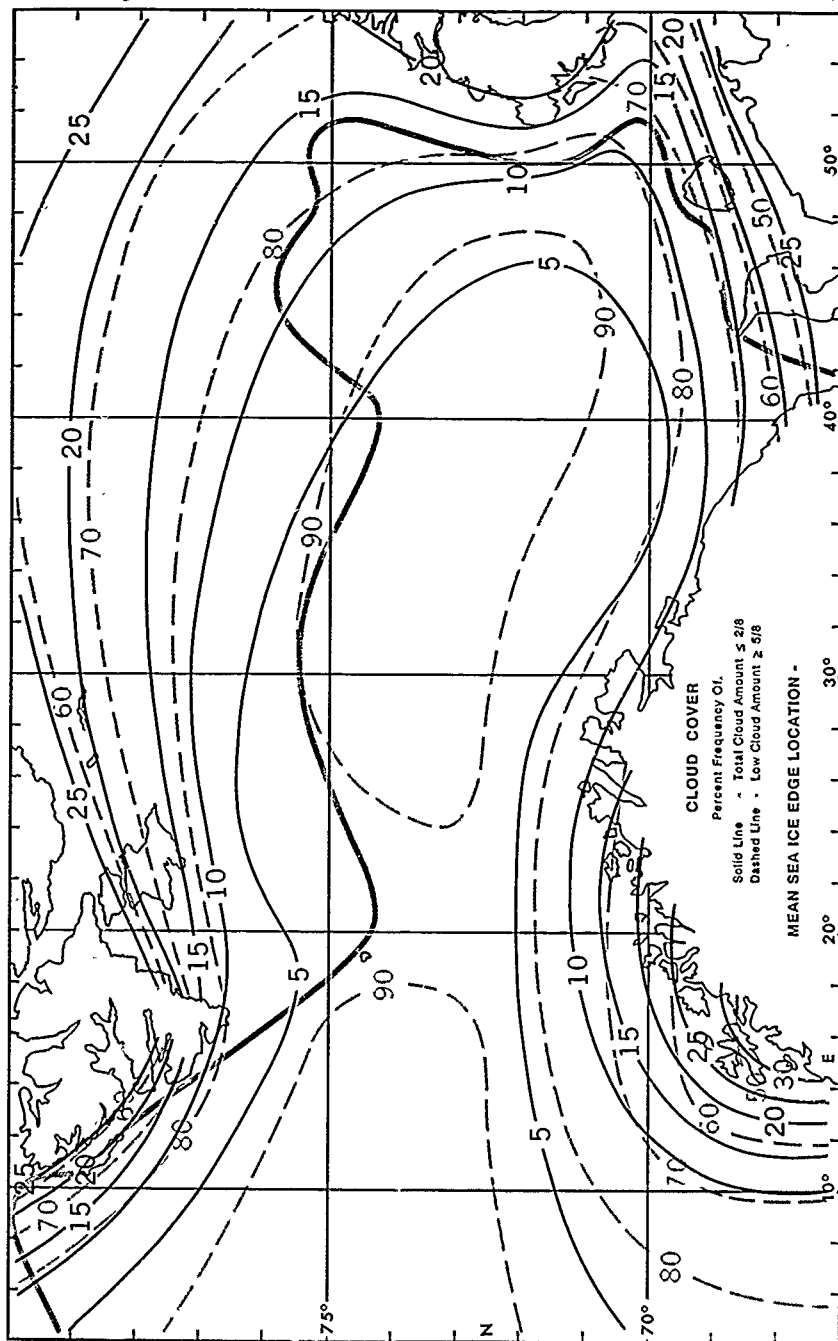
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* Mean ice edge location is shown on all isopleth charts.

January

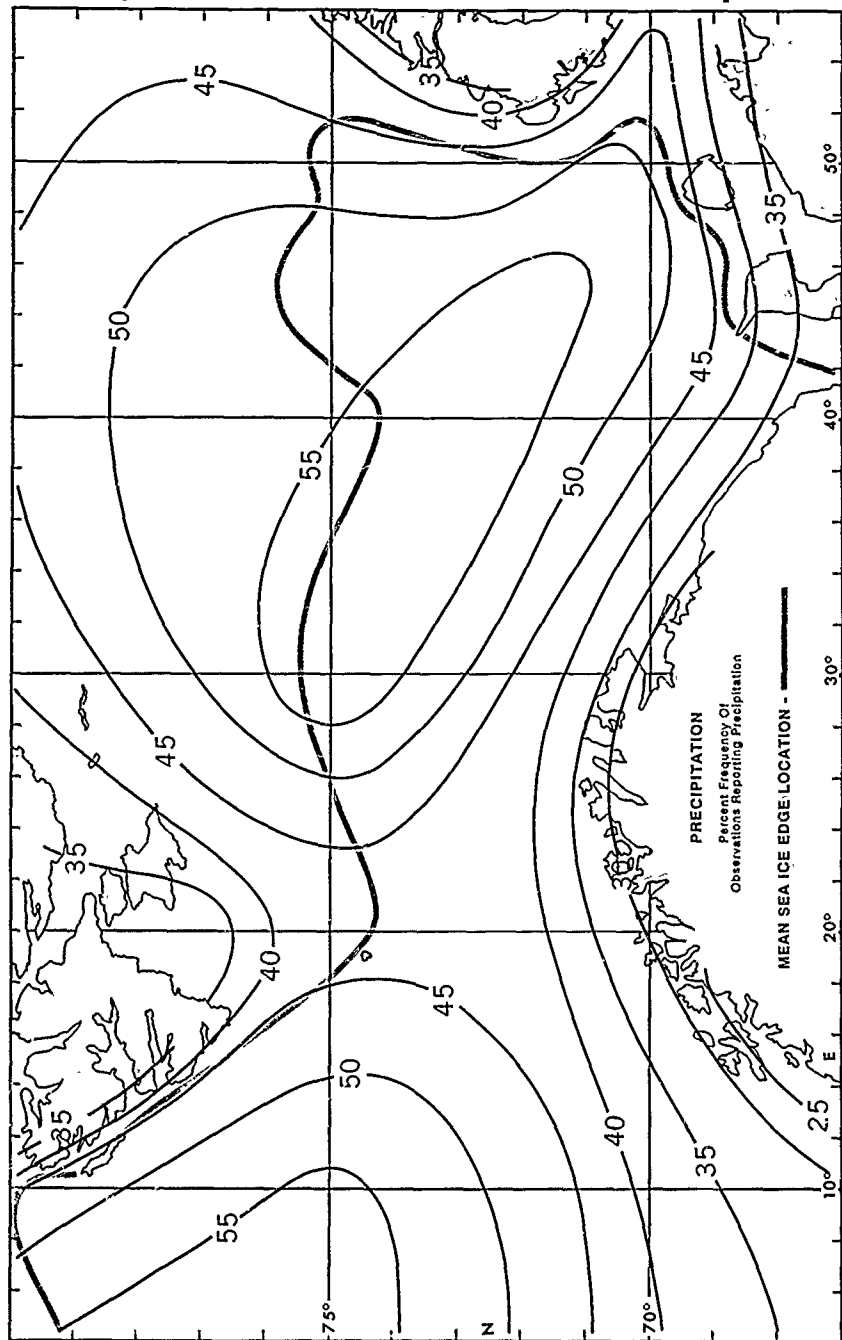
Clouds



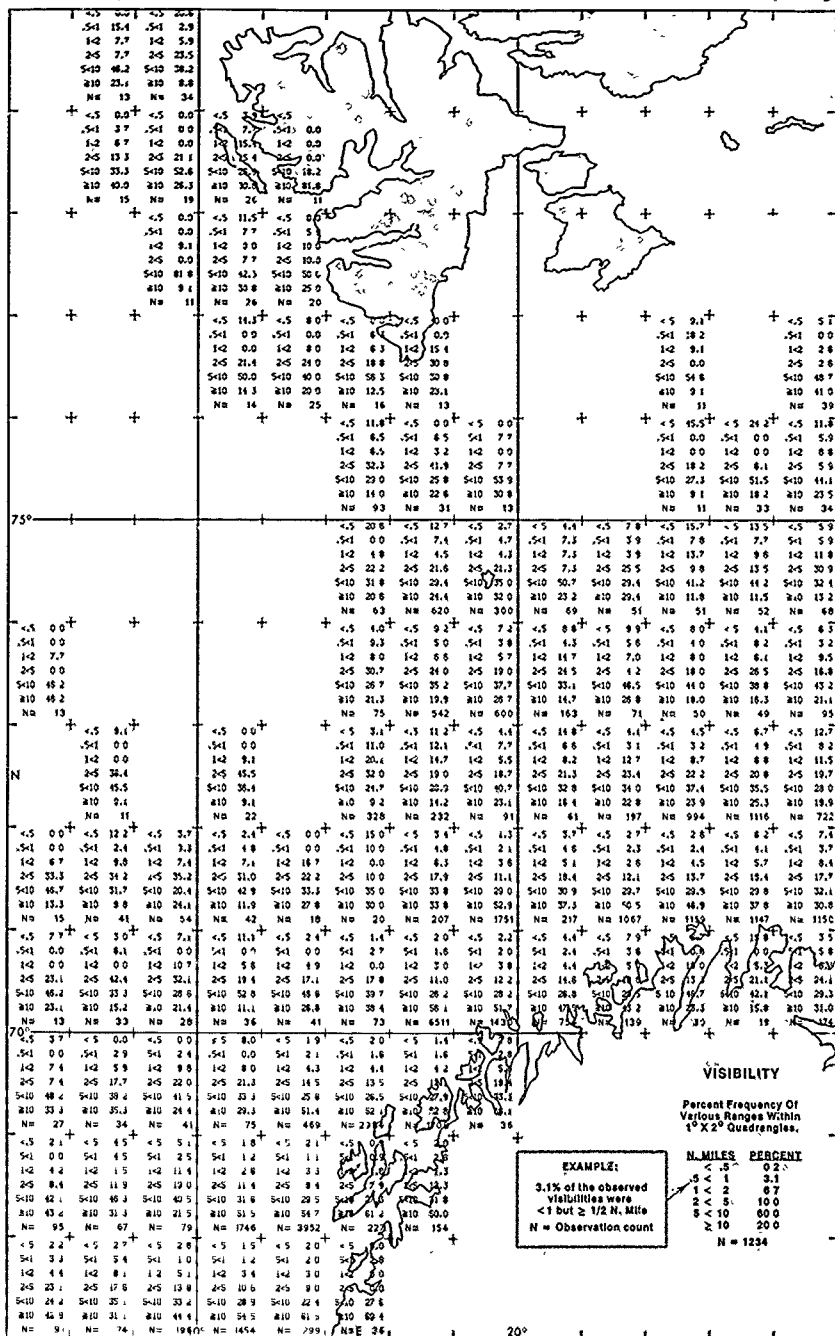
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

Precipitation

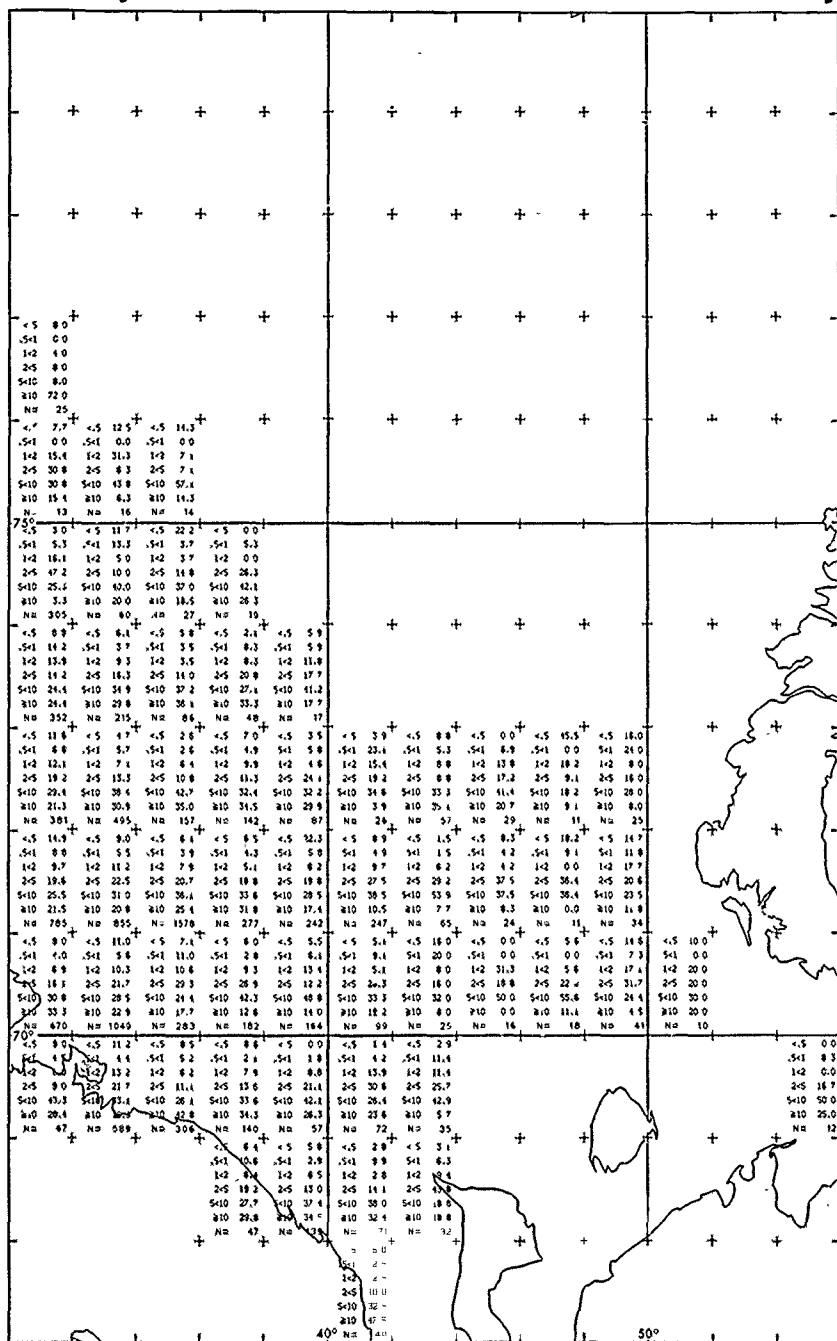


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts



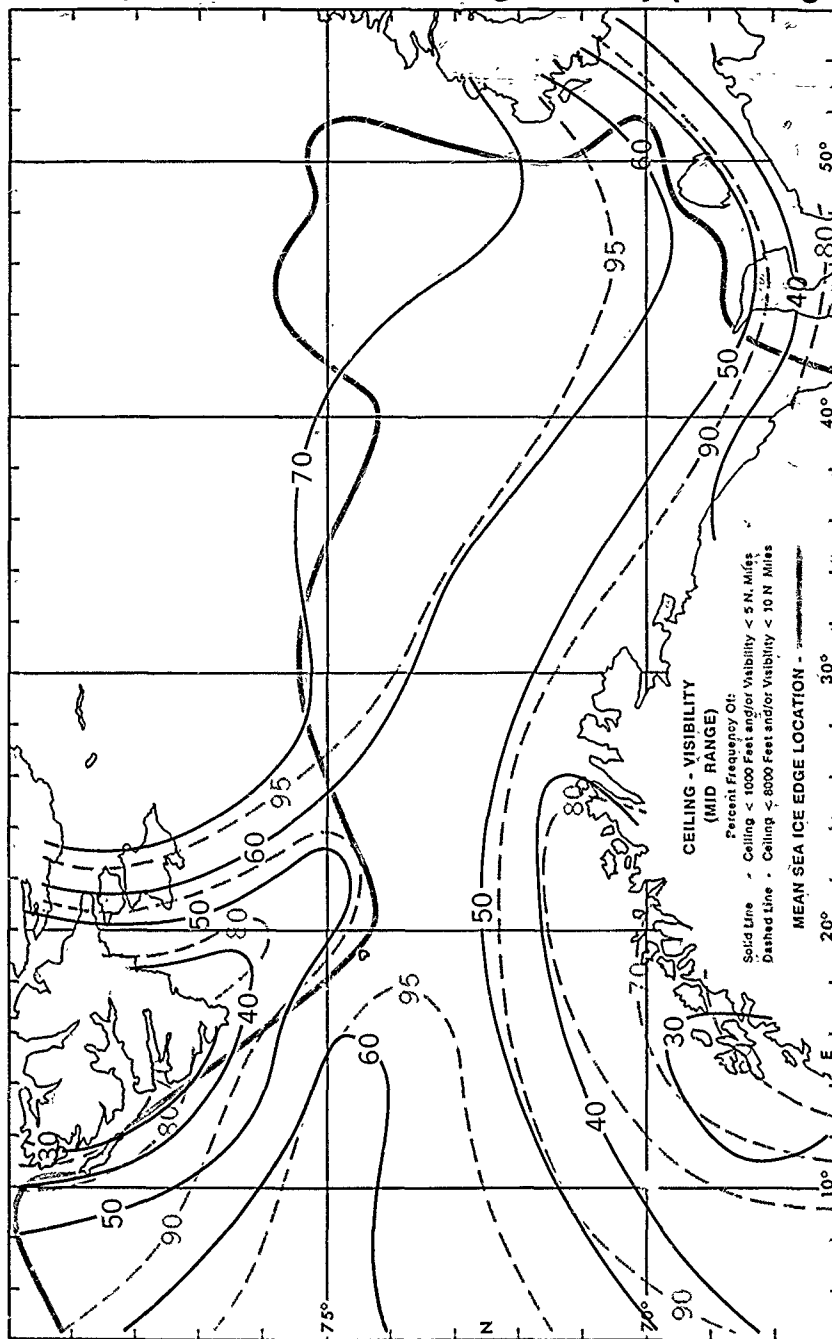
January

Visibility



January

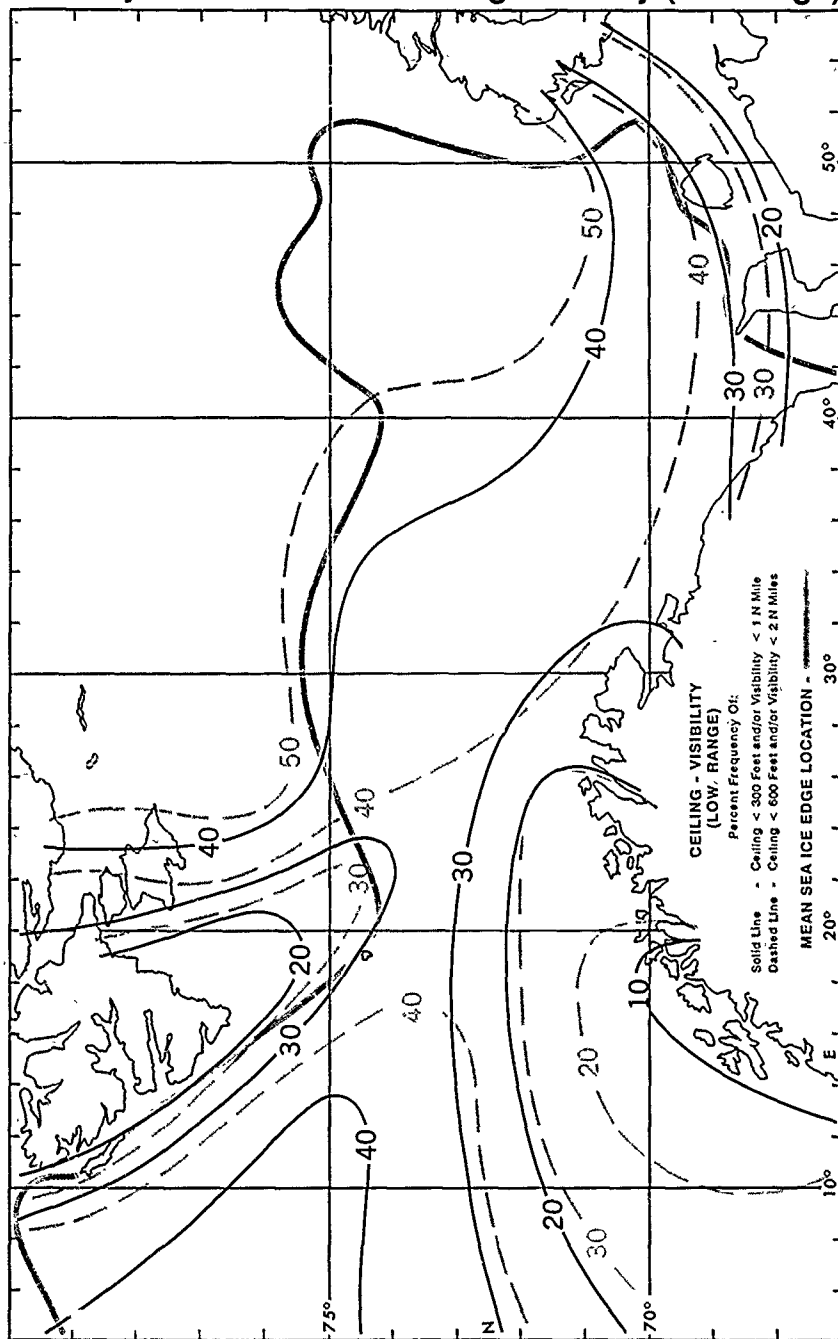
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

January

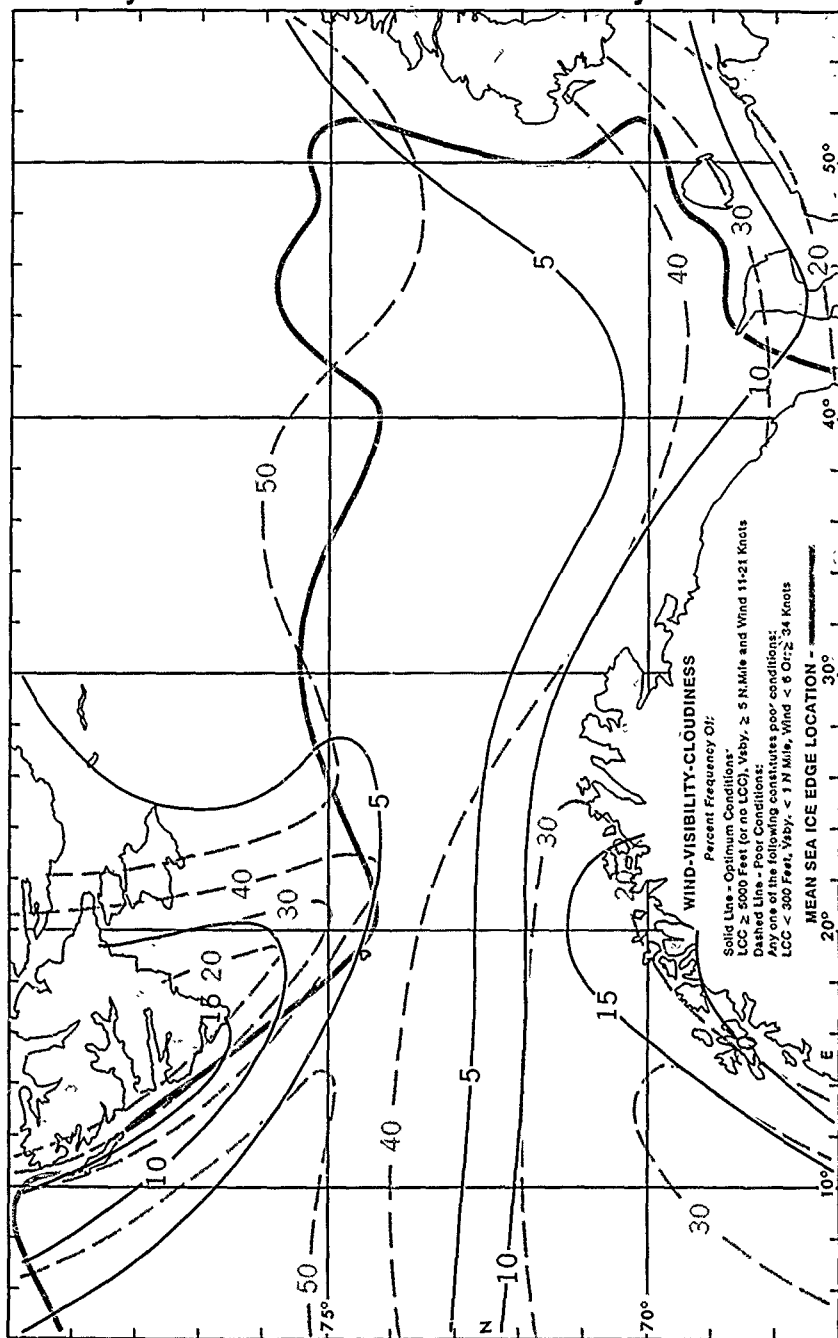
Ceiling-Visibility (low range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

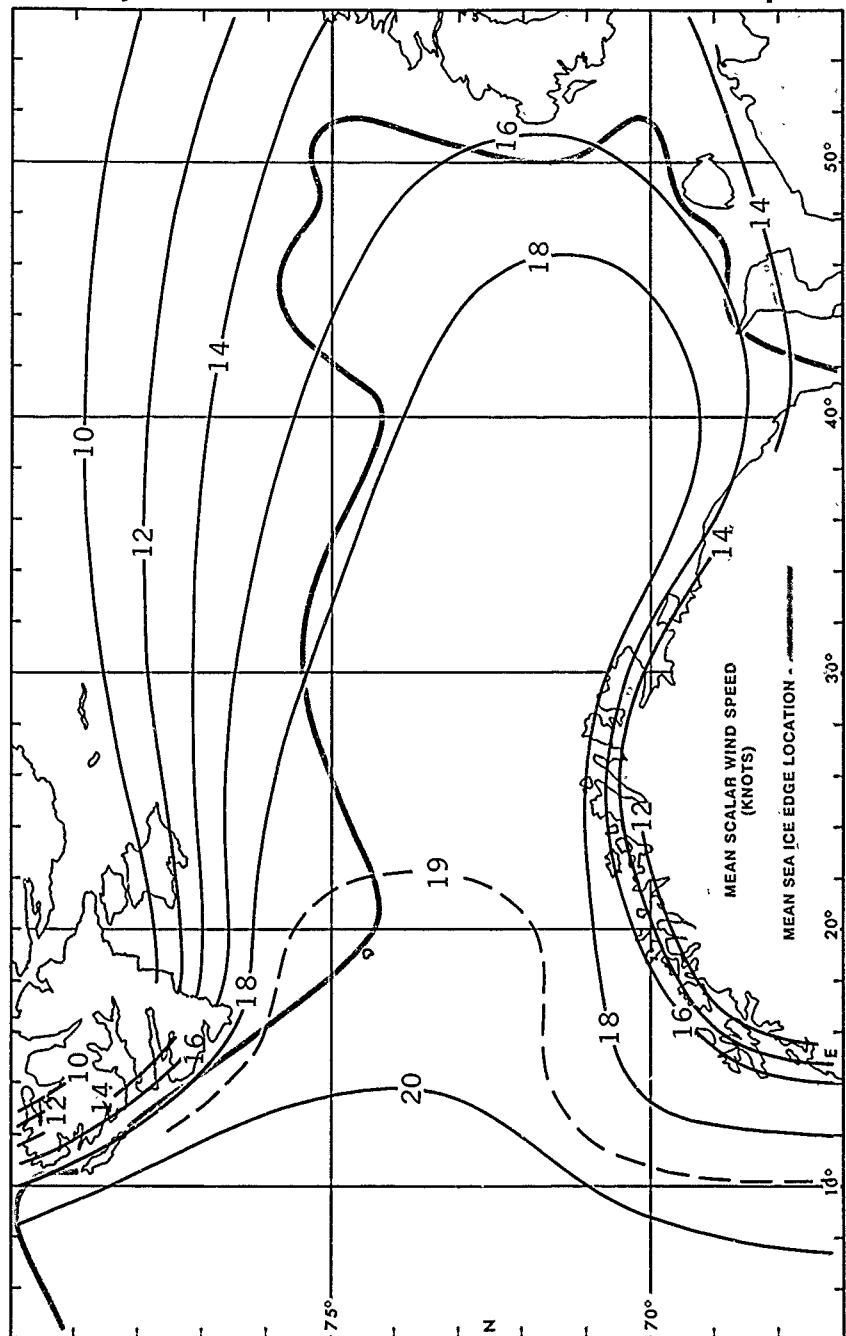
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January

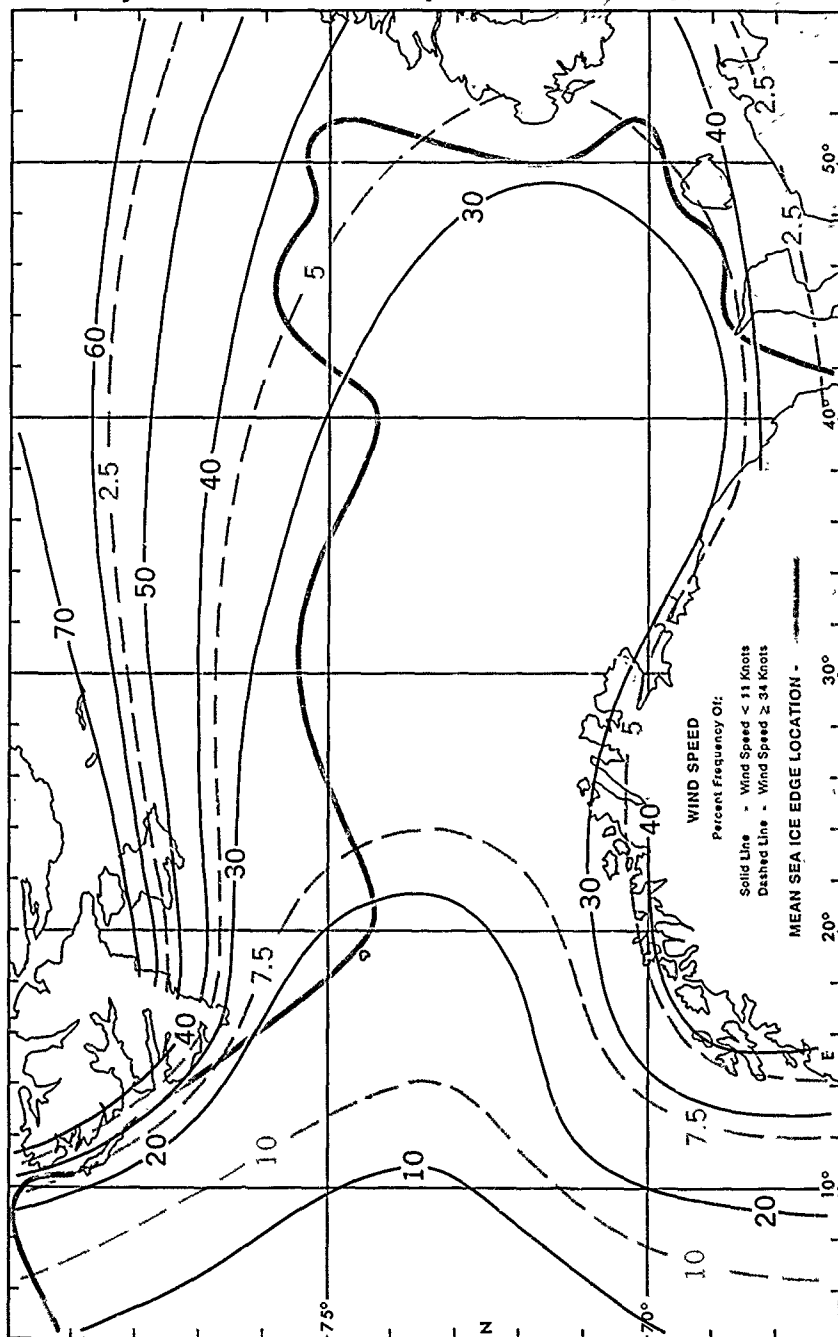
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

January

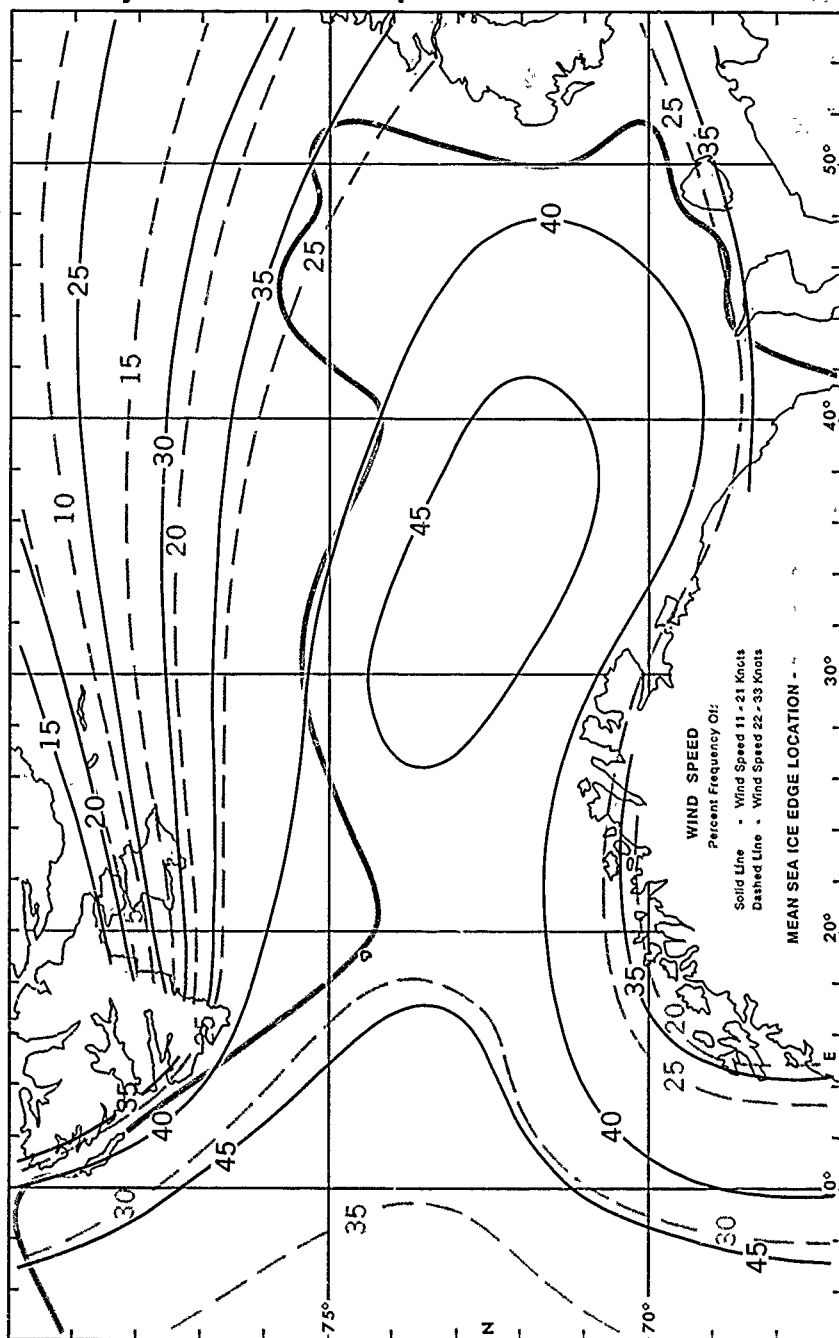
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

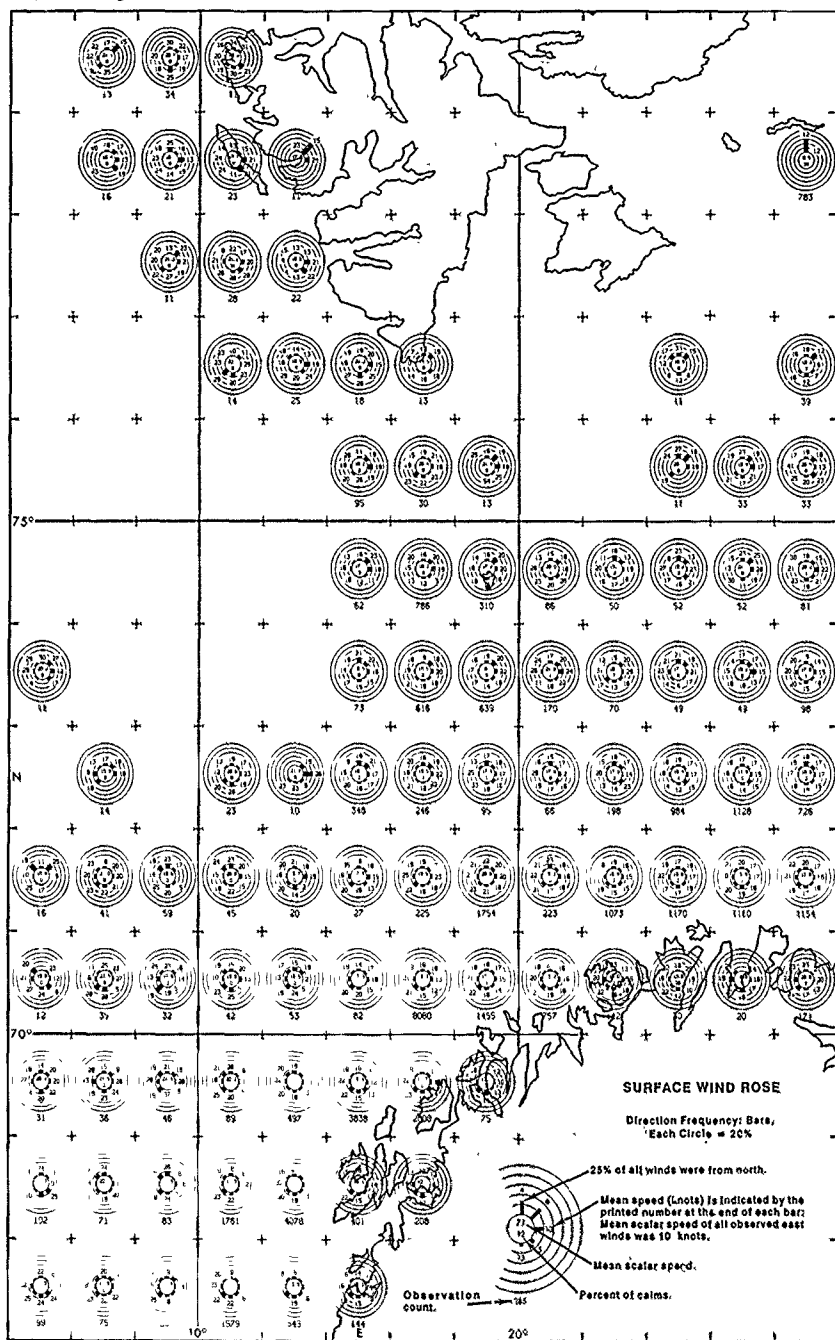
January

Wind Speed 11-21 and 22-33 Knots



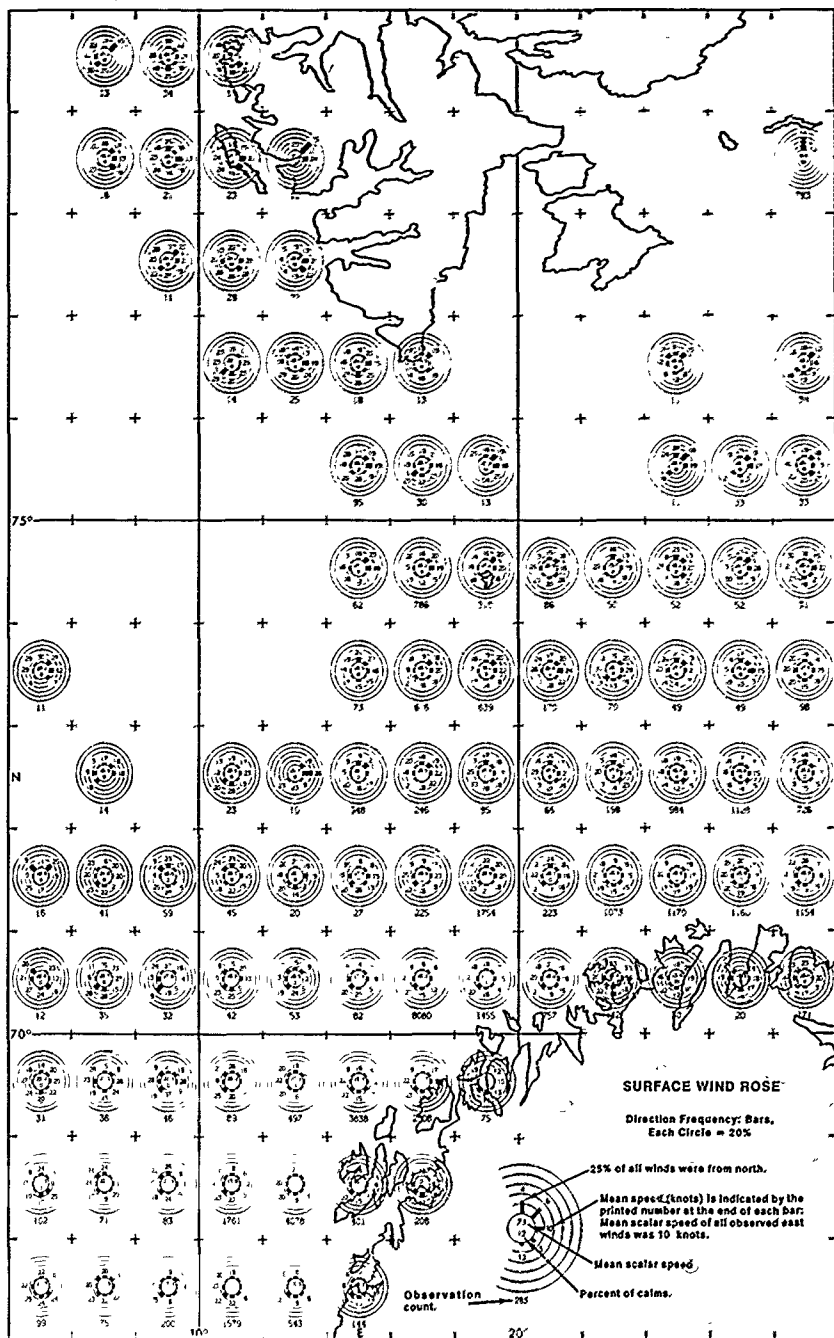
January

Surface Wind Roses



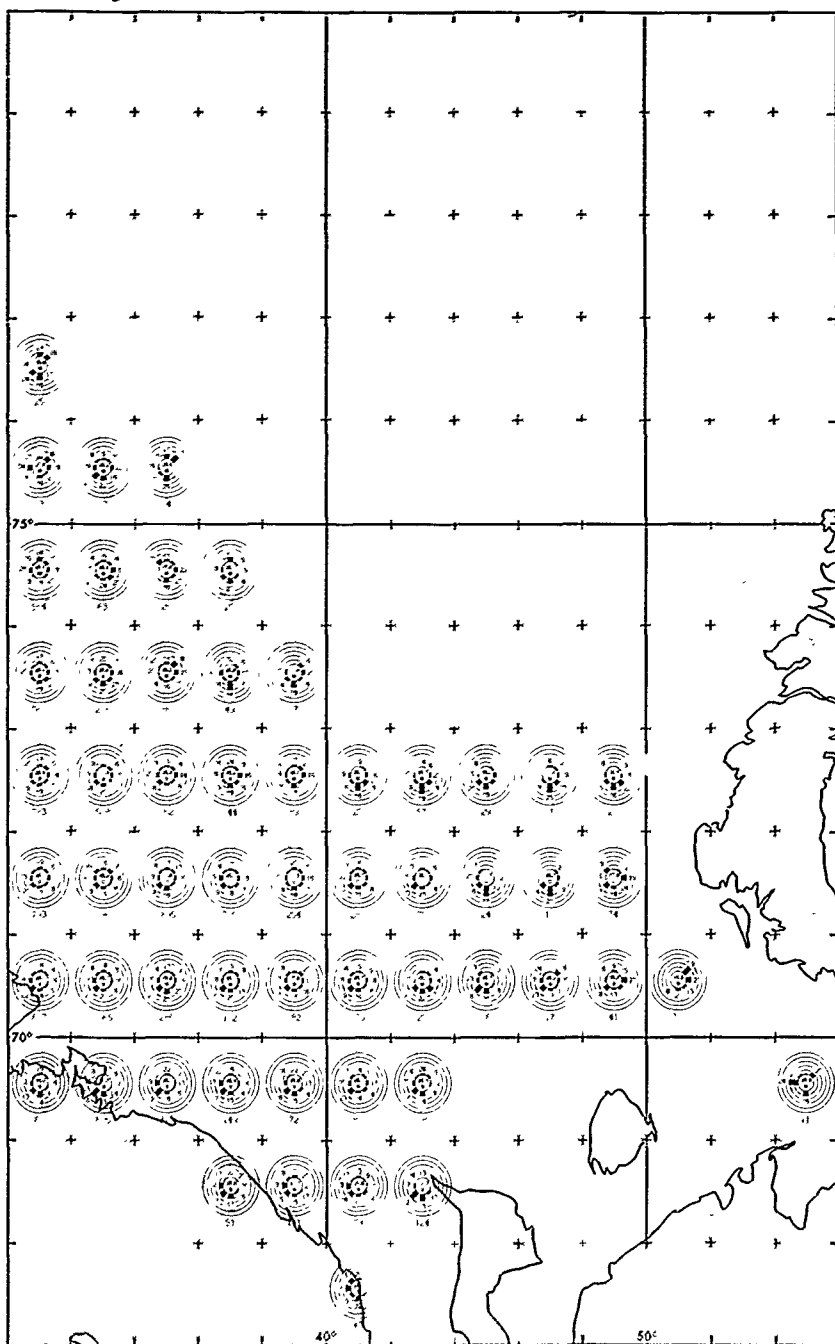
January

Surface Wind Roses



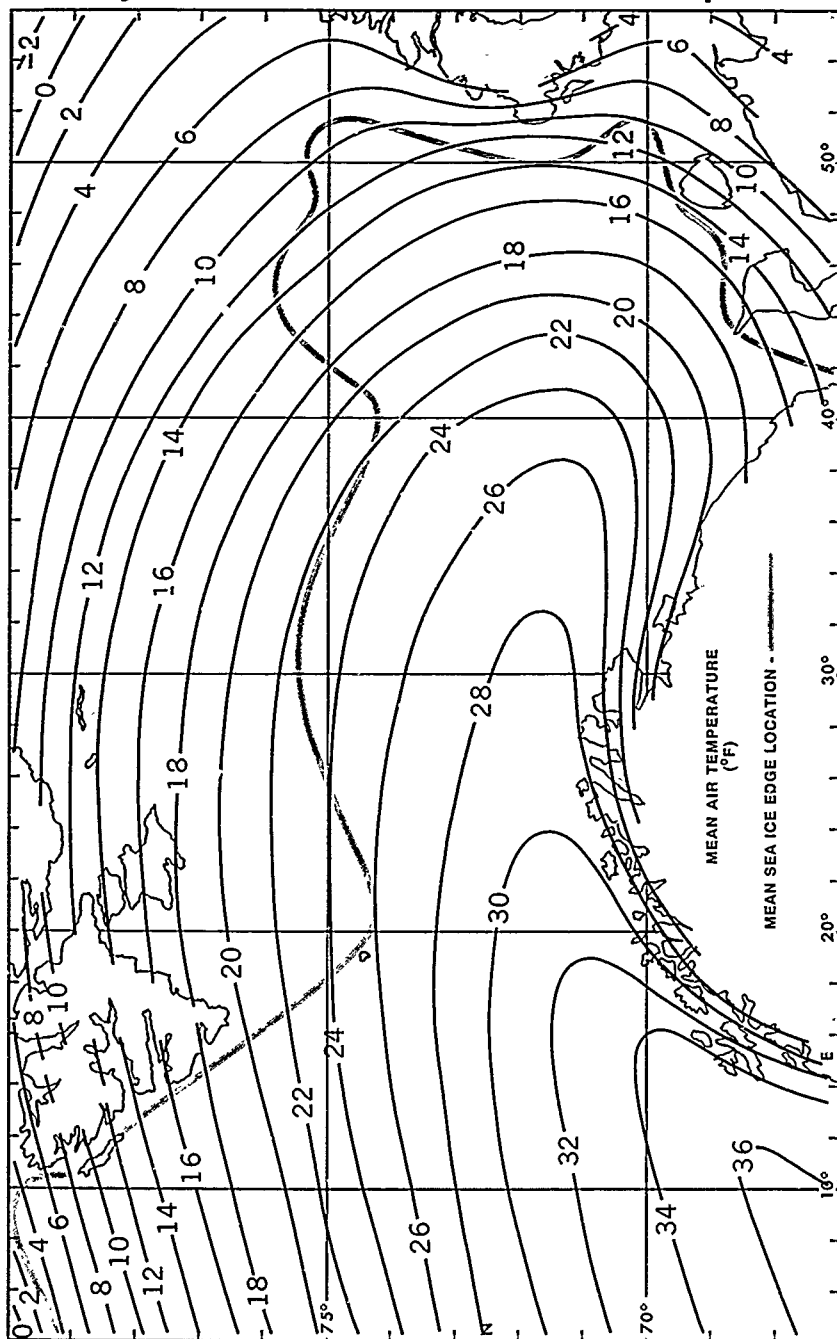
January

Surface Wind Roses



January

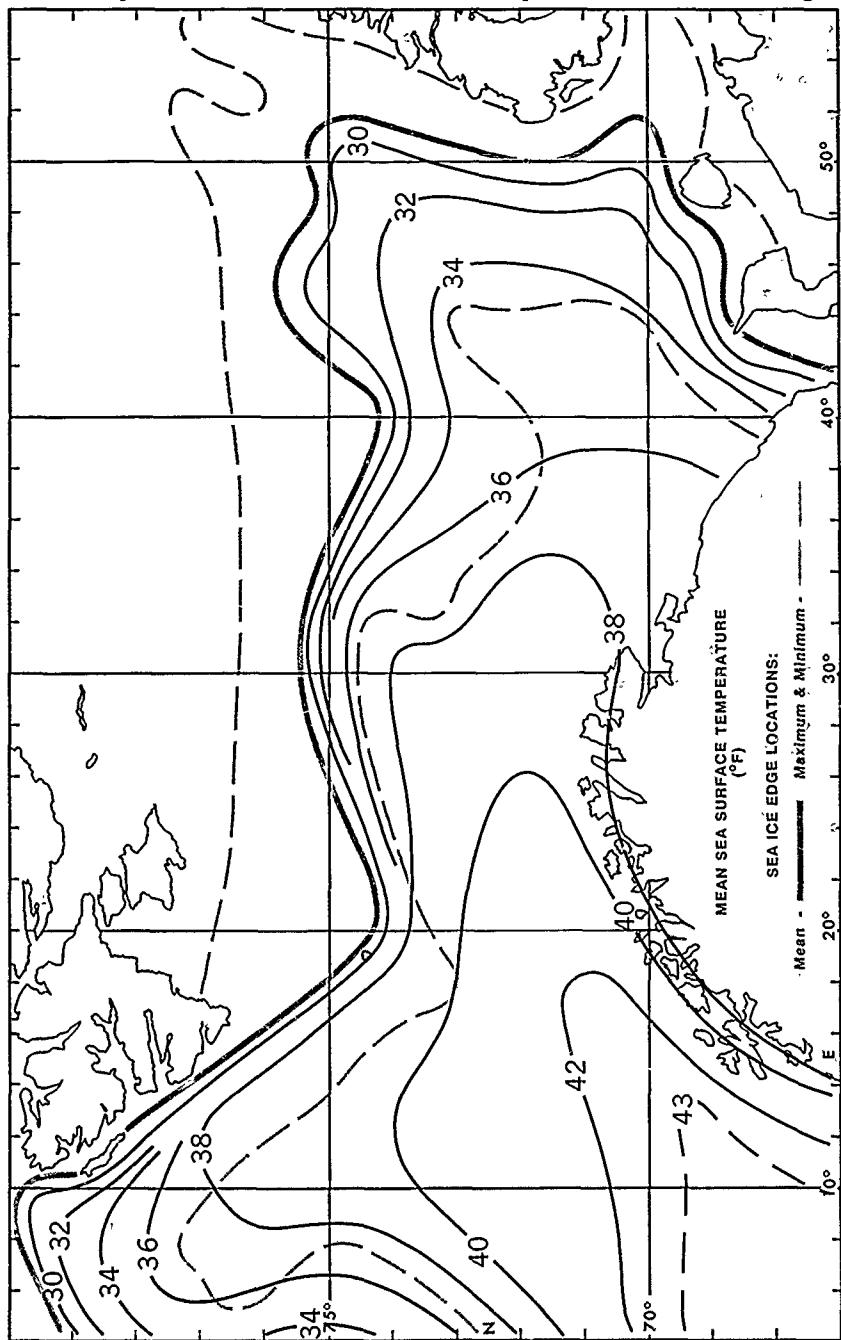
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

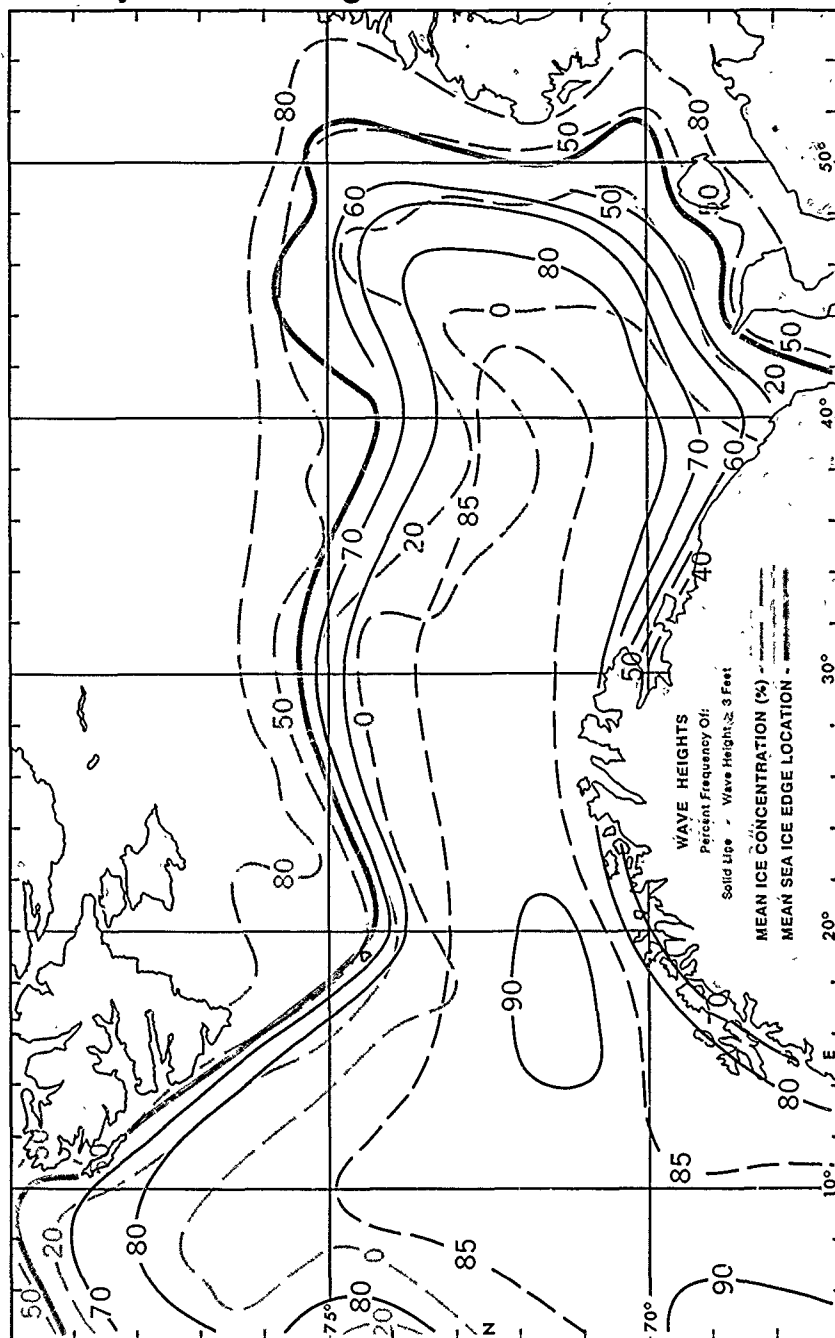
January

Mean Sea Temperature & Ice Edge



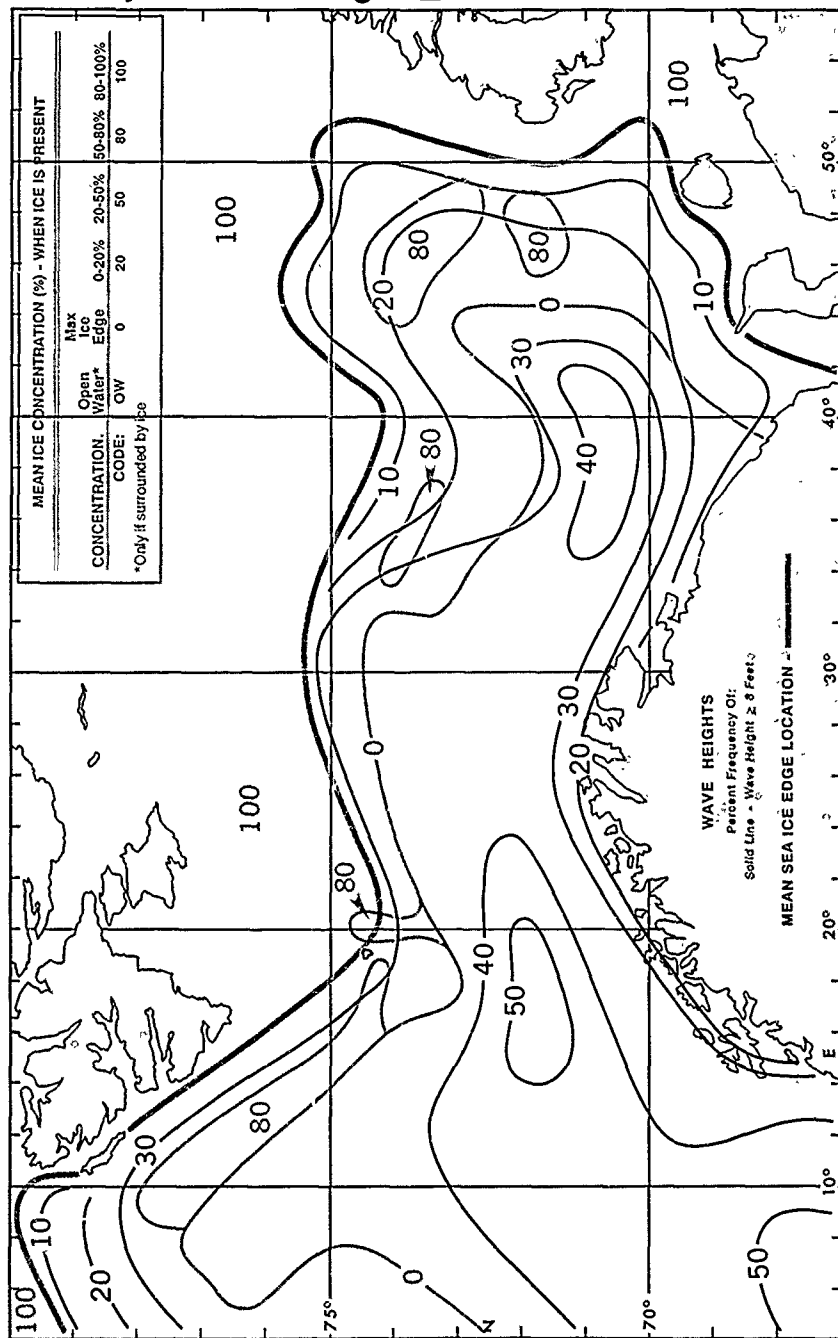
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

January Wave Height ≥ 3 Ft. & Ice Concentration

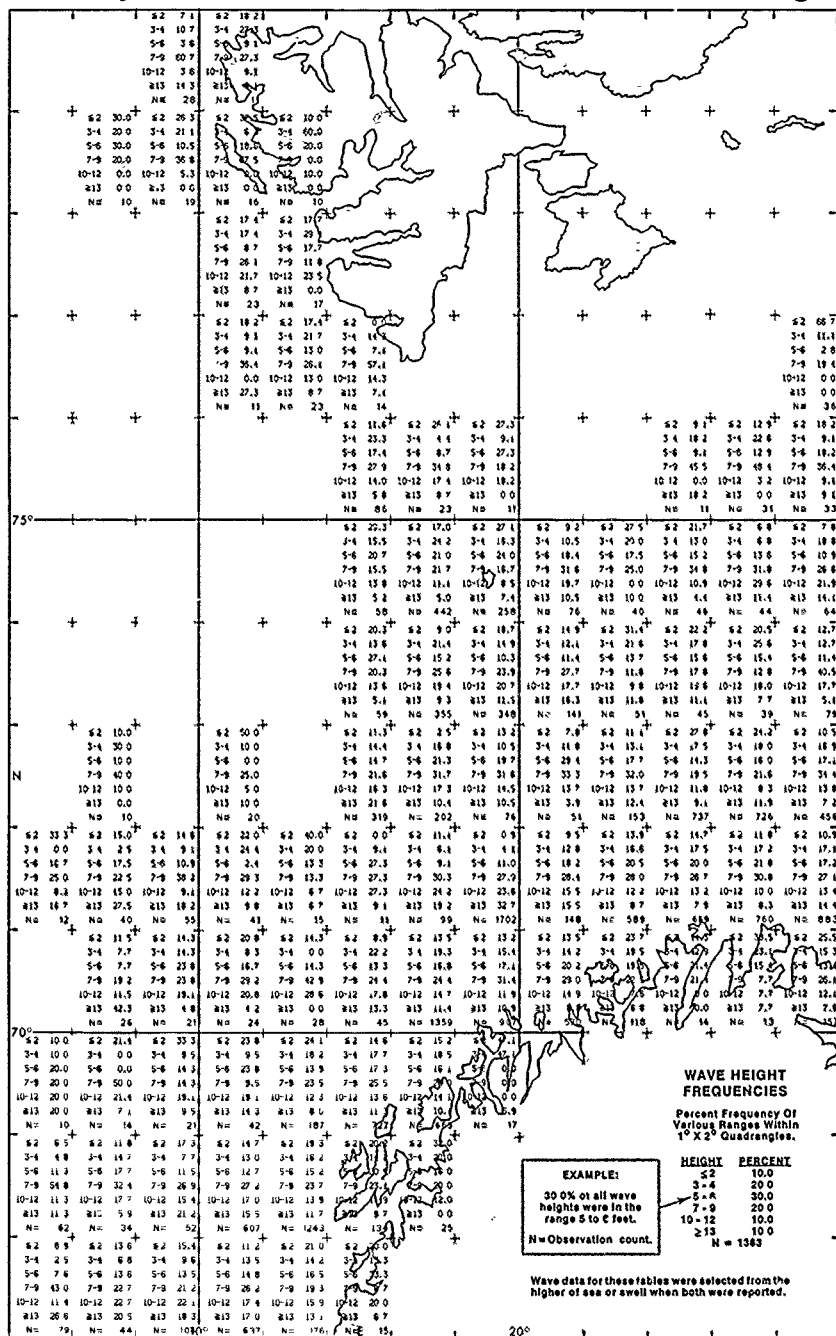


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

January

Wave Height ≥ 8 Ft. & Ice Concentration

NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

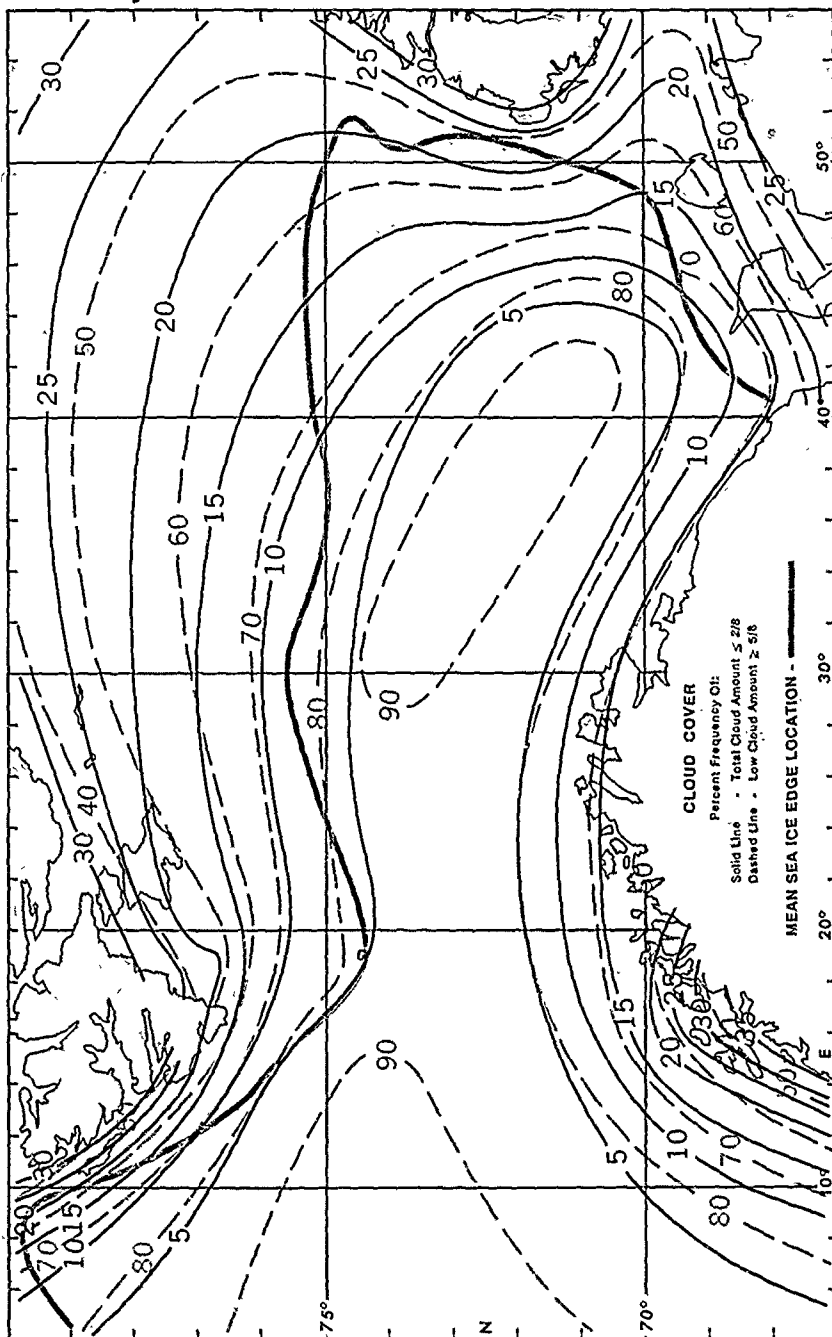


Wave Height



February

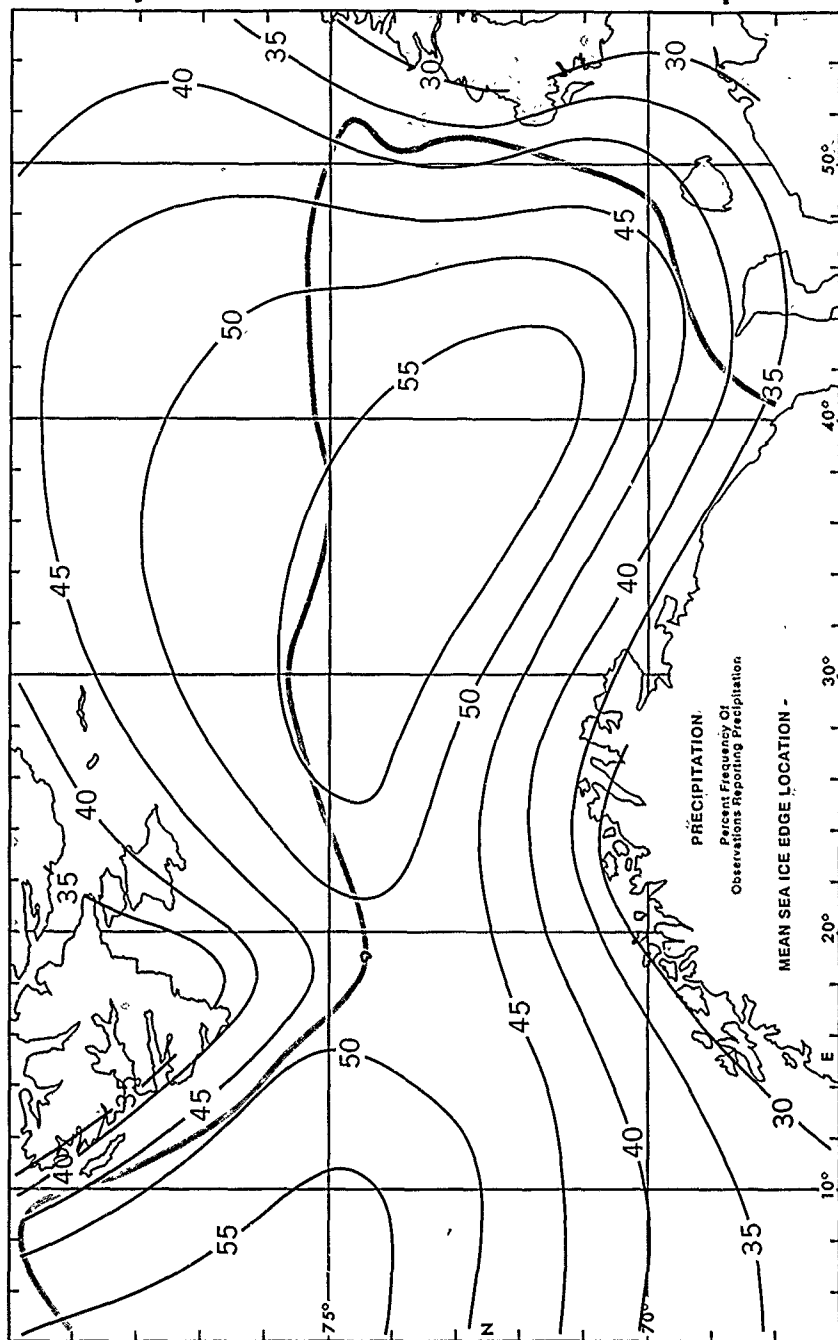
Clouds



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February

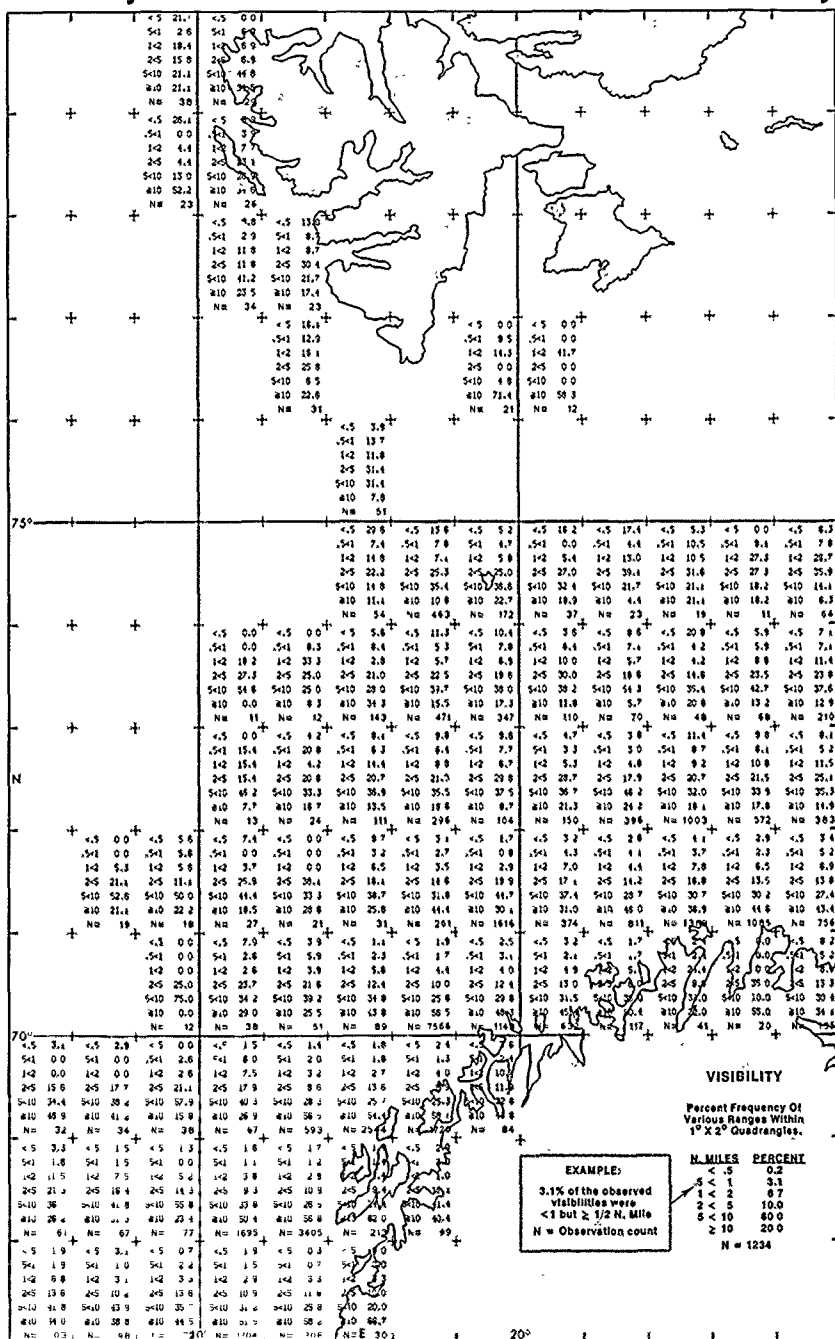
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

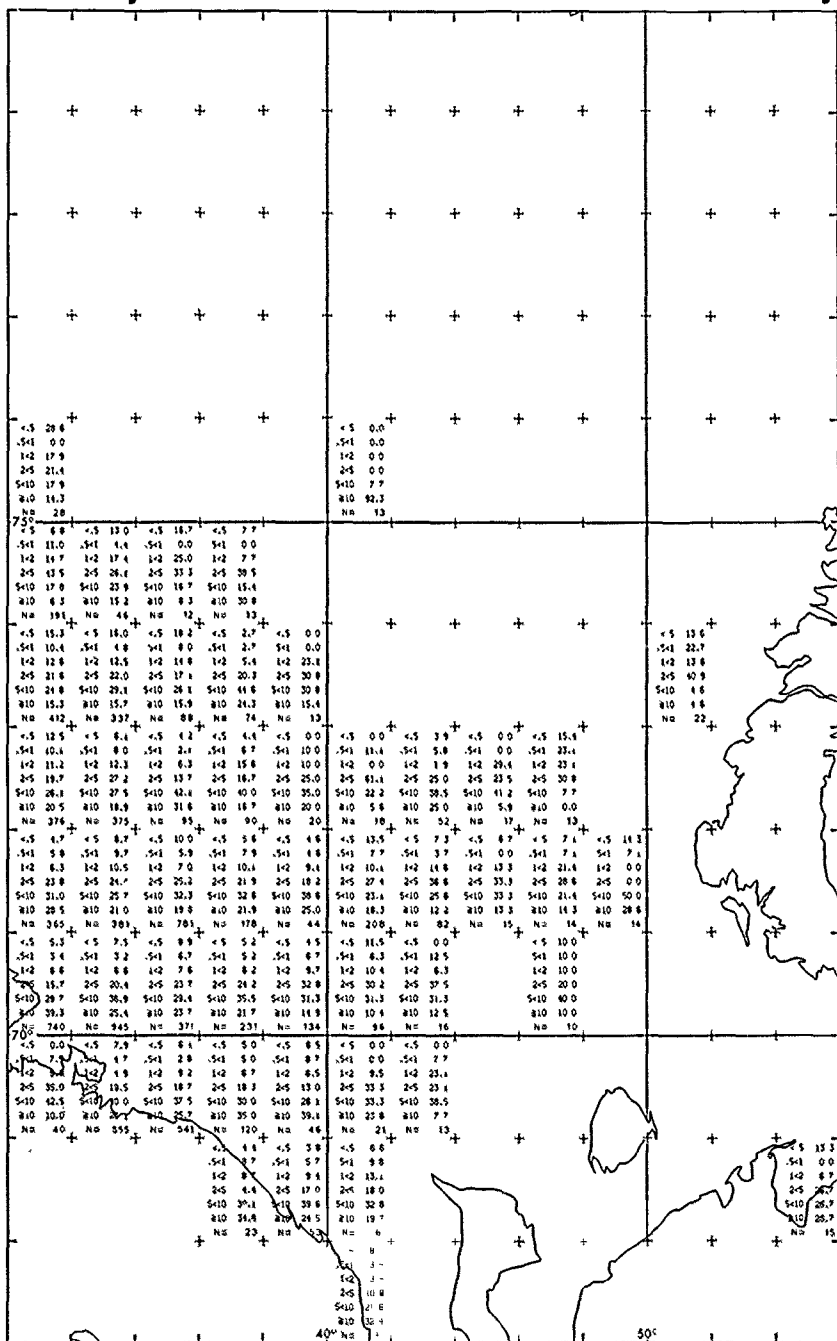
February

Visibility



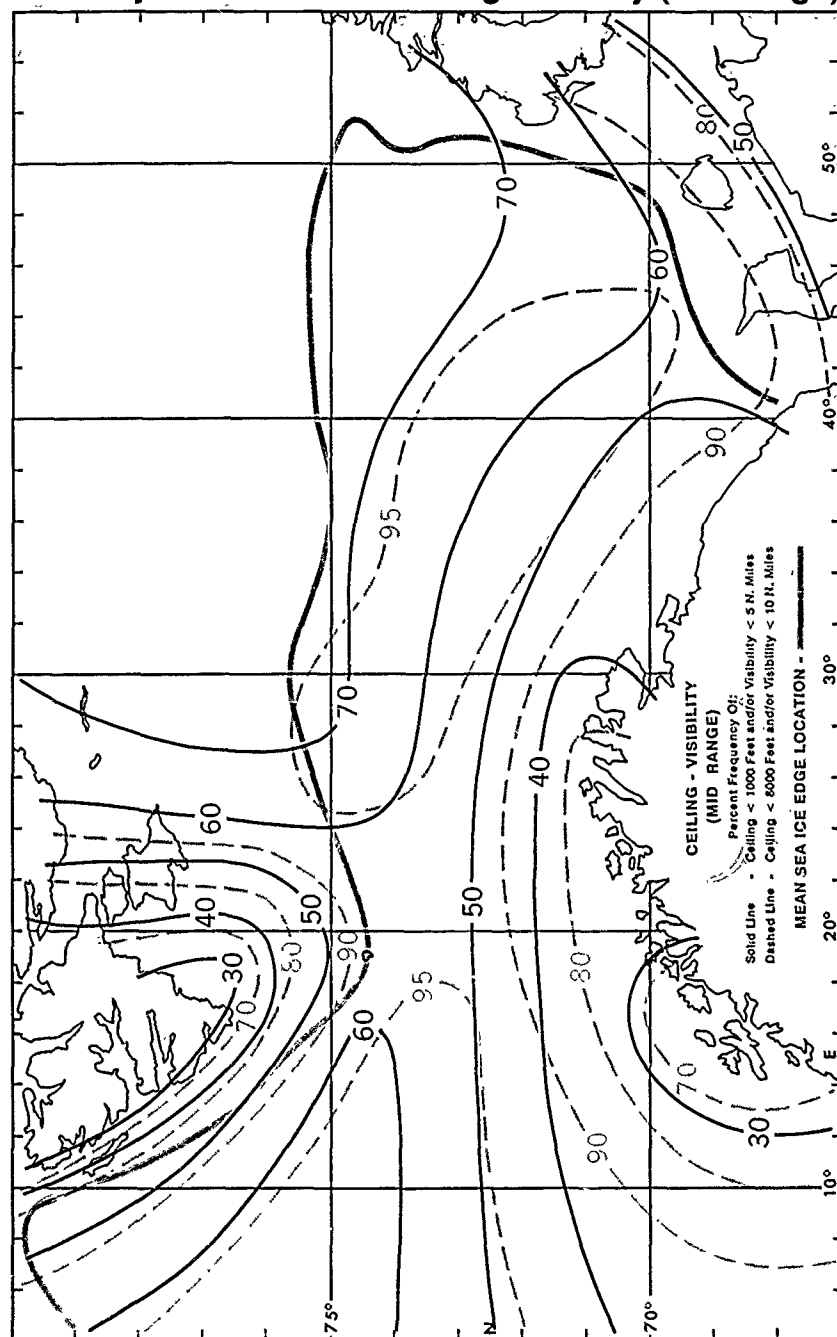
February

Visibility



February

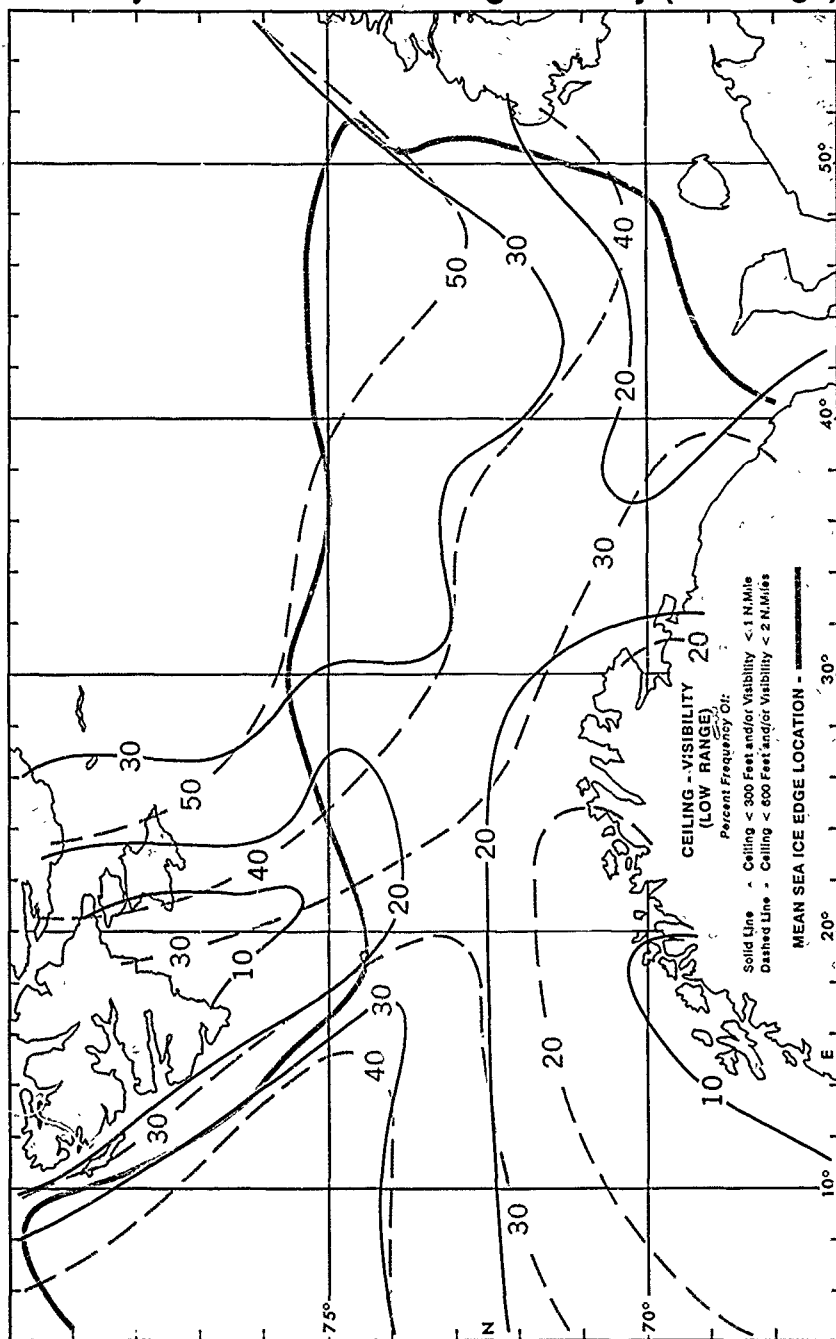
Ceiling-Visibility (mid range)



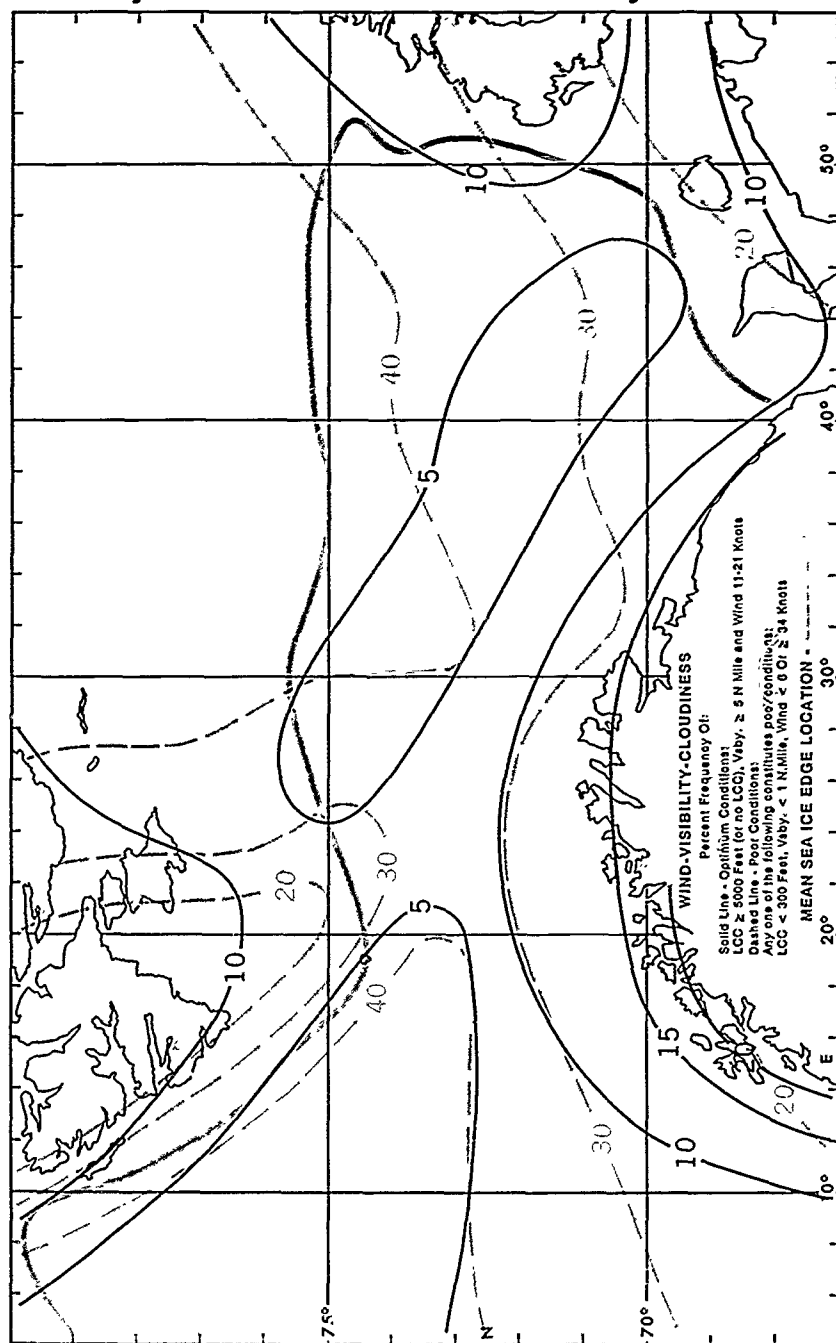
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

Ceiling-Visibility (low range)



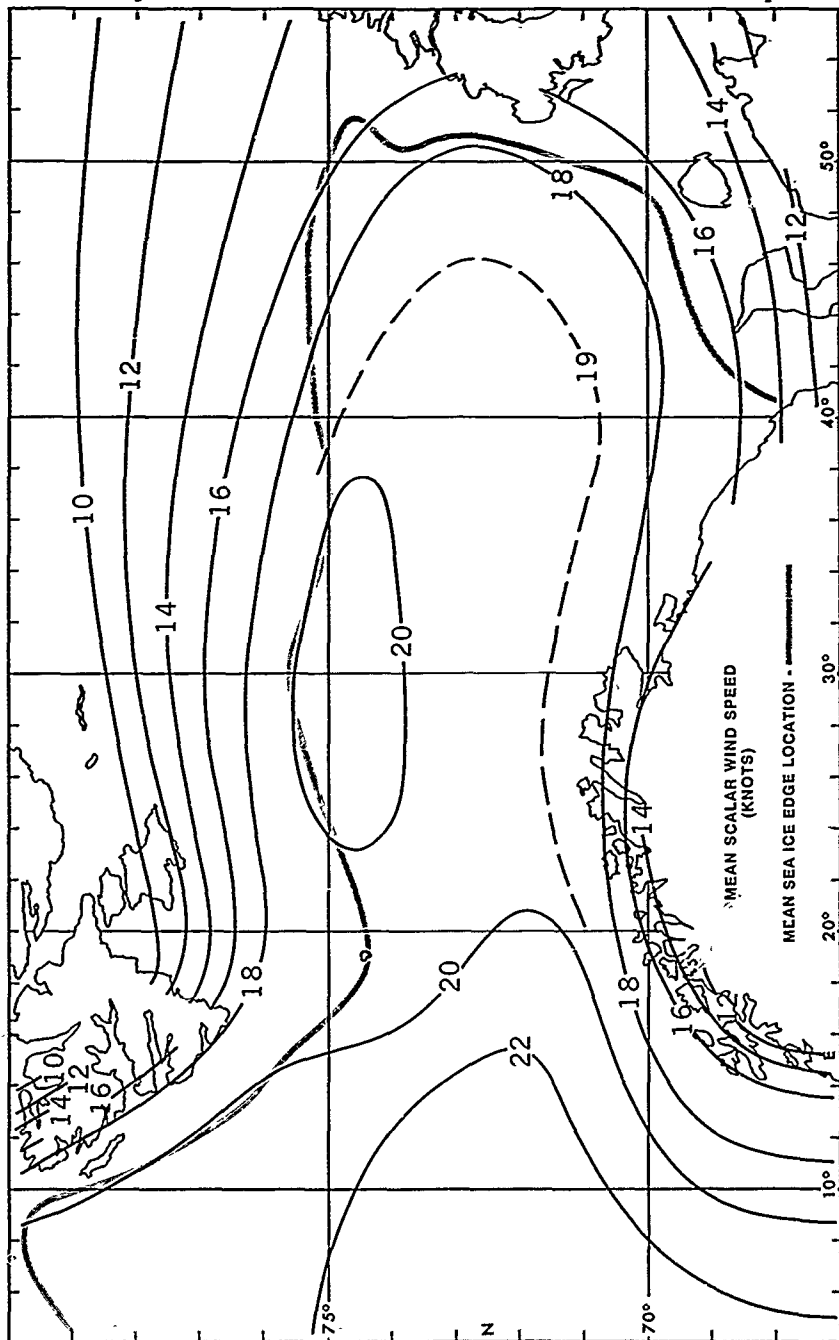
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

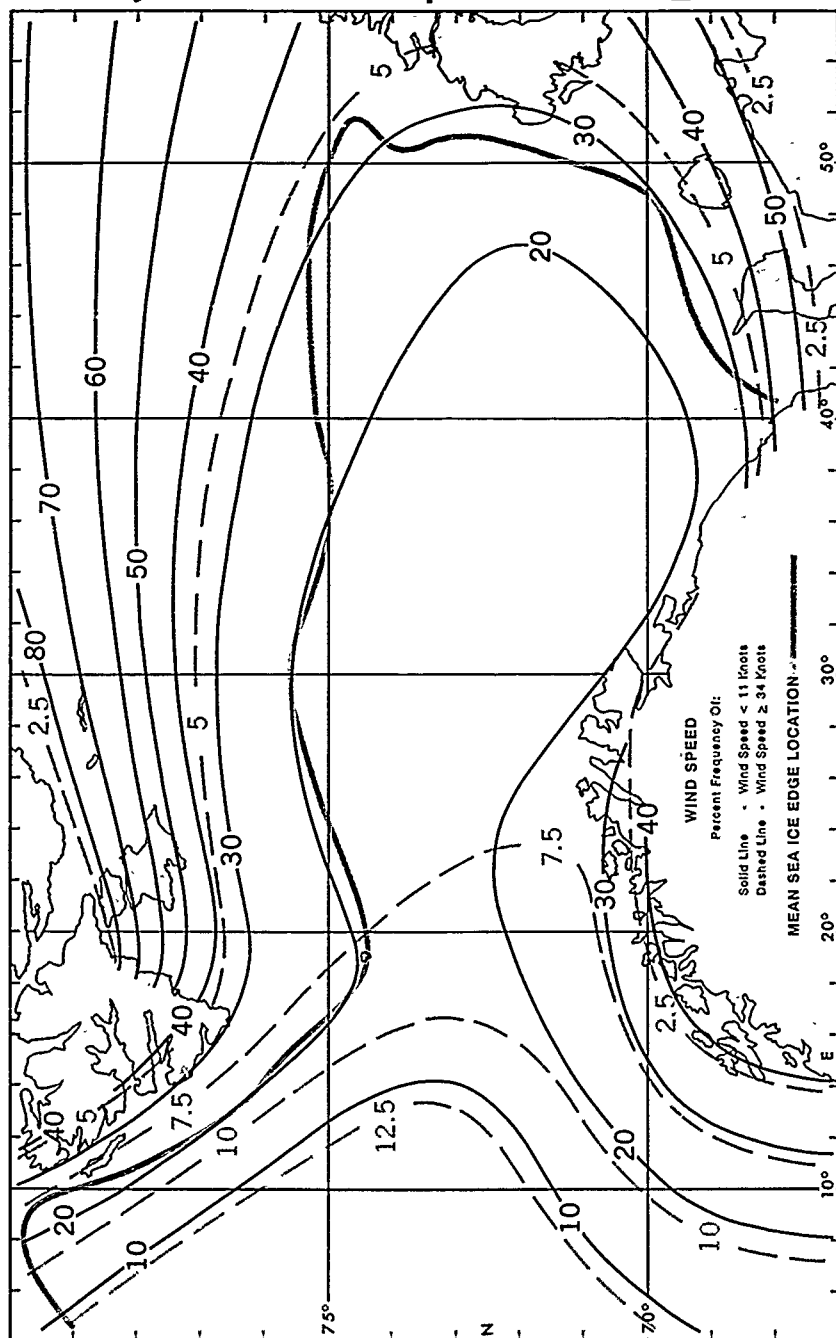
Mean Scalar Wind Speed



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February

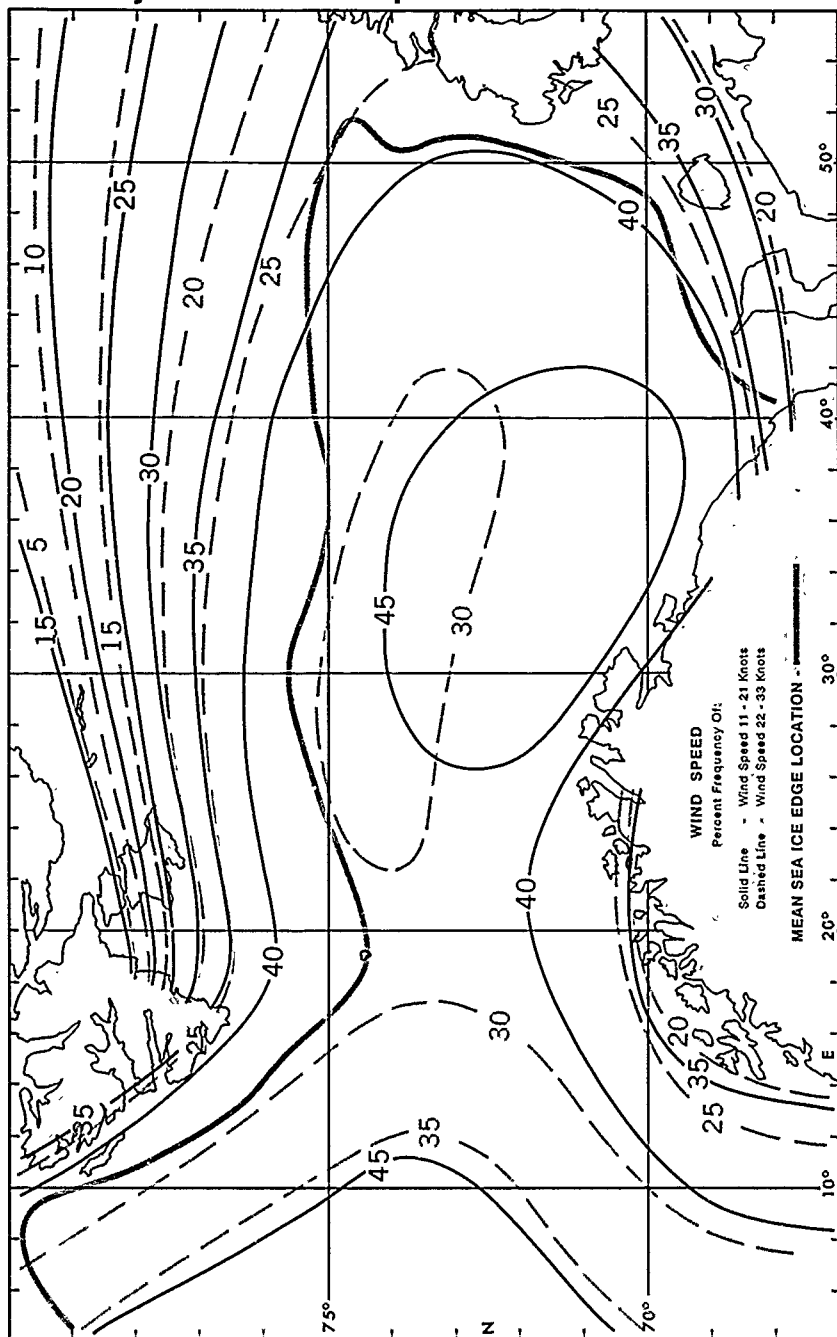
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

February

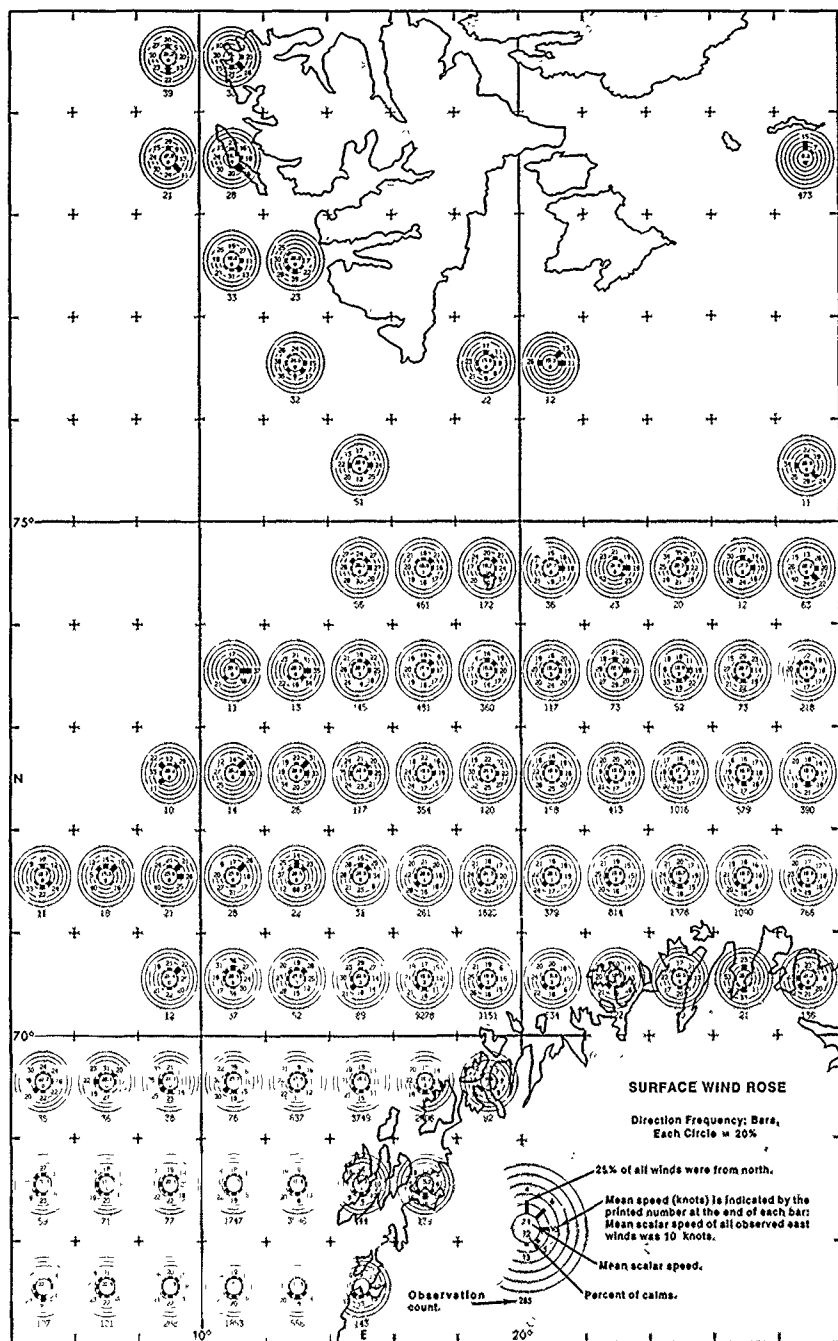
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

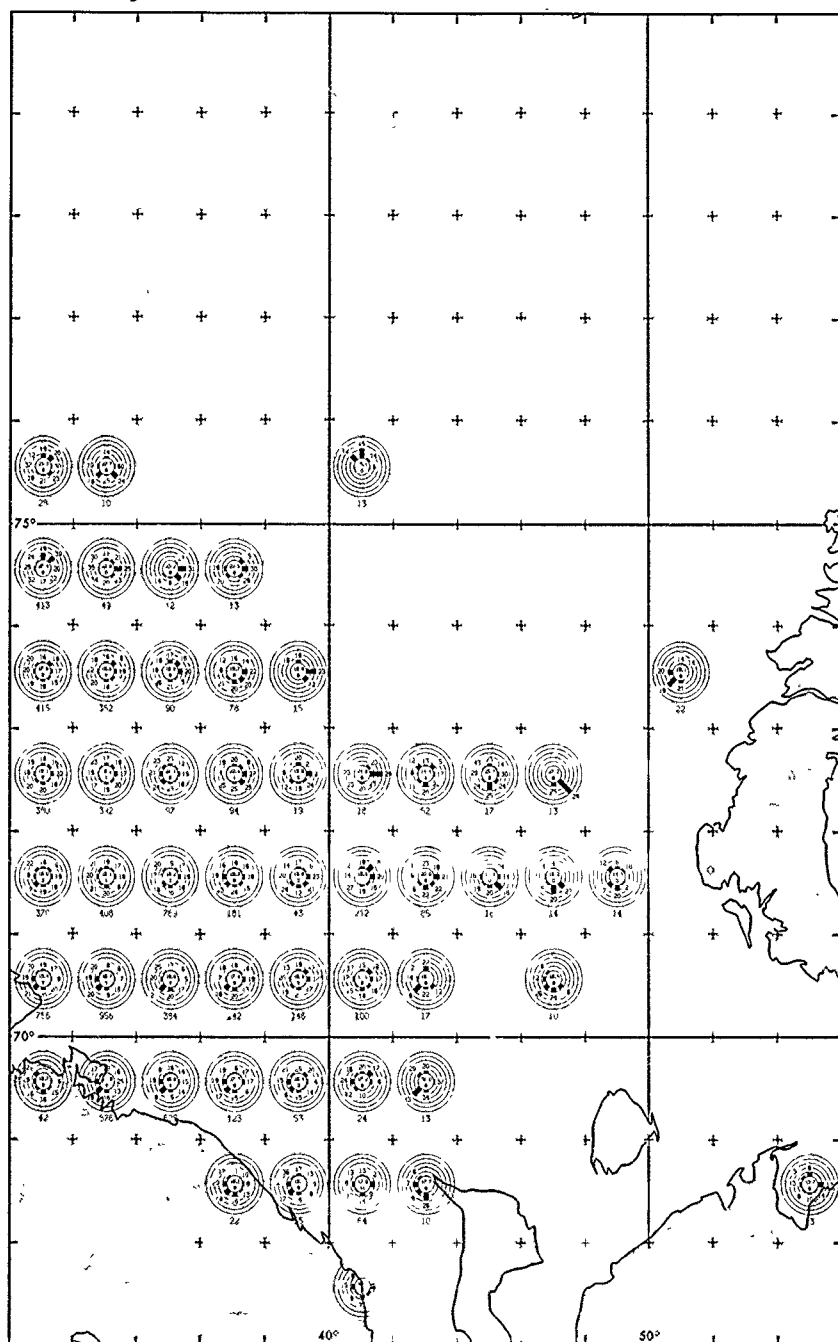
February

Surface Wind Roses



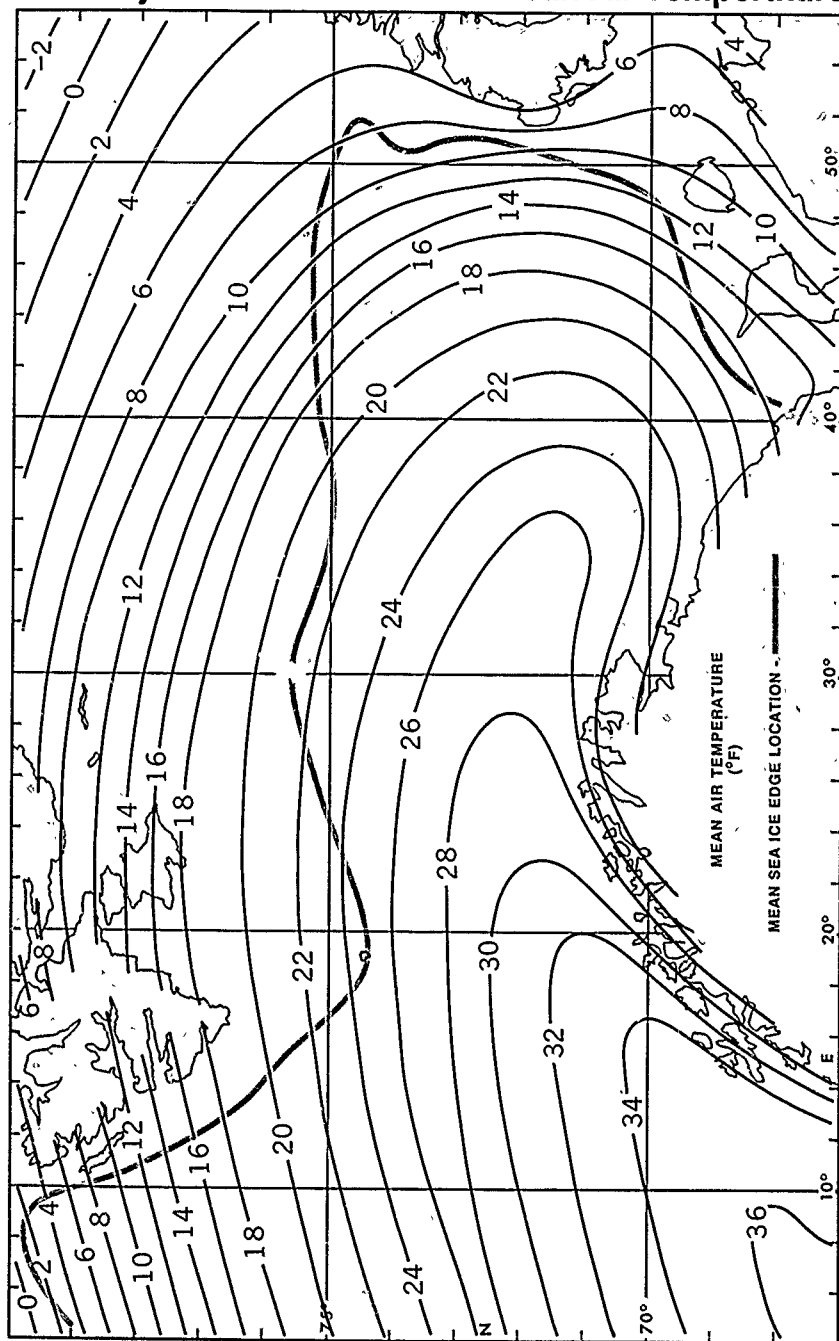
February

Surface Wind Roses



February

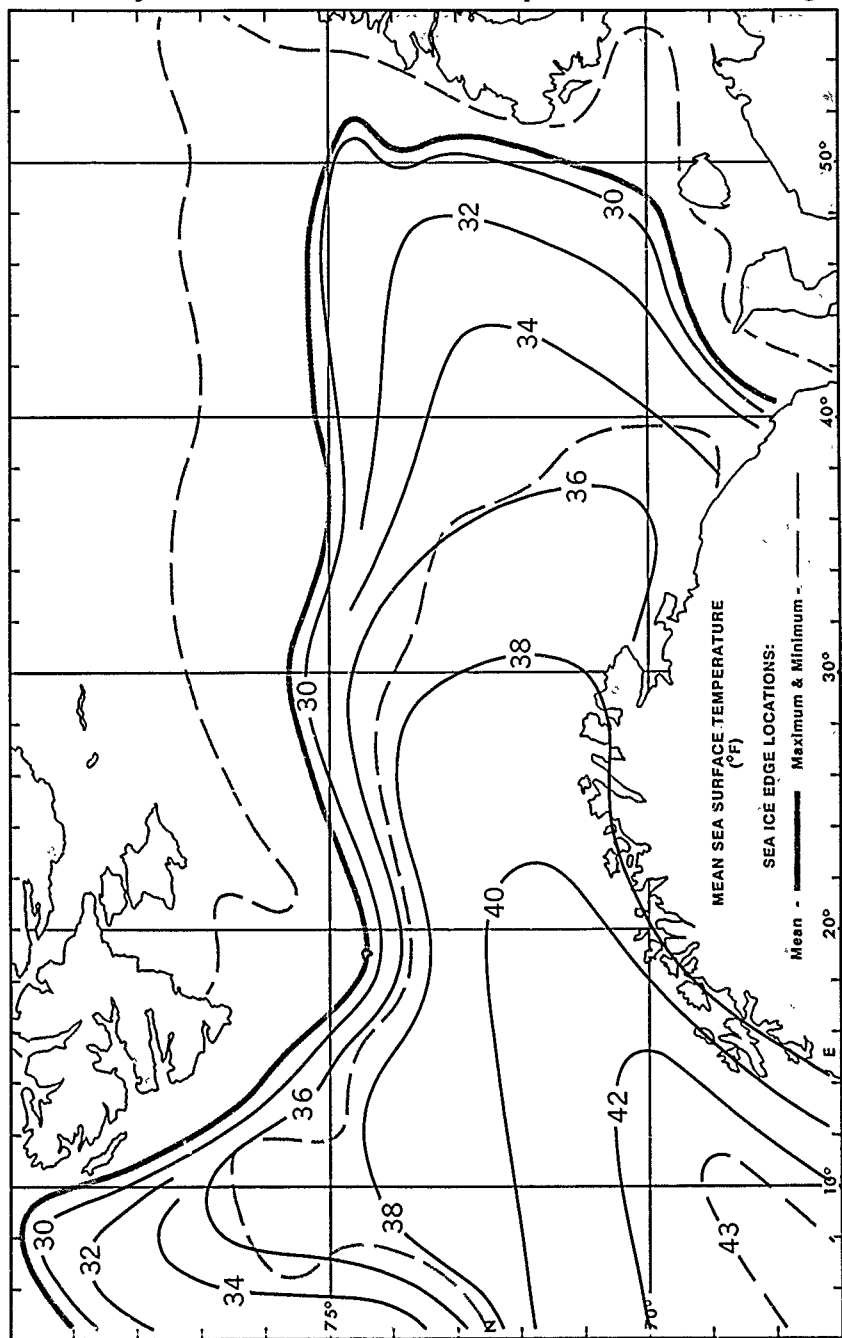
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

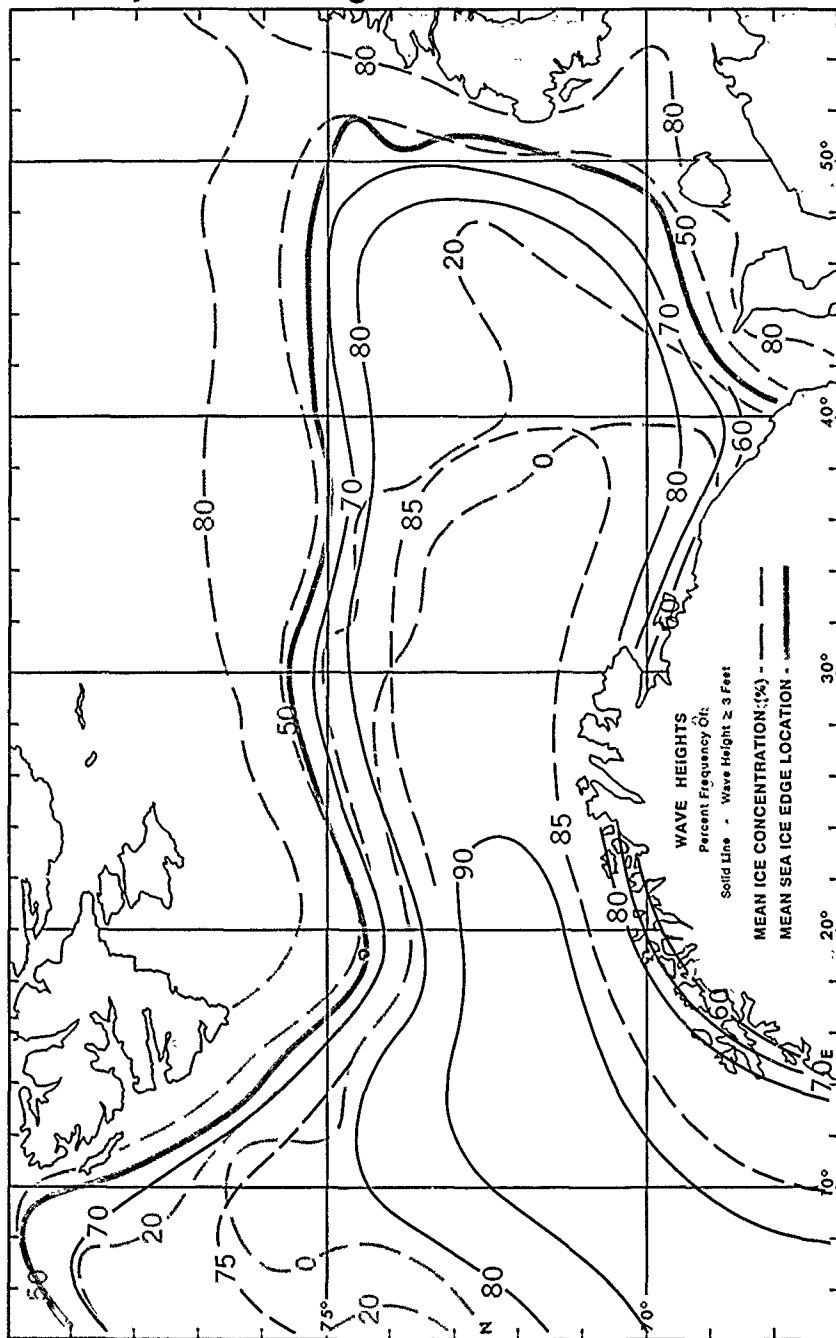
February

Mean Sea Temperature & Ice Edge



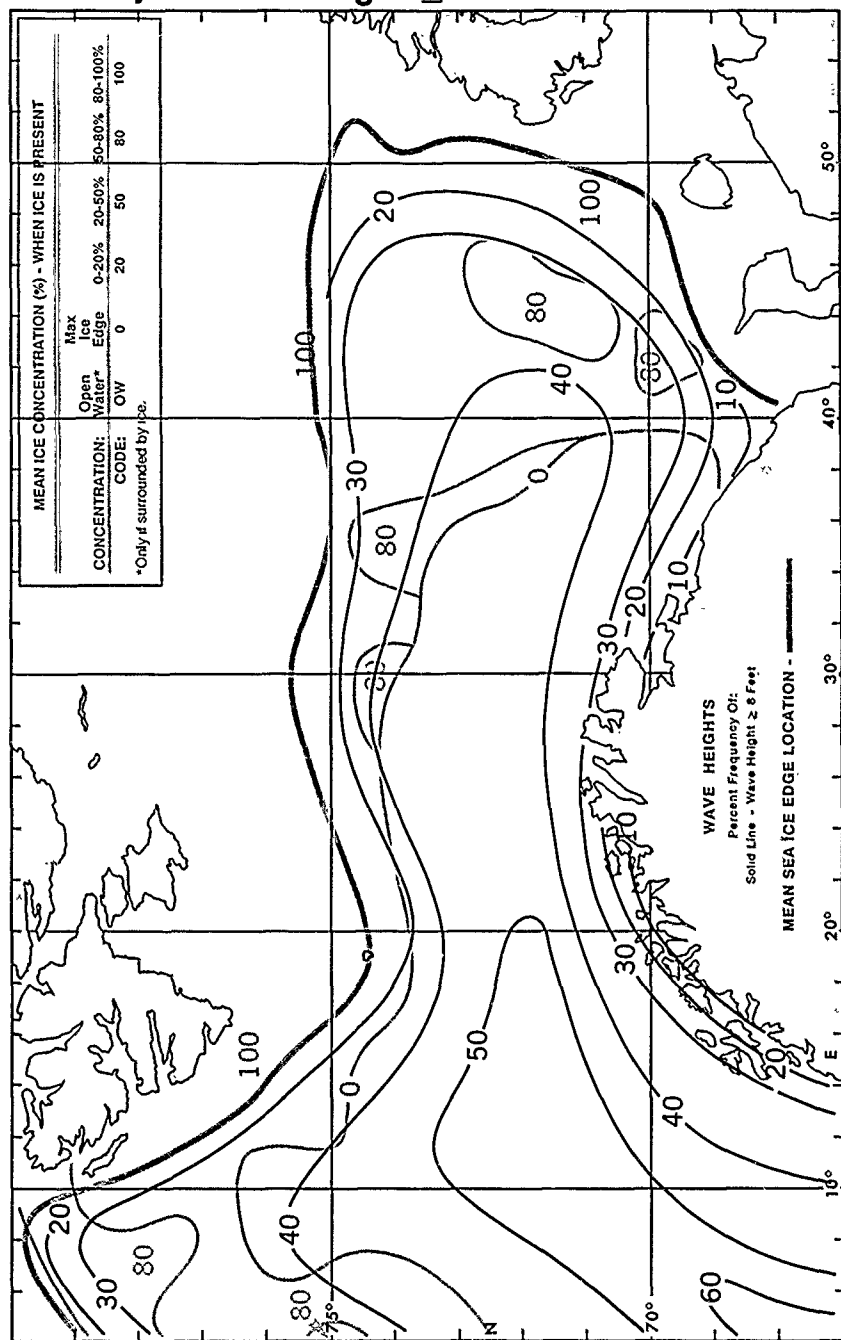
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

February Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

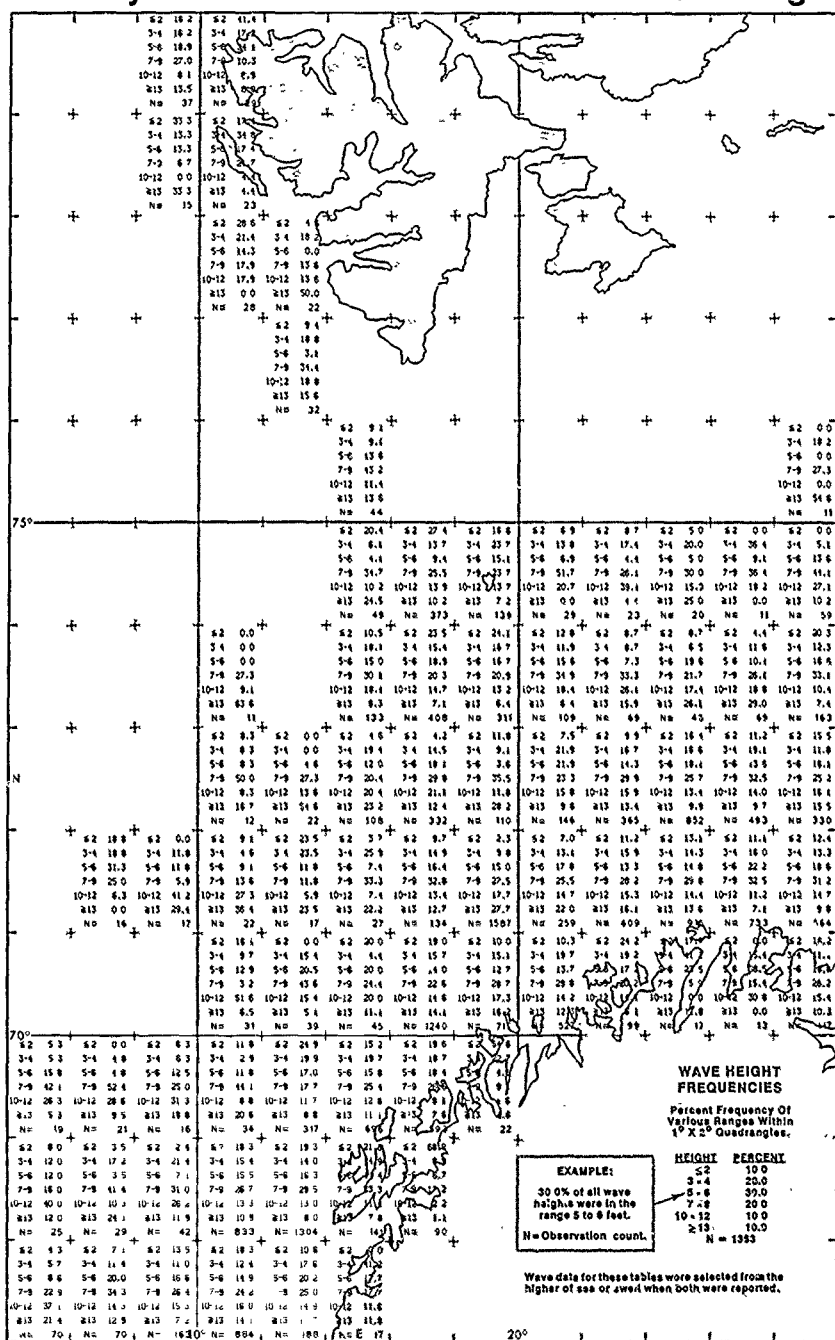
February Wave Height ≥ 8 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

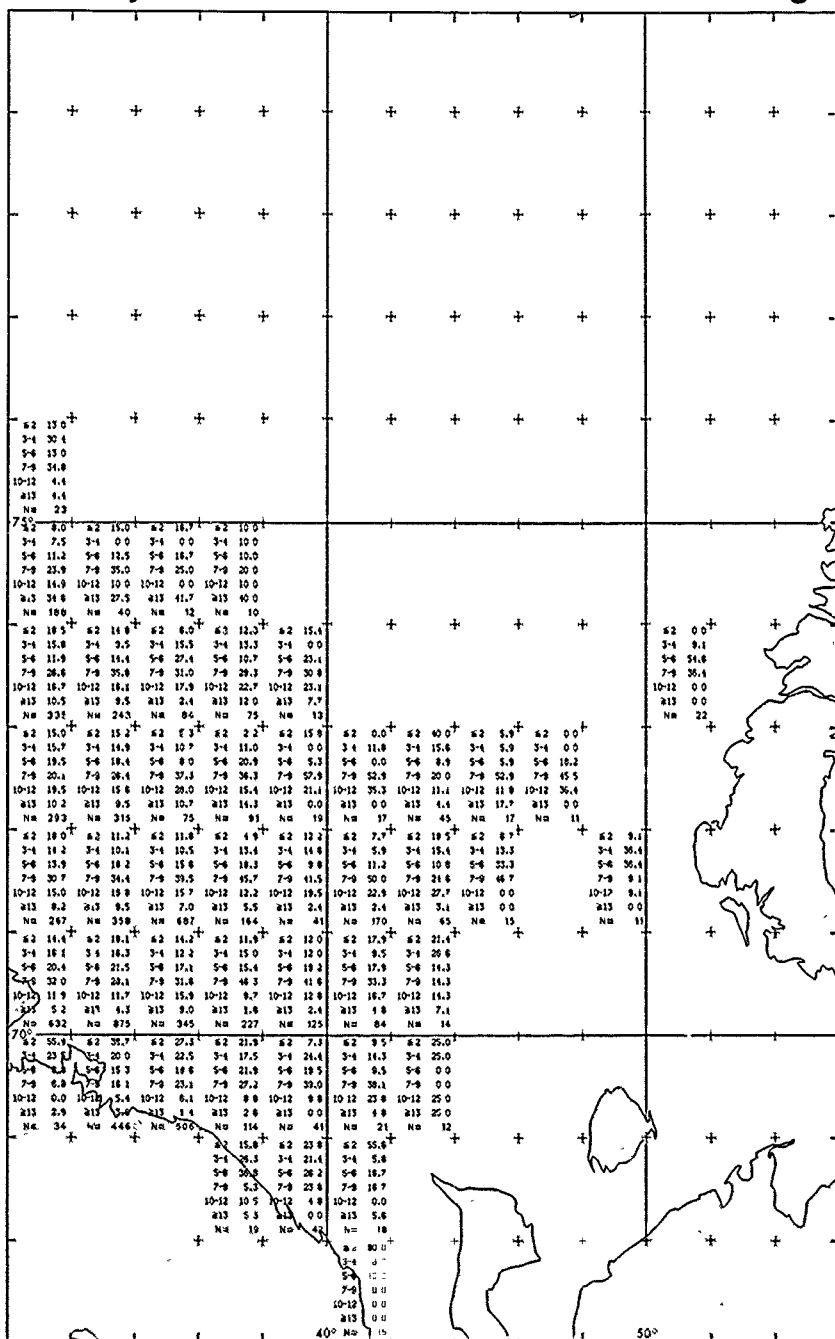
February

Wave Height



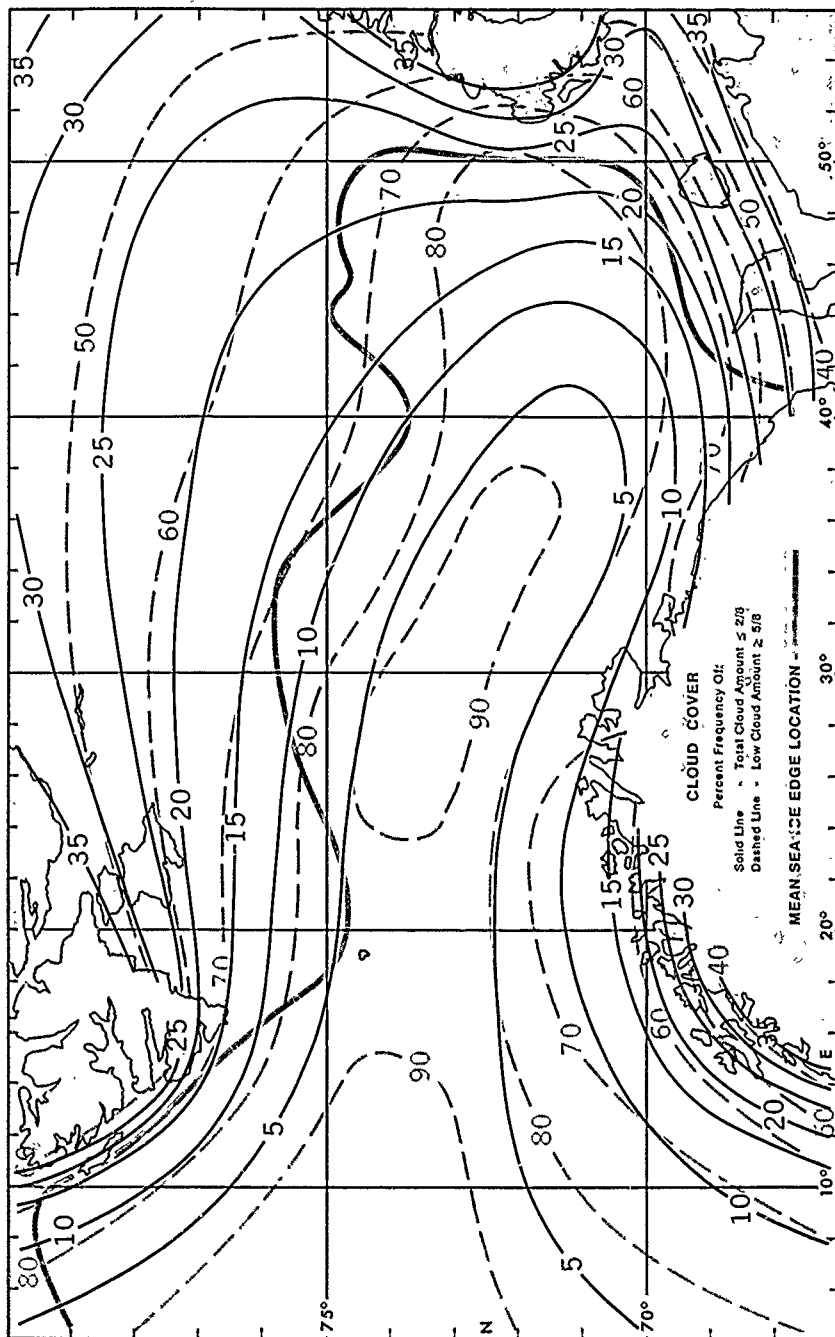
February

Wave Height



March

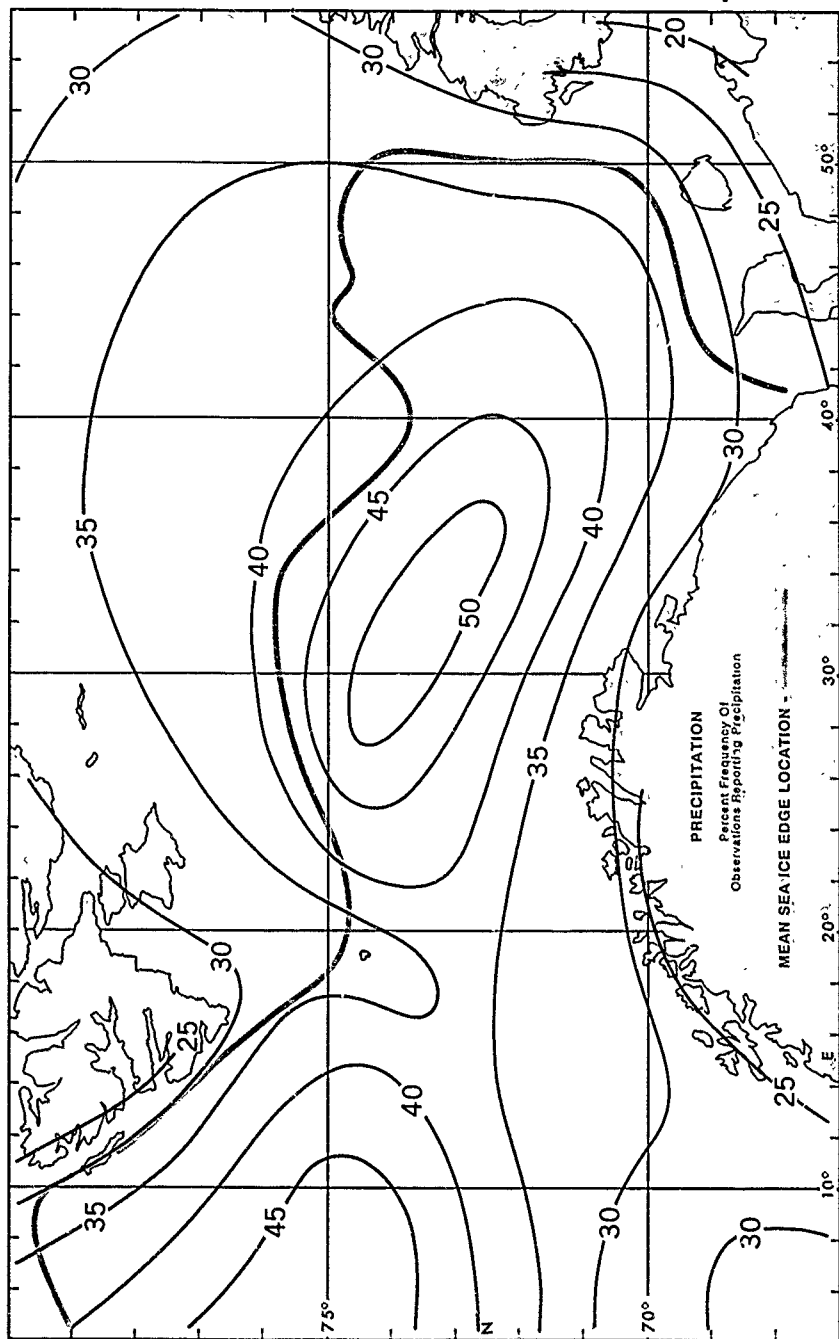
Clouds



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

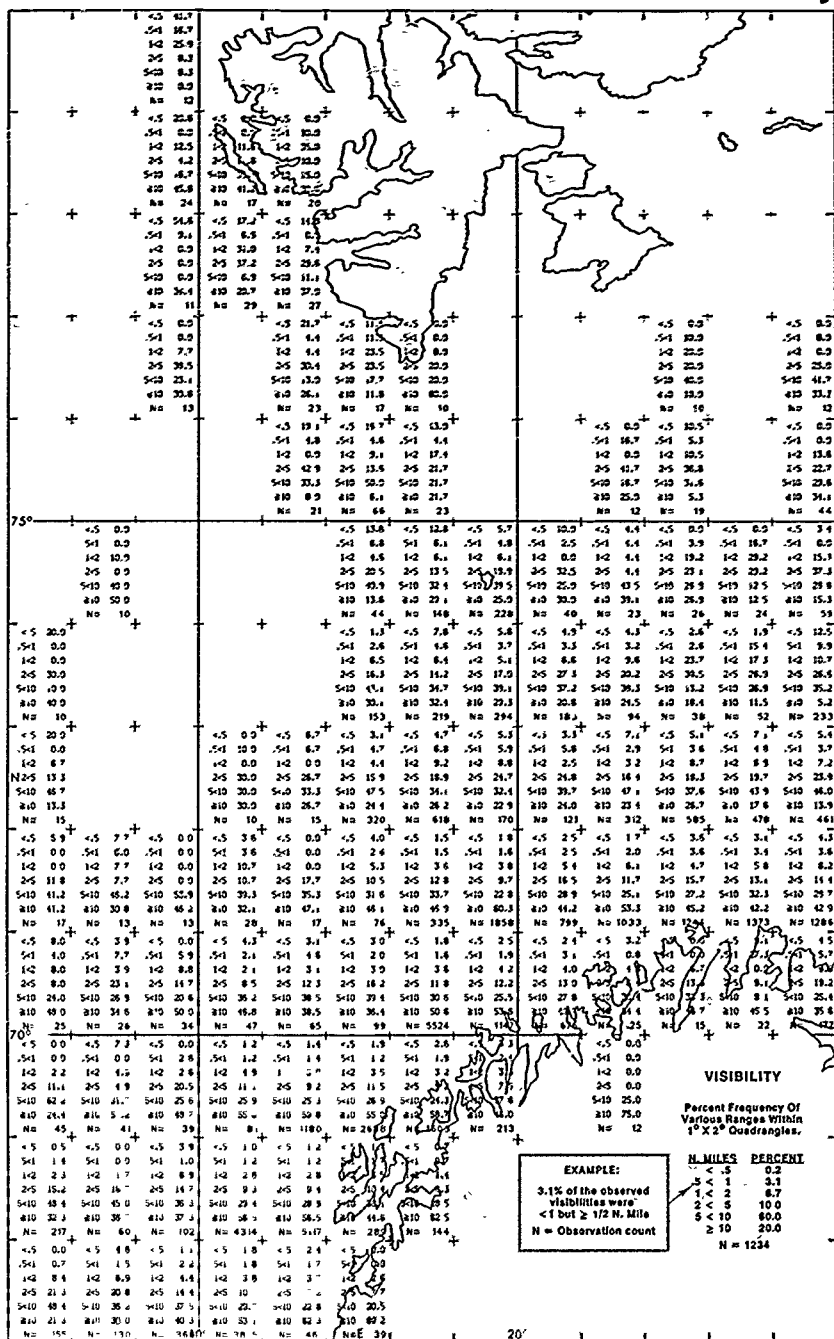
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

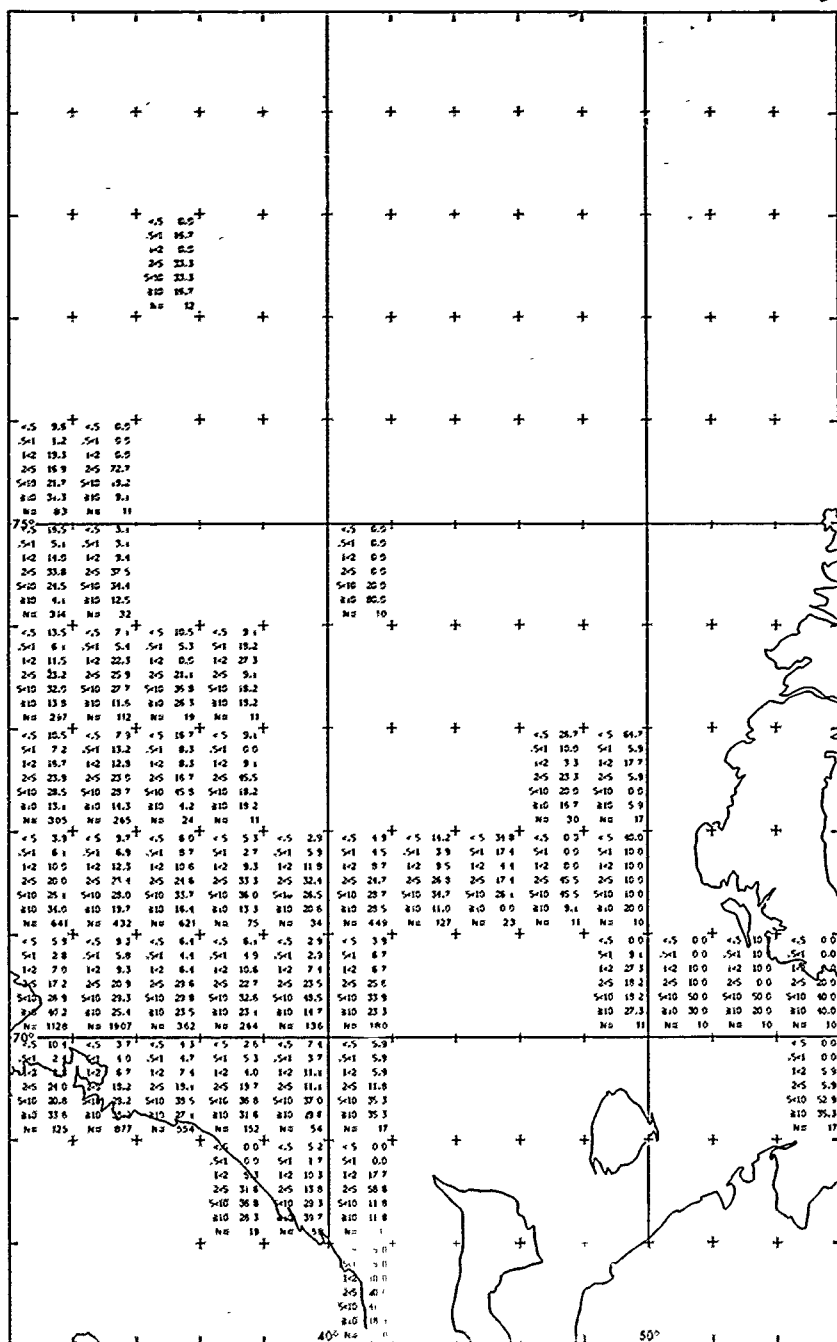
March

Visibility



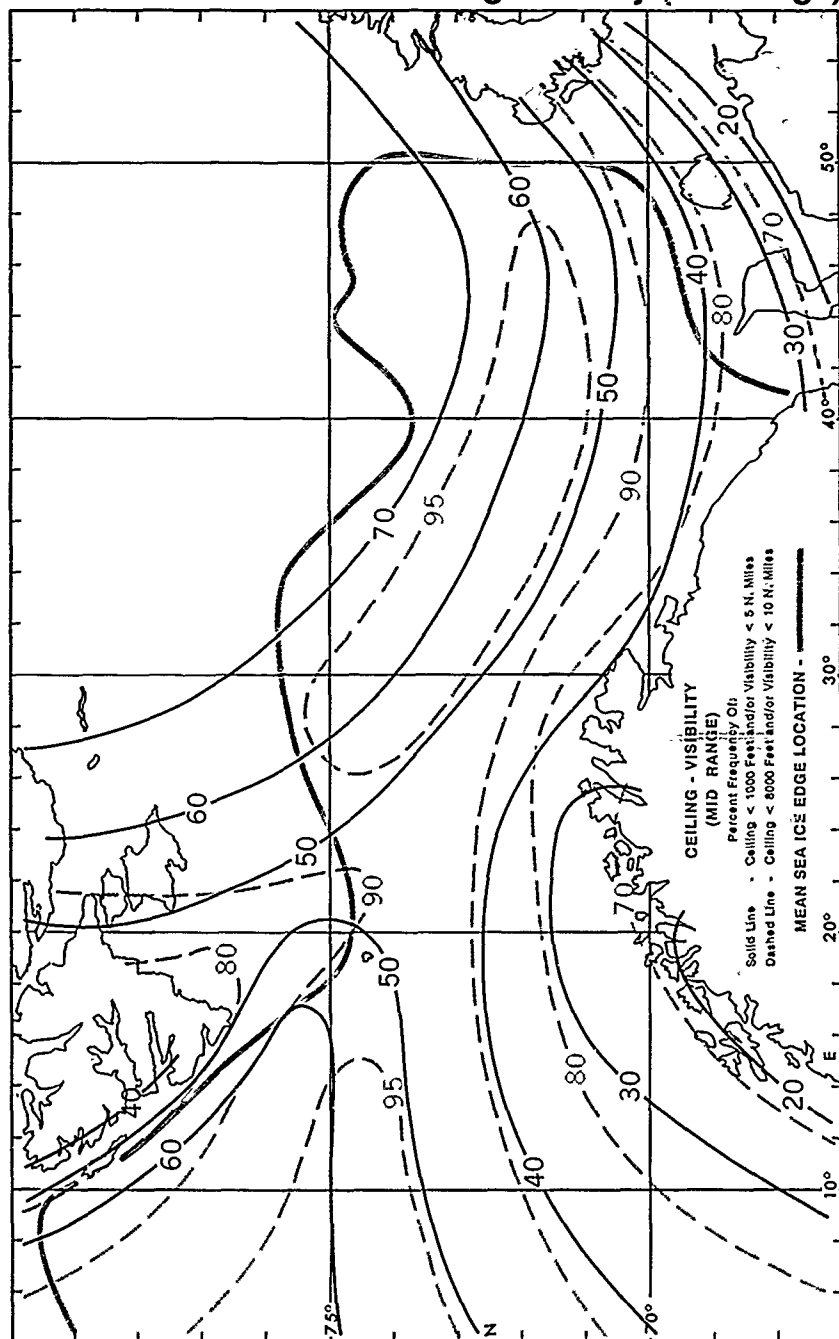
March

Visibility



March

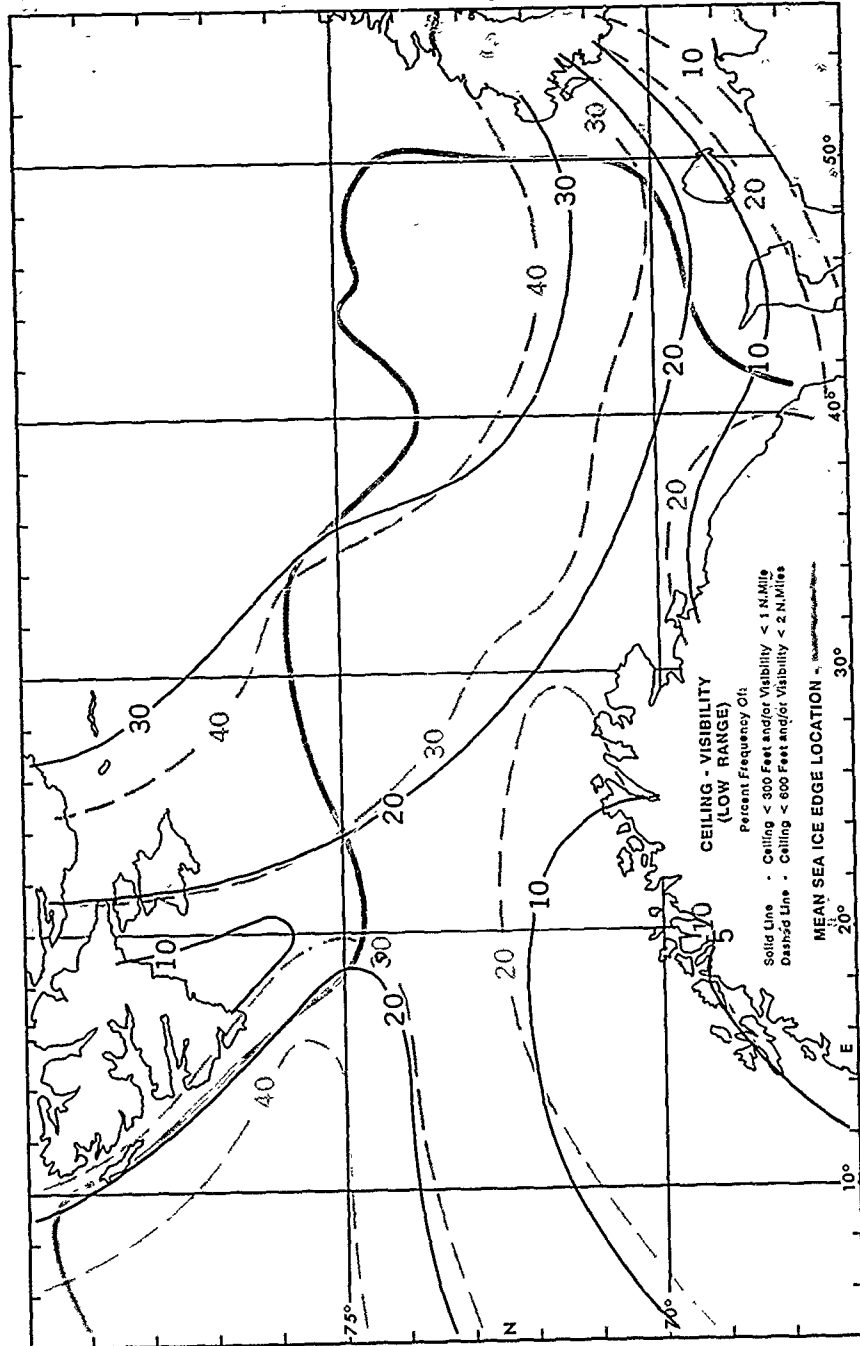
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

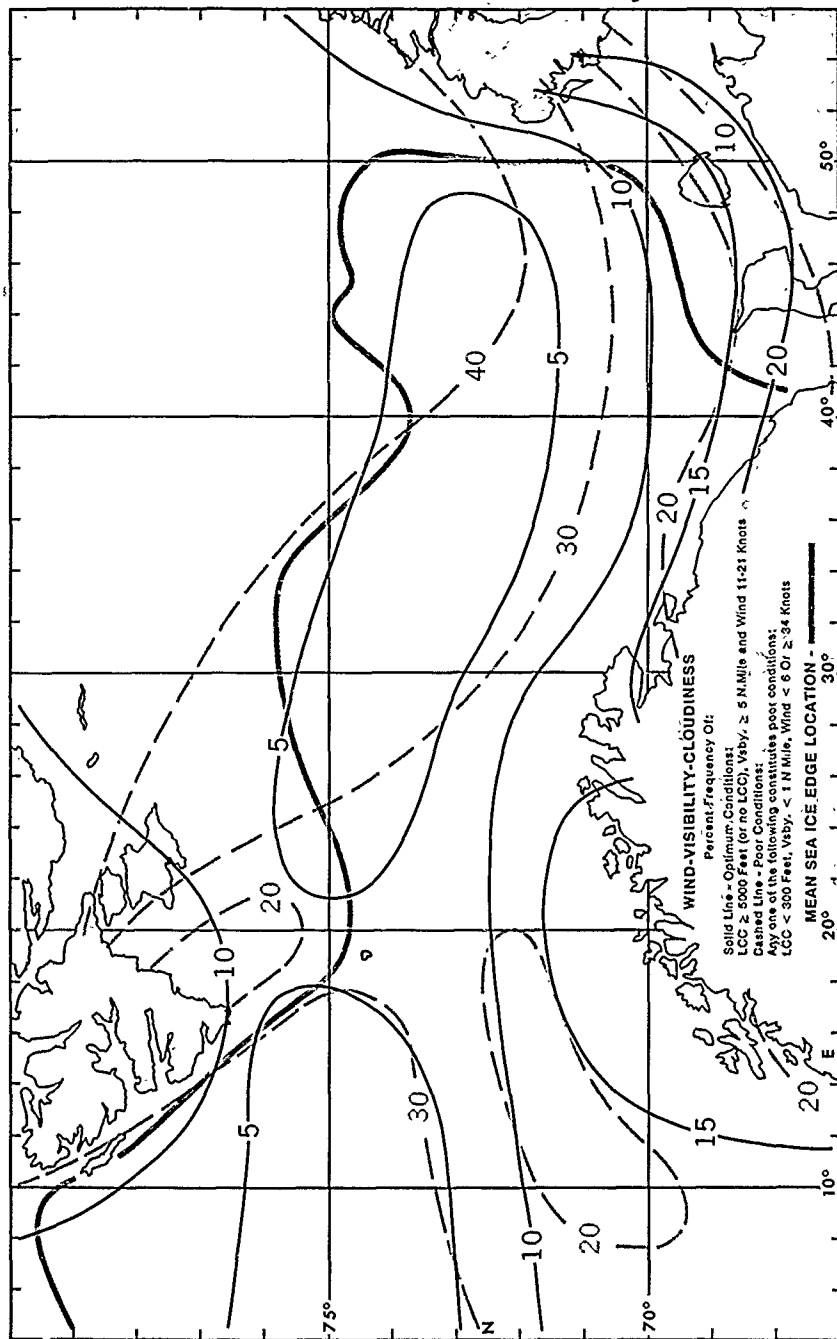
Ceiling-Visibility (low range)



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

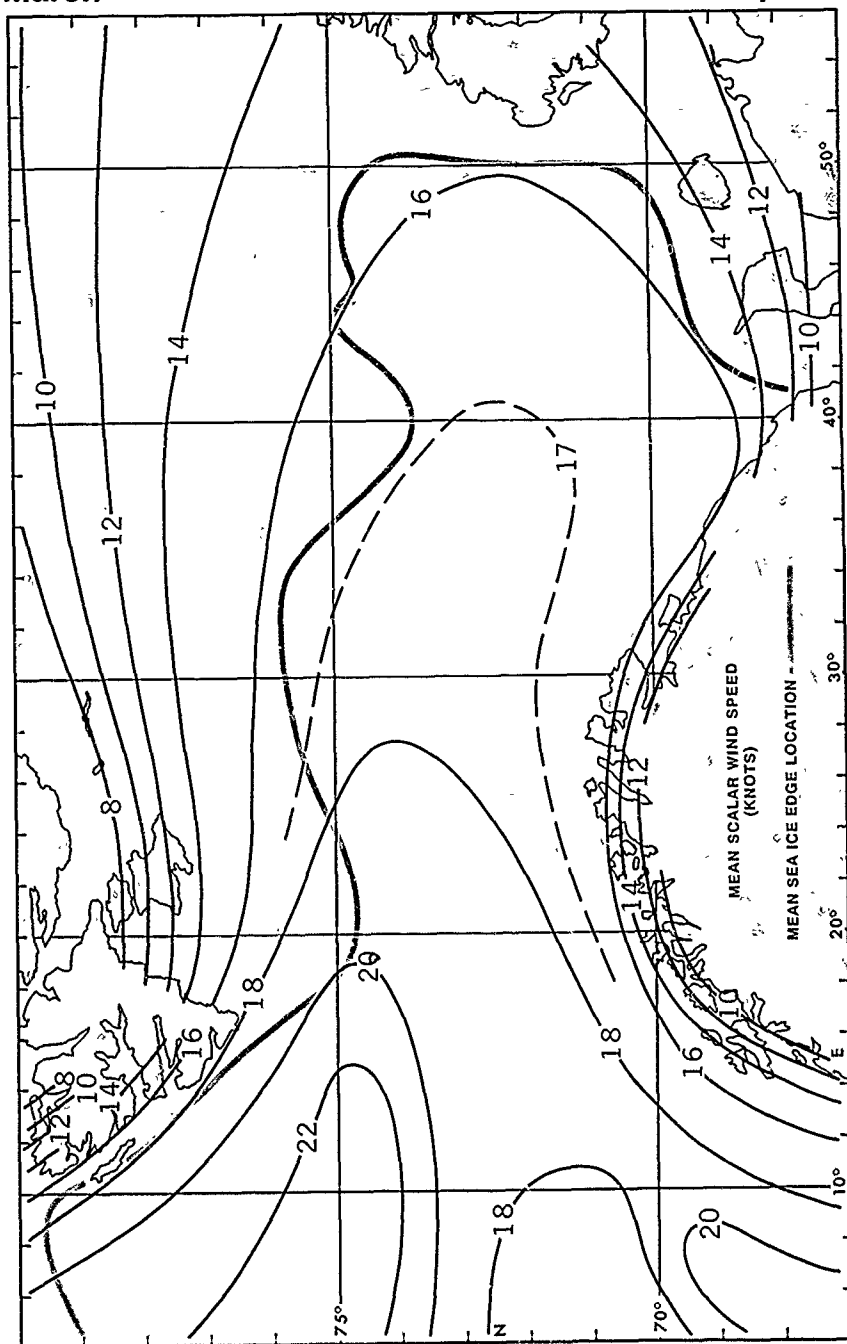
Wind-Visibility-Cloudiness



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

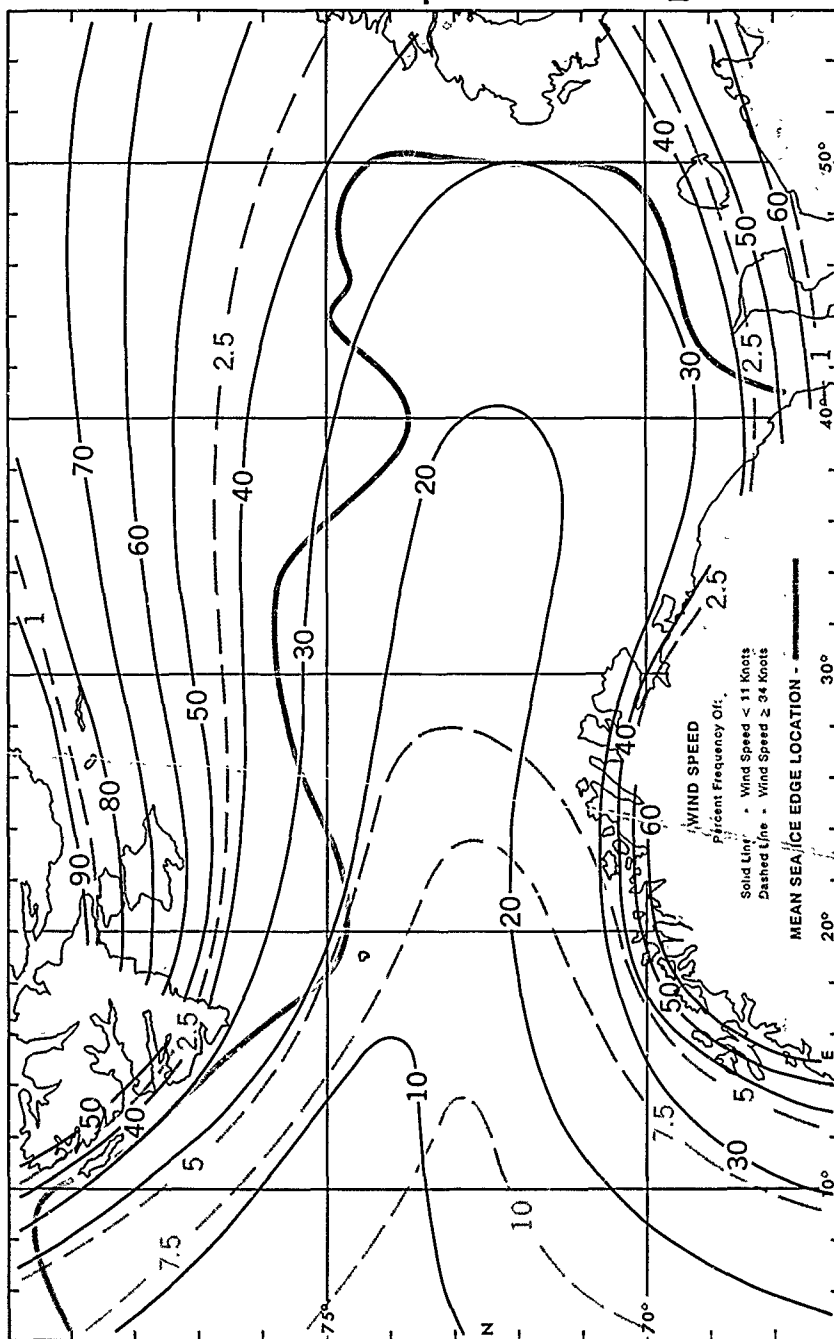
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

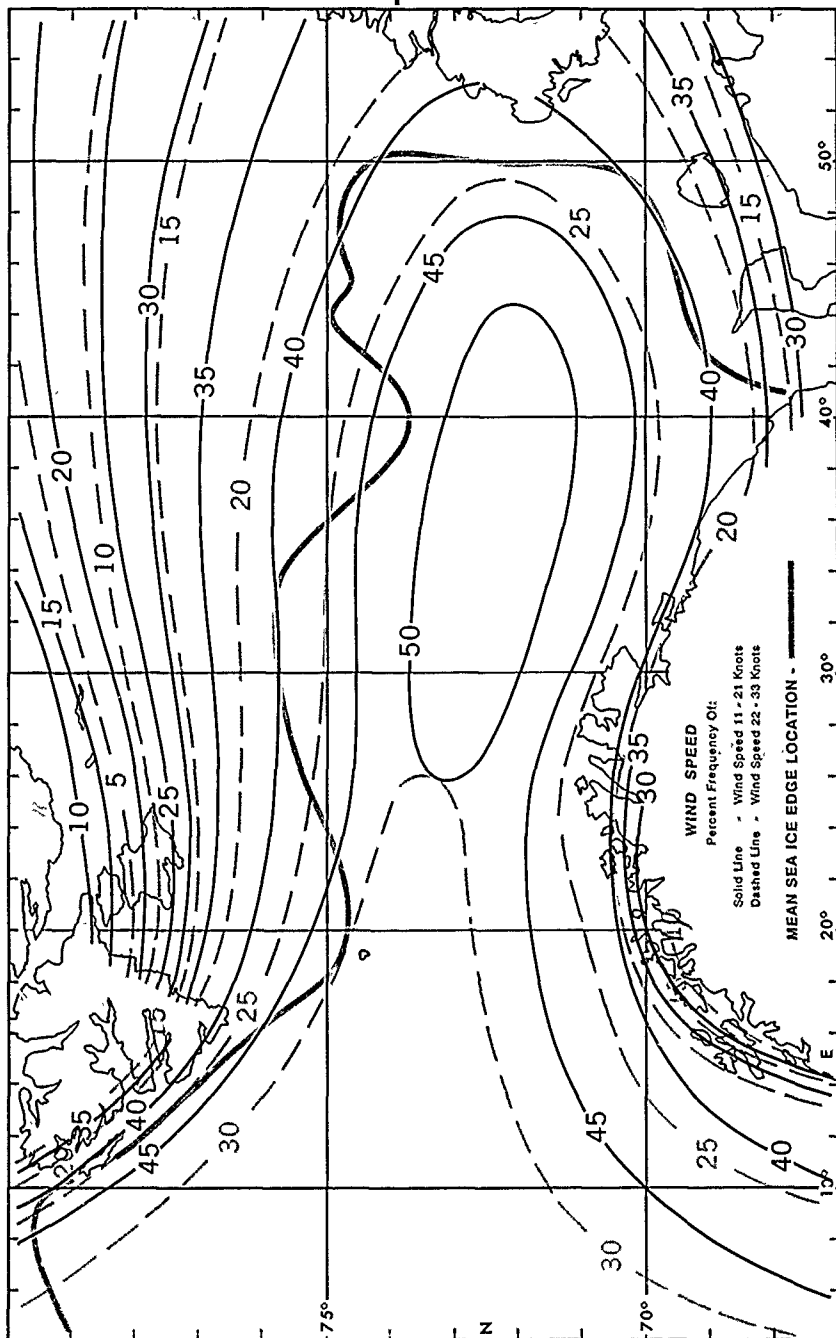
Wind Speed < 11 and ≥ 34 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

Surface Wind Roses



Direction Frequency: Bars,
Each Circle = 20%

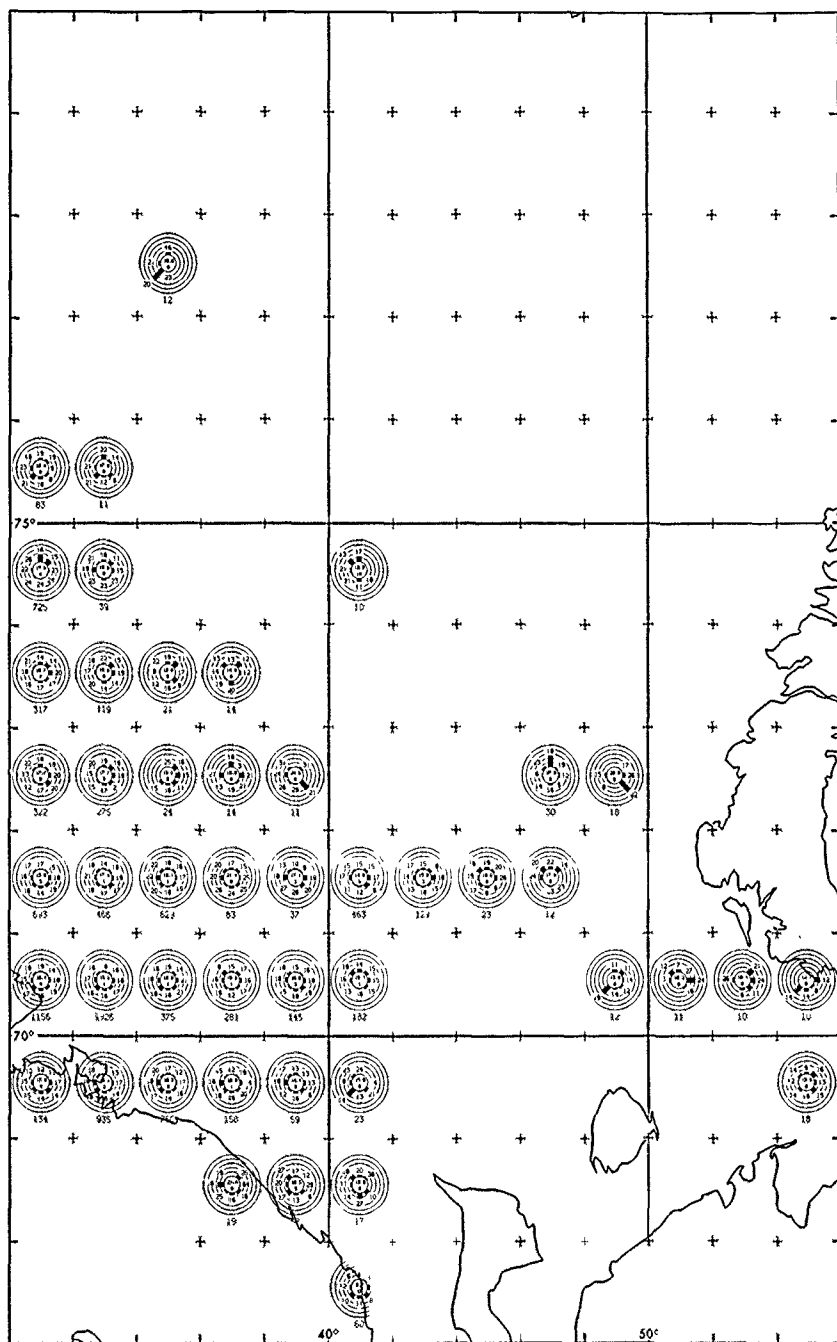
Mean speed (knots) is indicated by the printed number at the end of each bar. Mean scalar speed of all observed east winds was 10 knots.

Mean scalar ϵ
Percent of calms.

Observation
count.

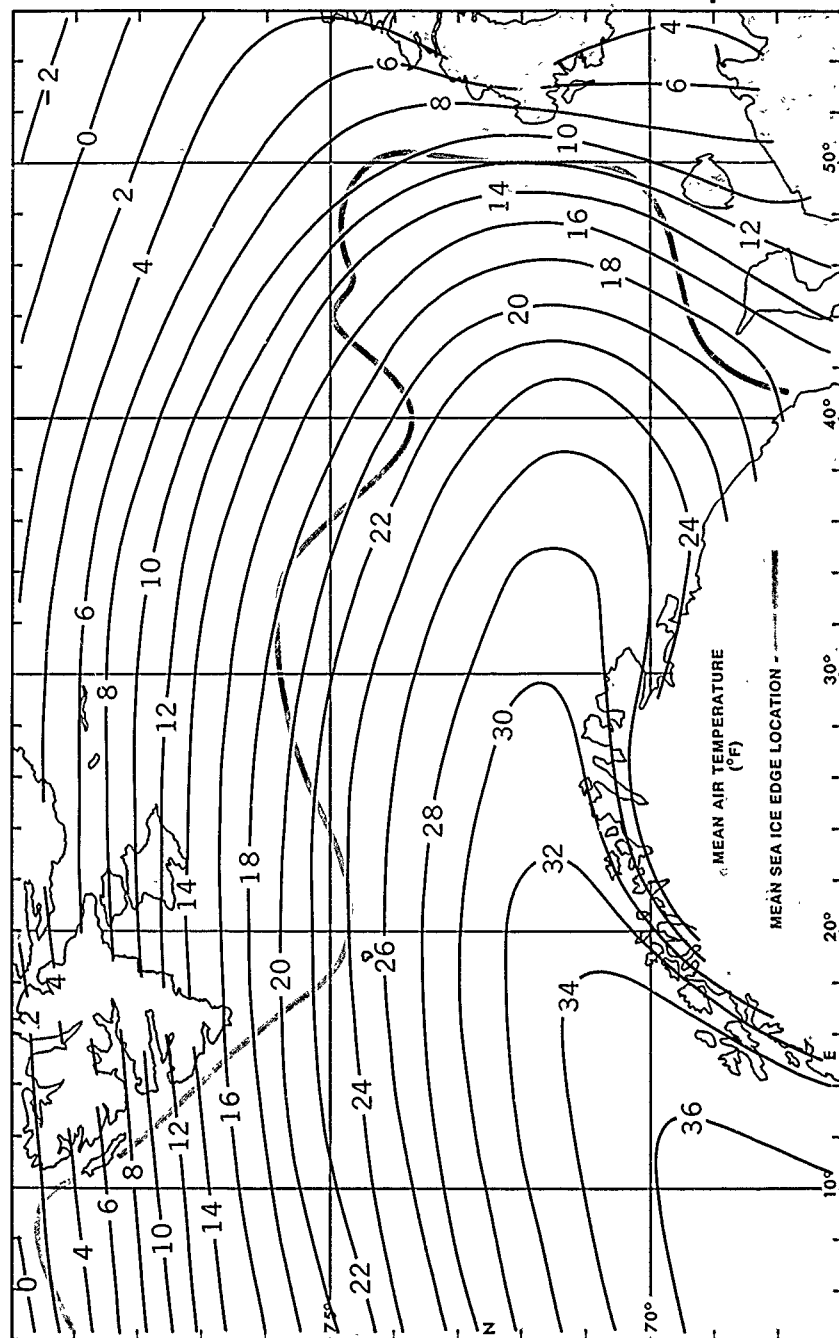
March

Surface Wind Roses



March

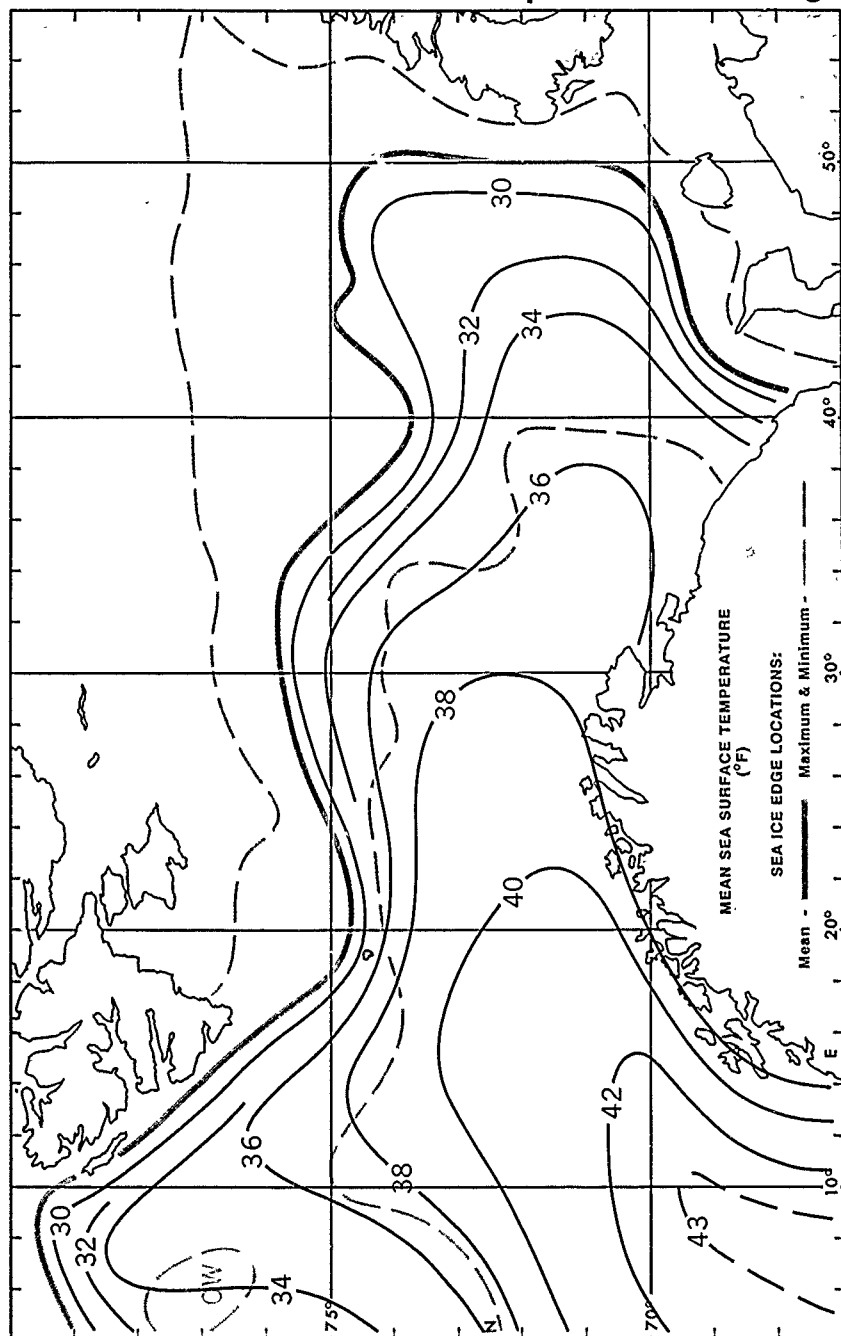
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

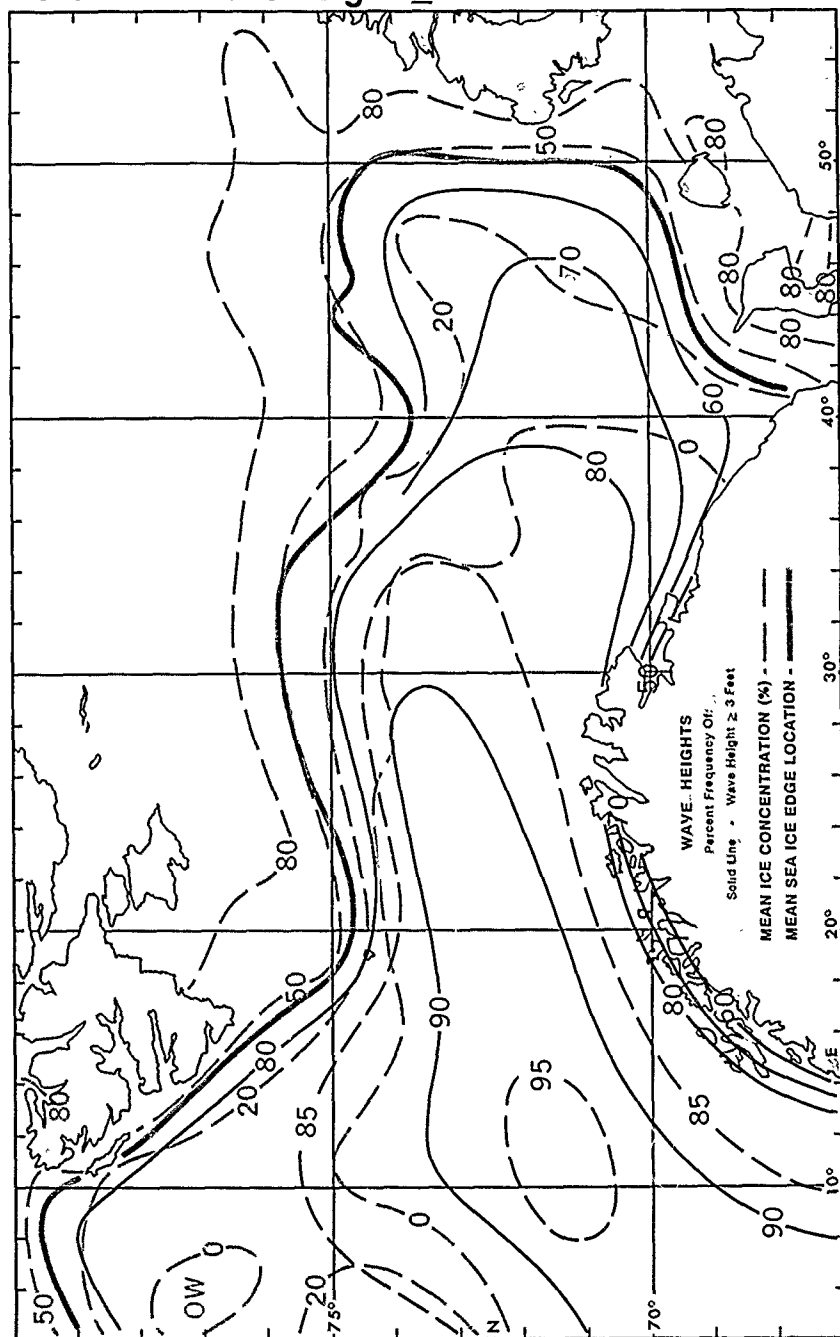
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

March

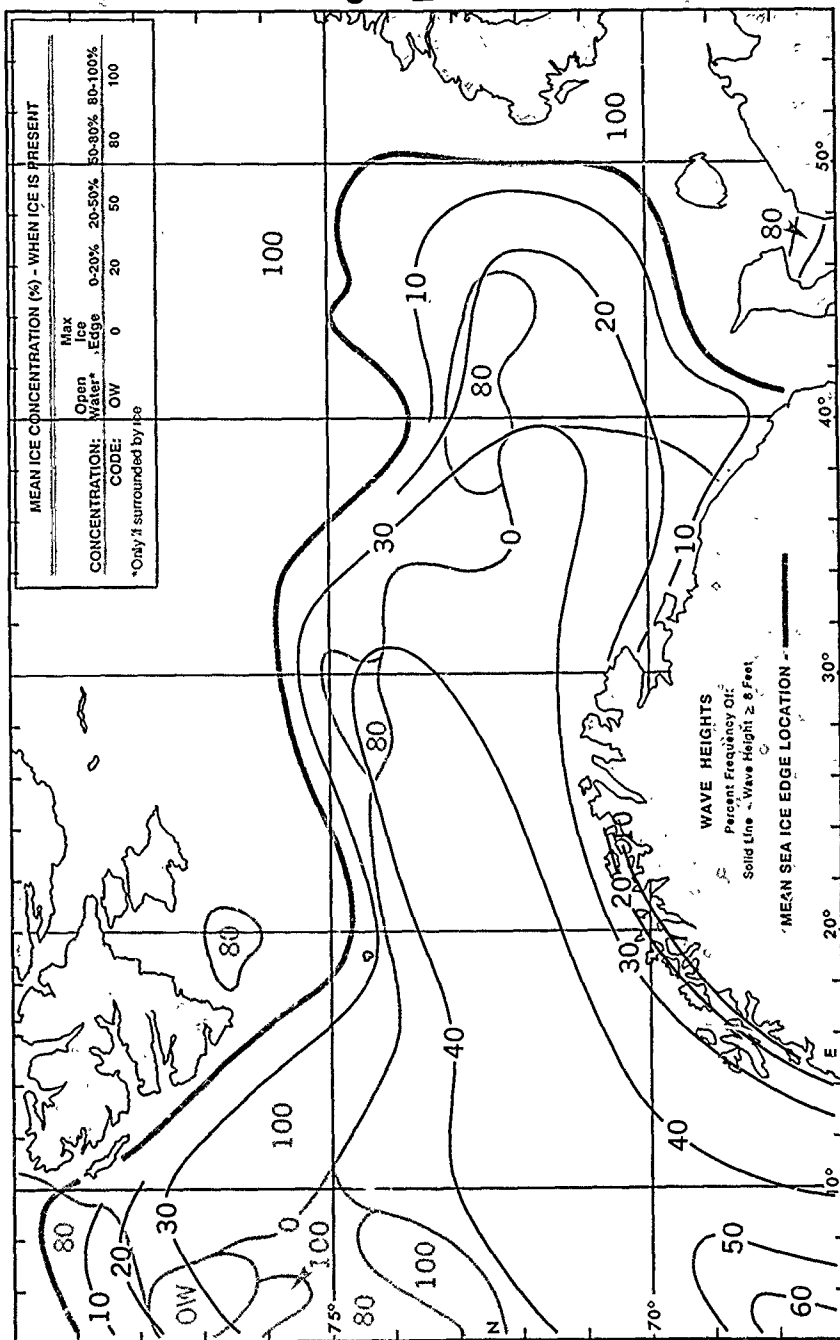
Wave Height ≥ 3 Ft. & Ice Concentration



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

March

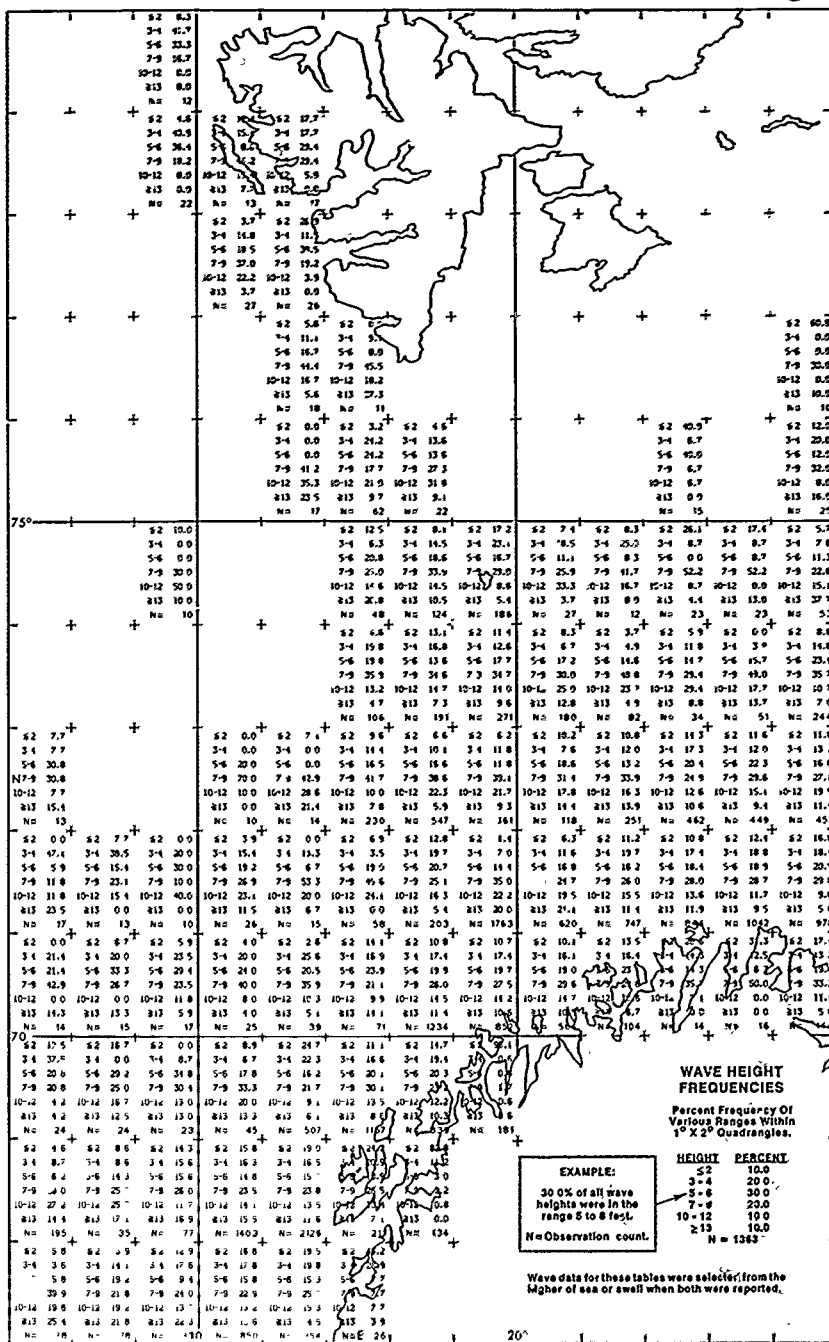
Wave Height ≥ 8 Ft. & Ice Concentration



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

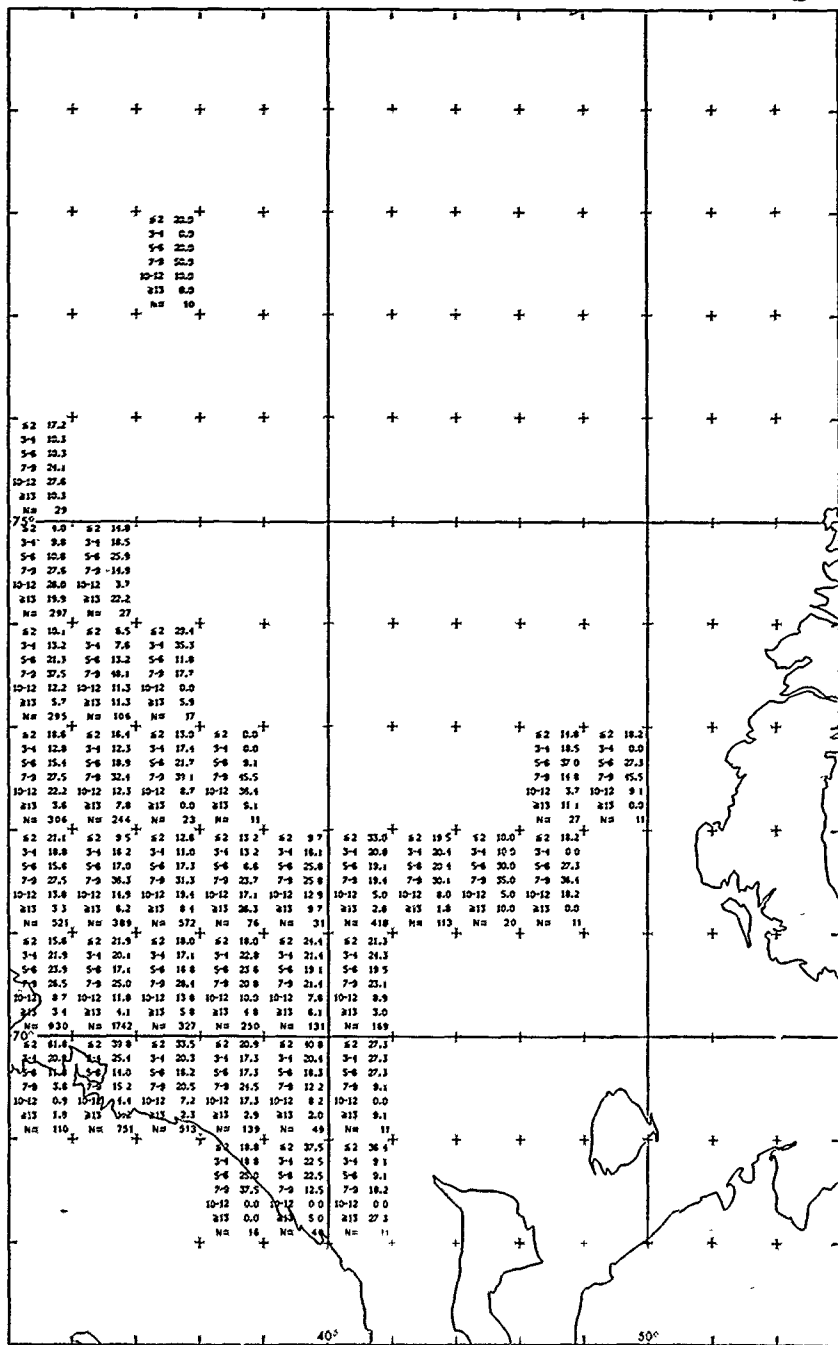
March

Wave Height



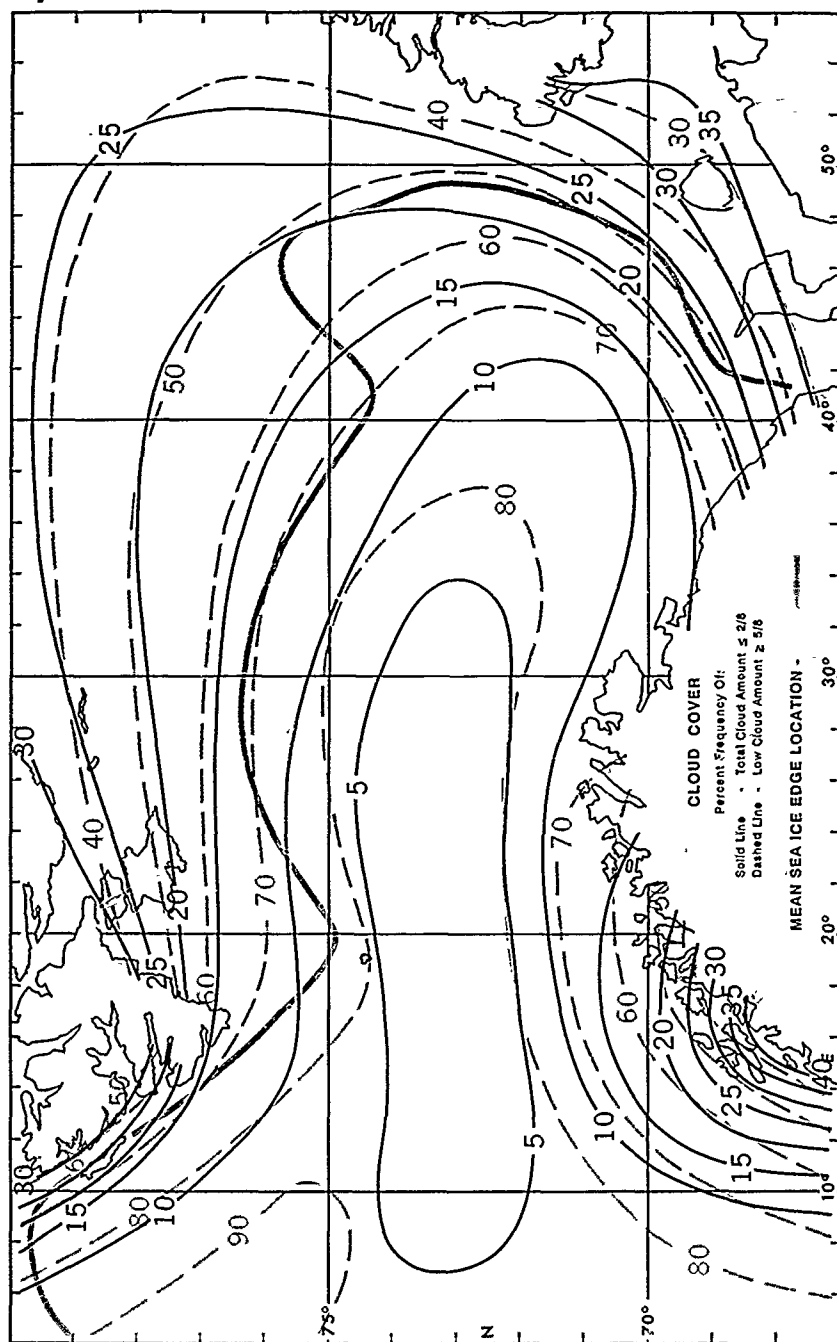
March

Wave Height



April

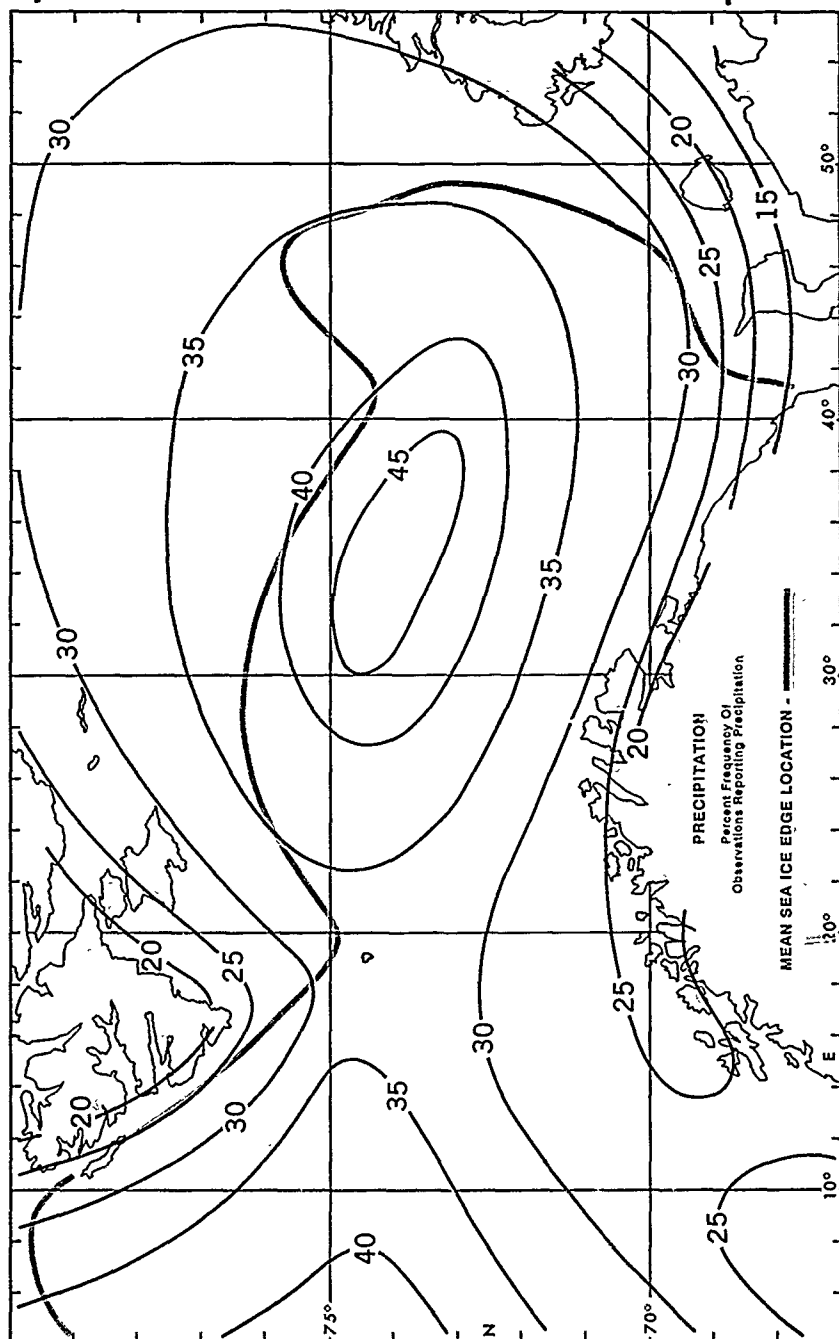
Clouds



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

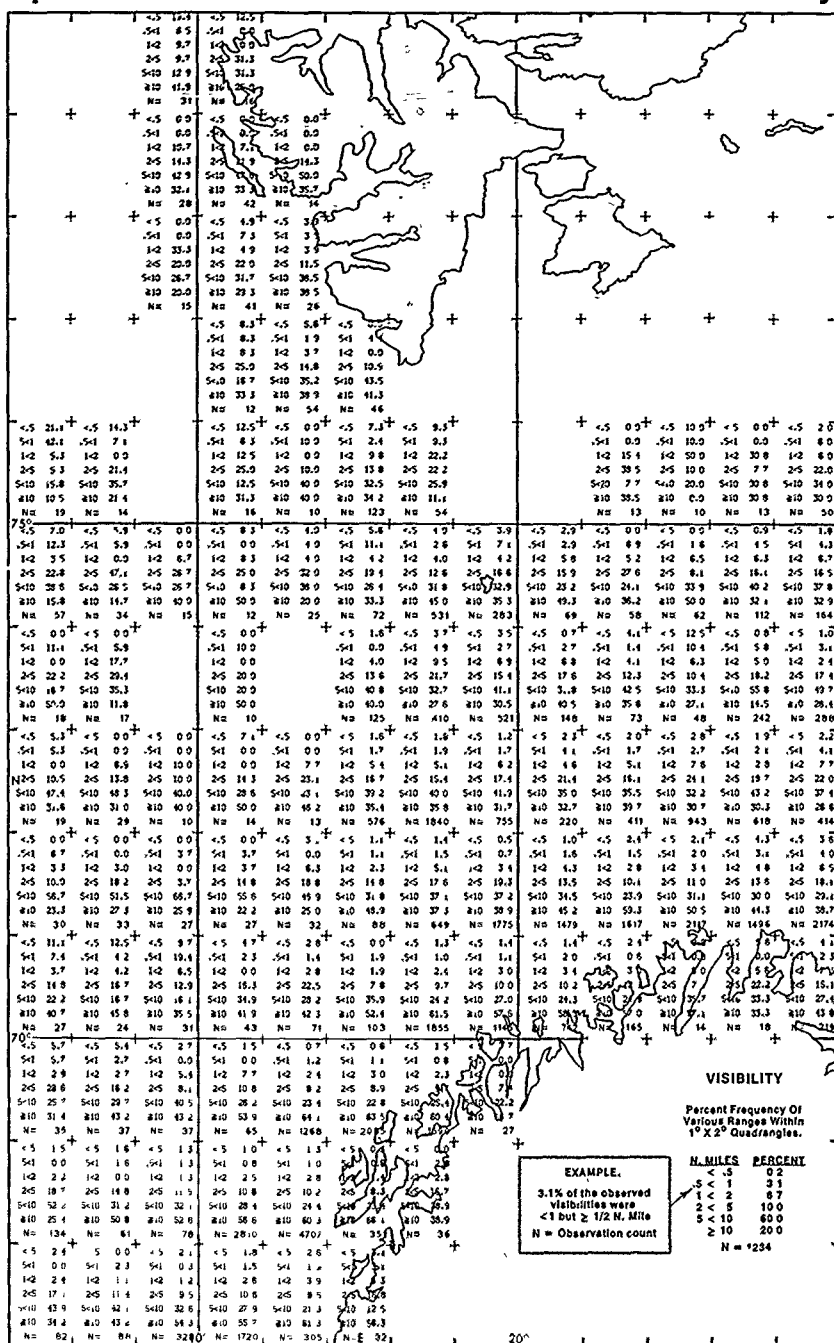
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

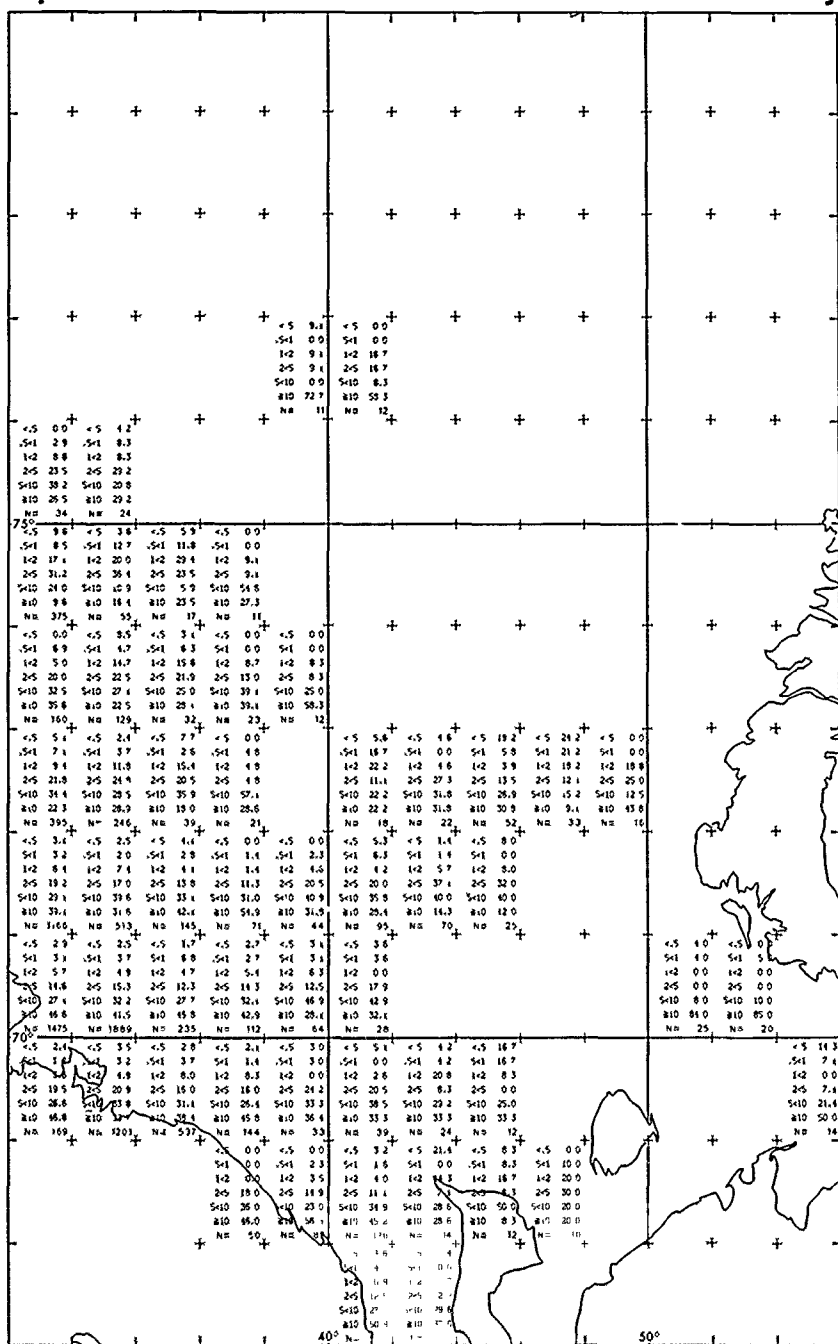
April

Visibility



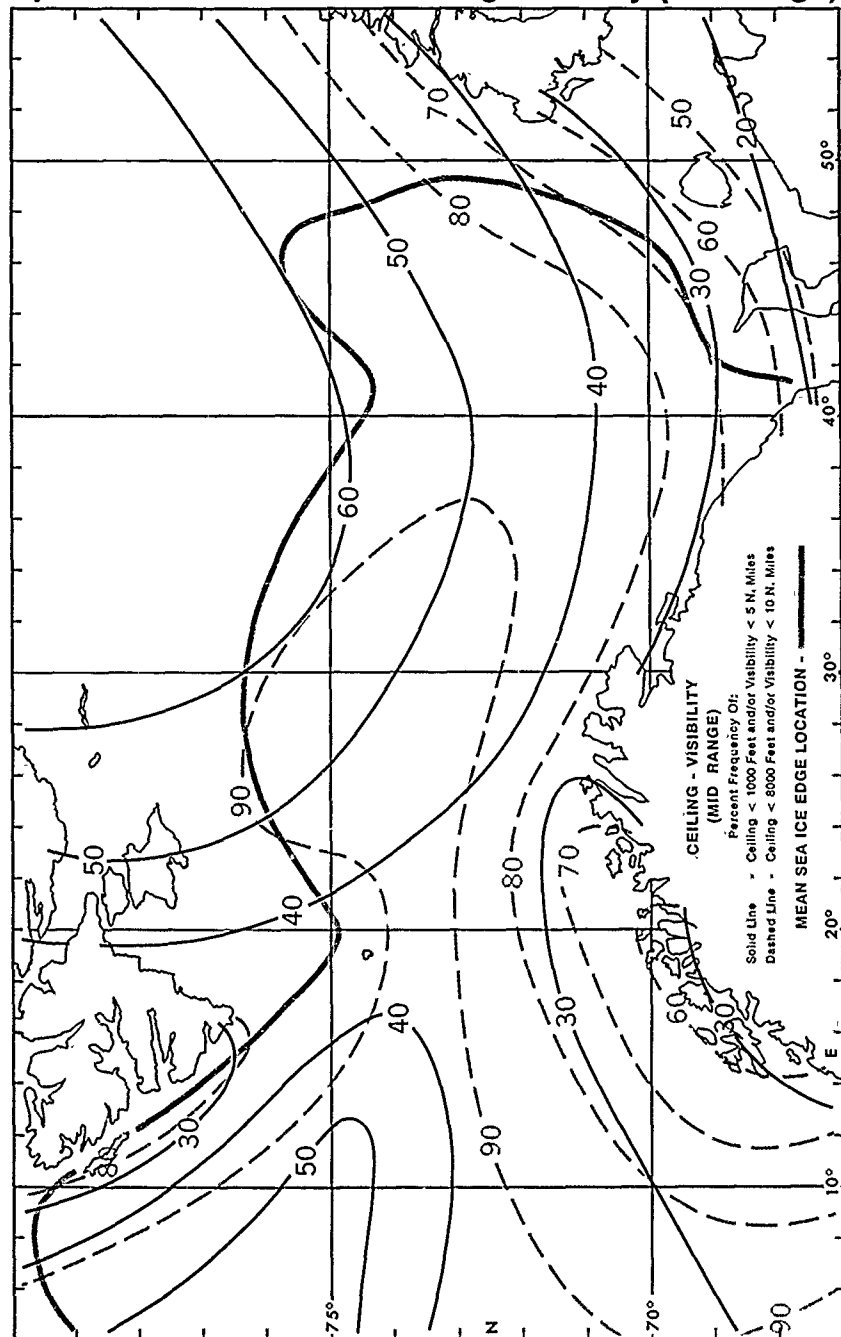
April

Visibility



April

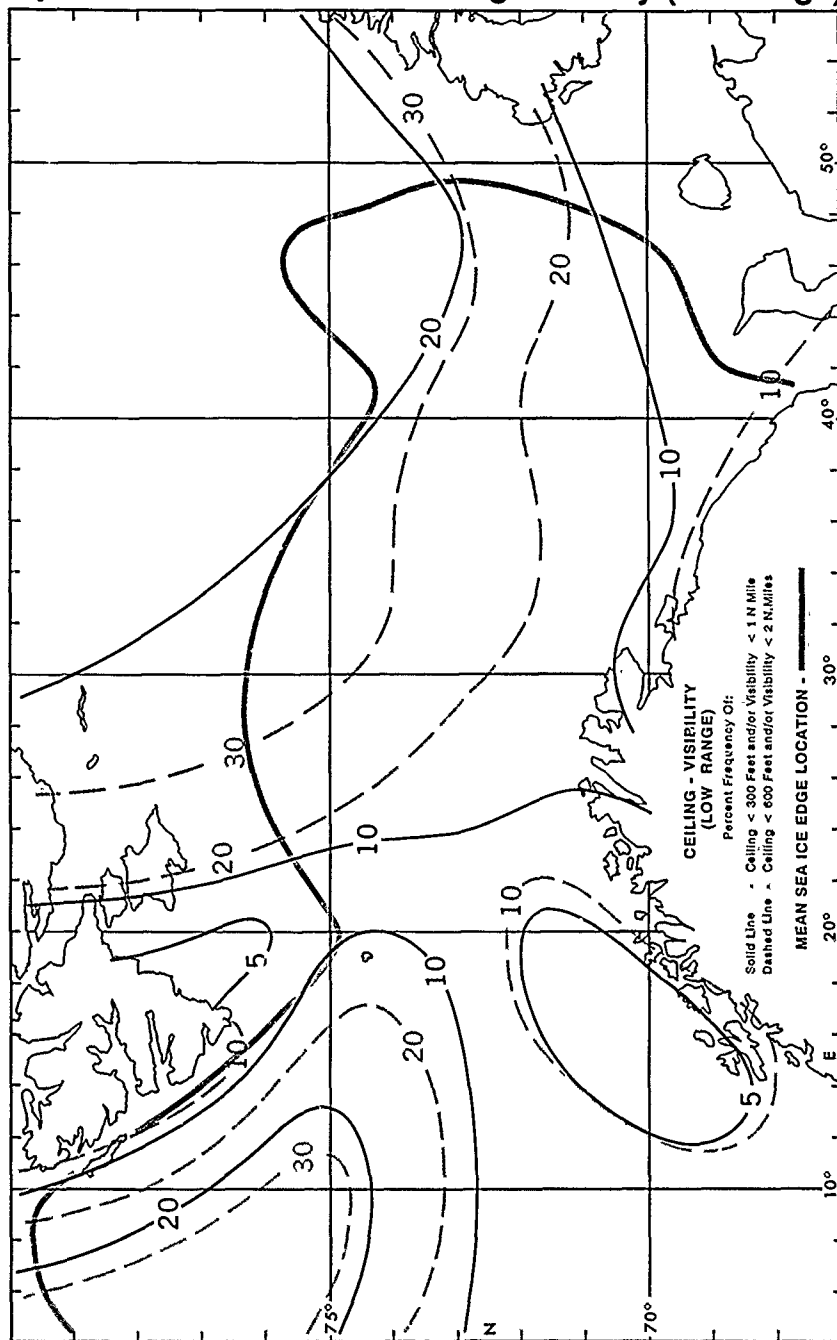
Ceiling-Visibility (mid range)



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

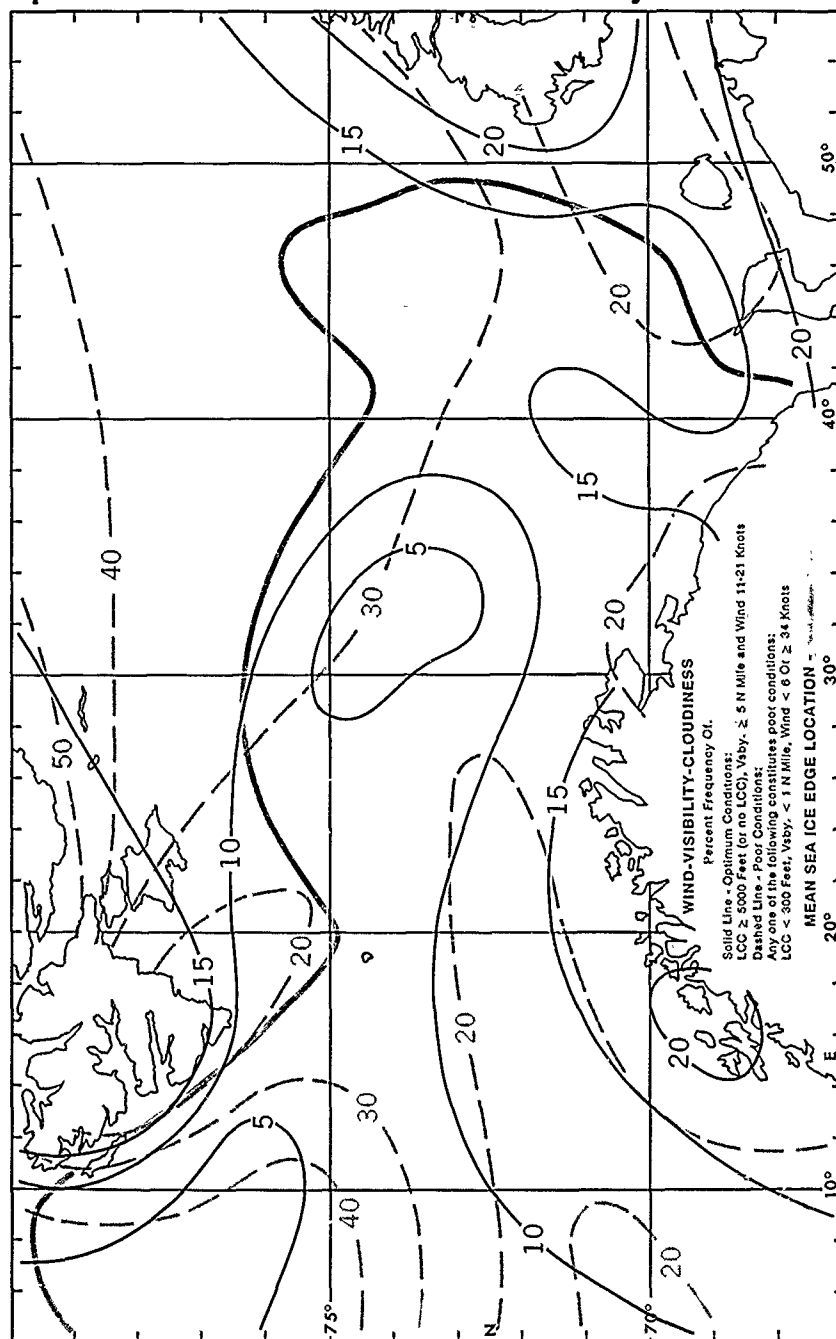
Ceiling-Visibility (low range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

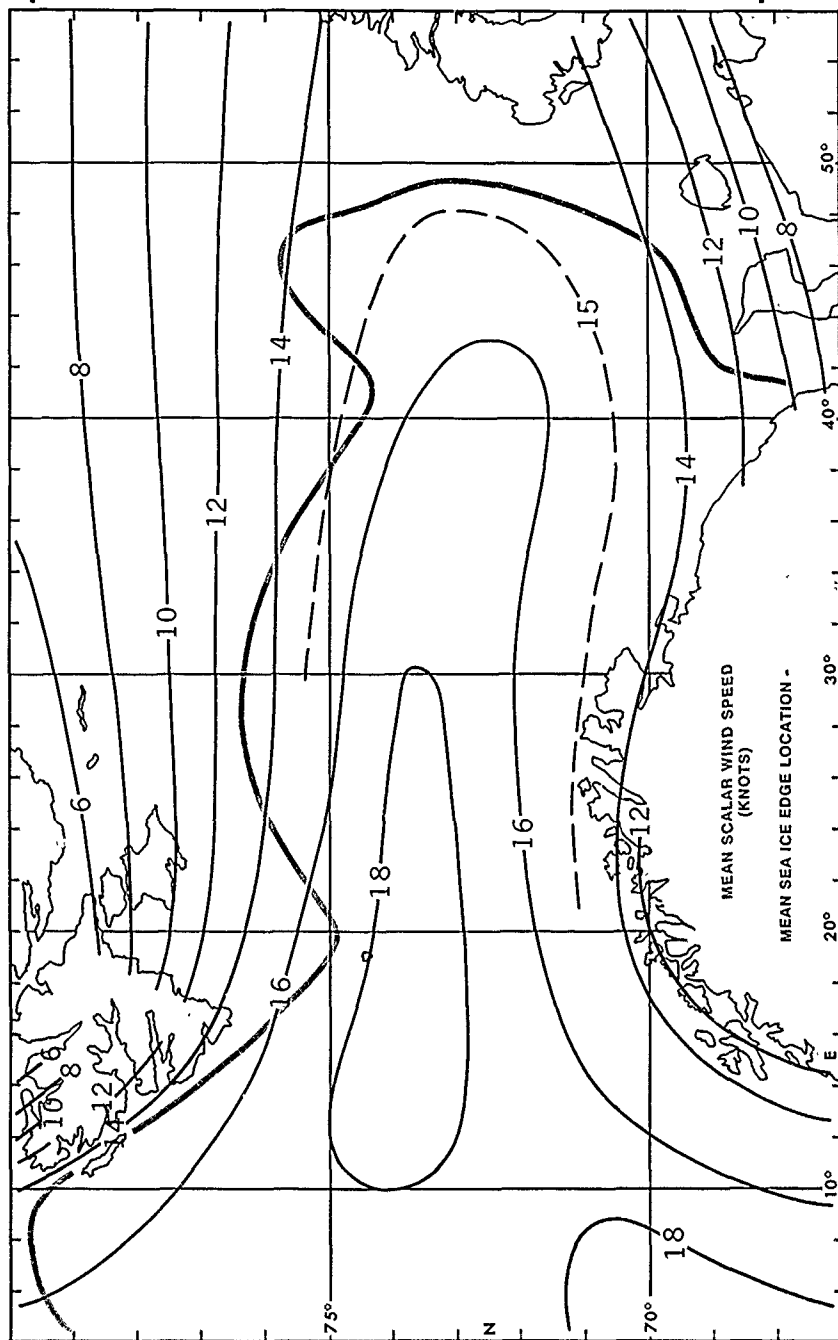
Wind-Visibility-Cloudiness



NOTE. Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

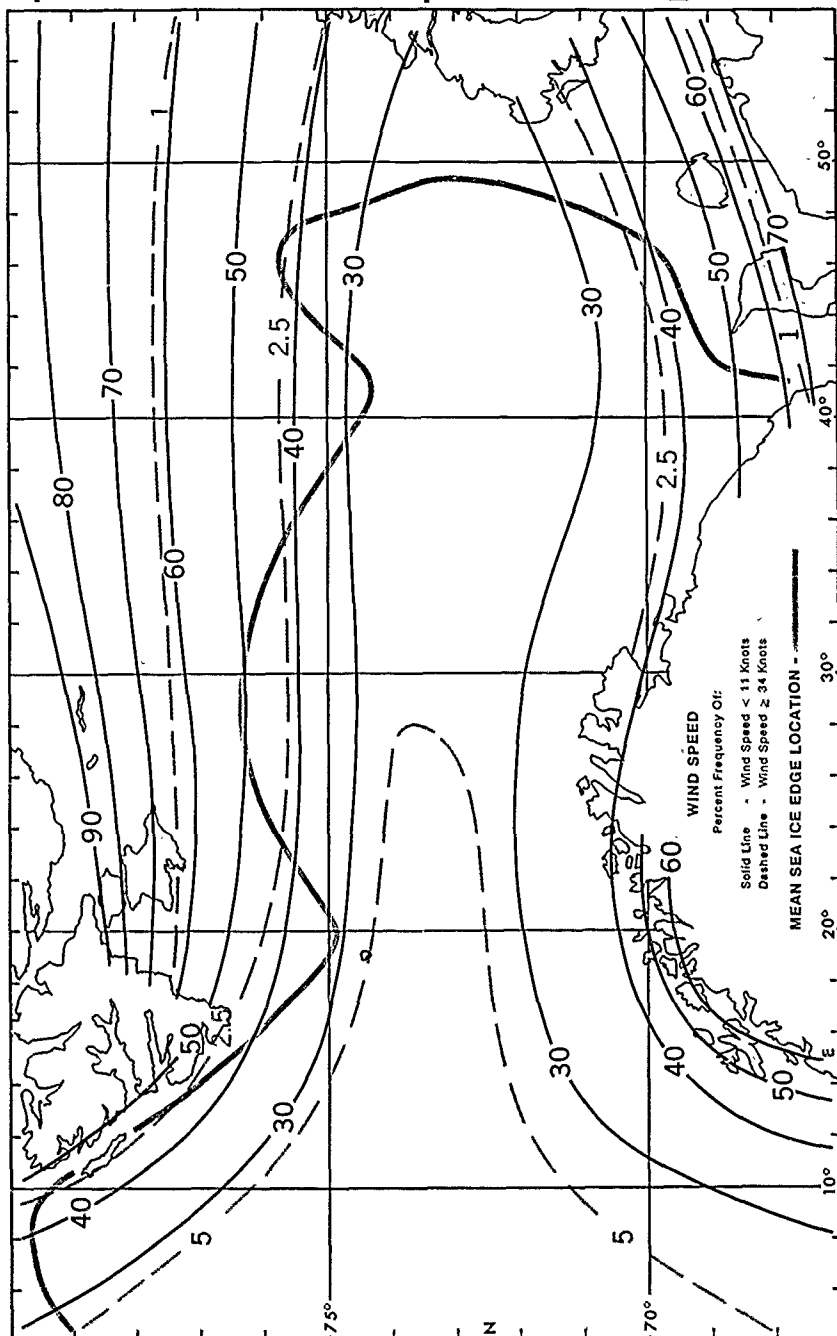
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

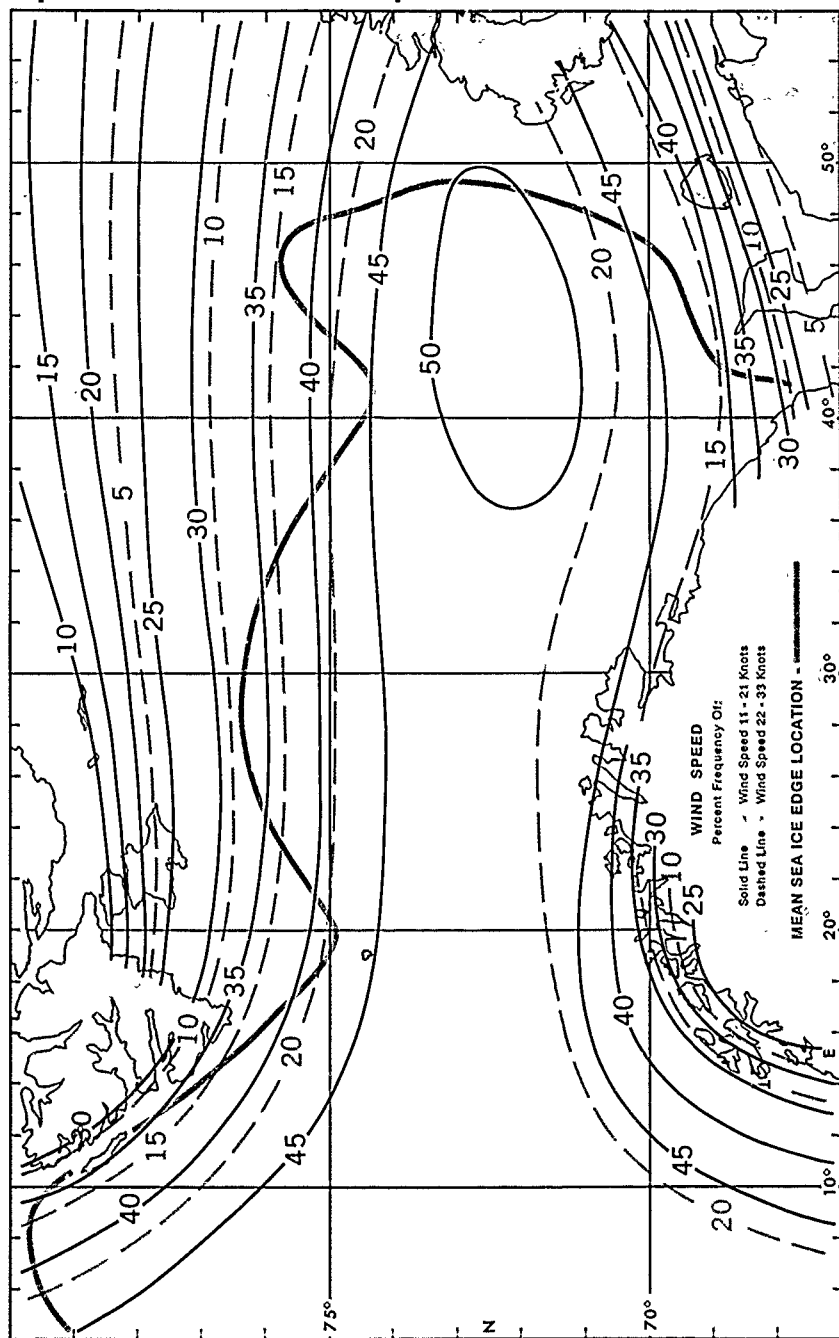
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

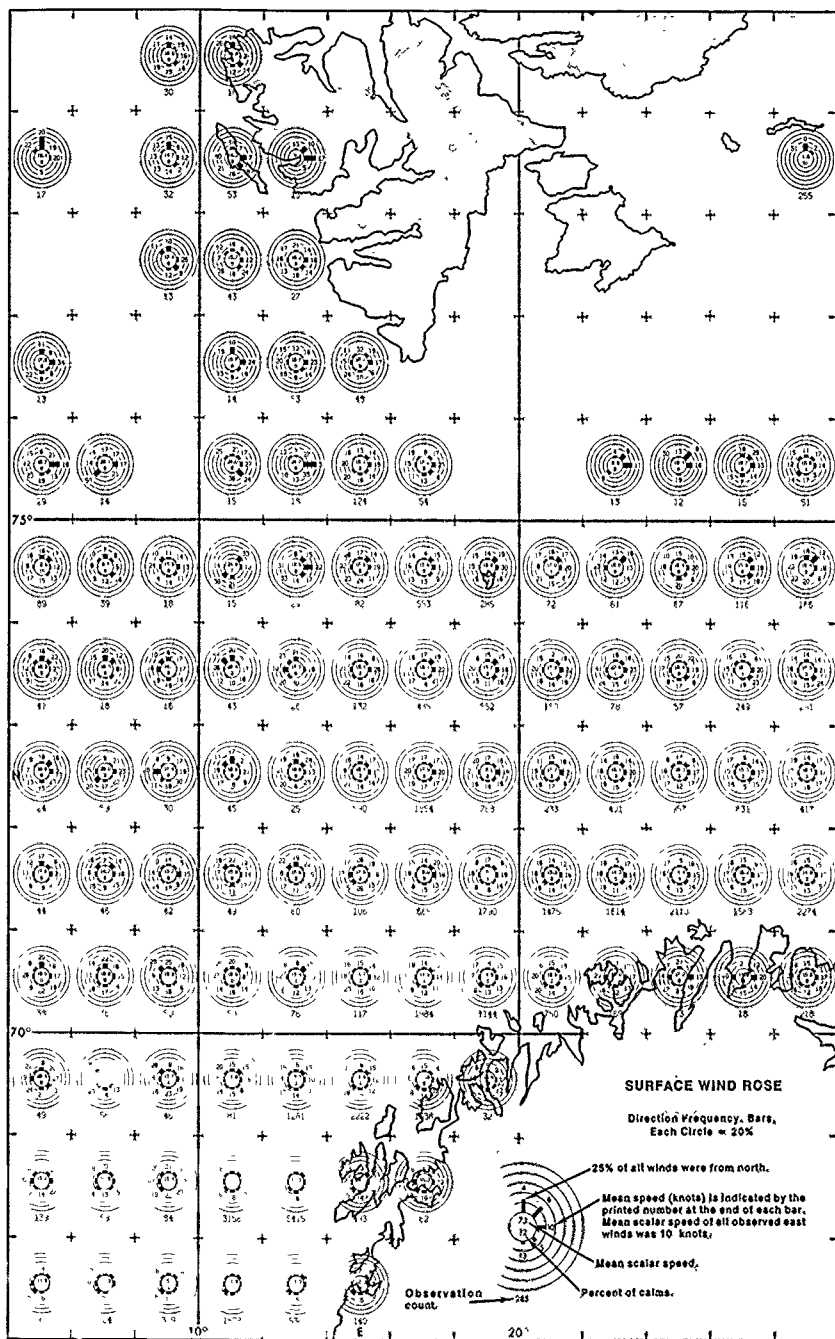
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

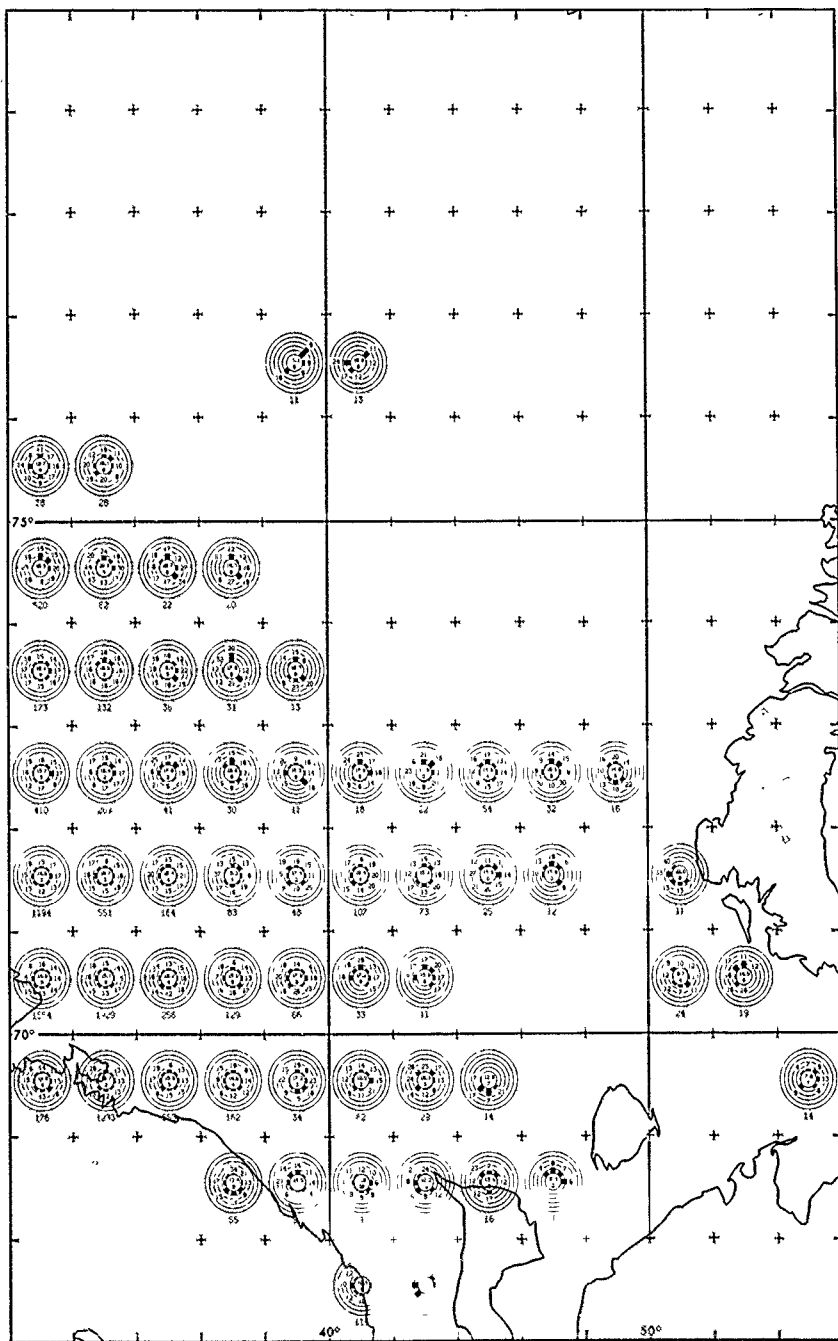
April

Surface Wind Roses



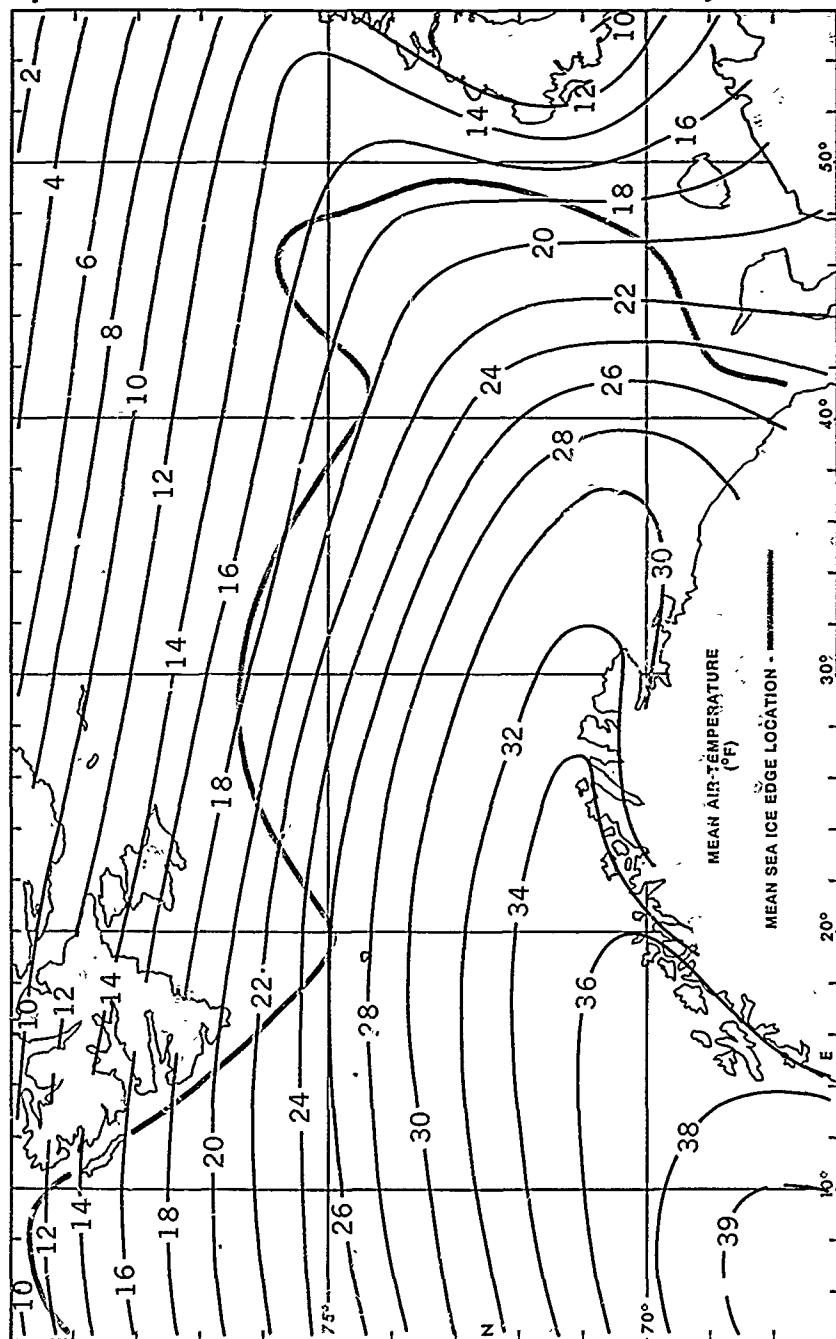
April

Surface Wind Roses



April

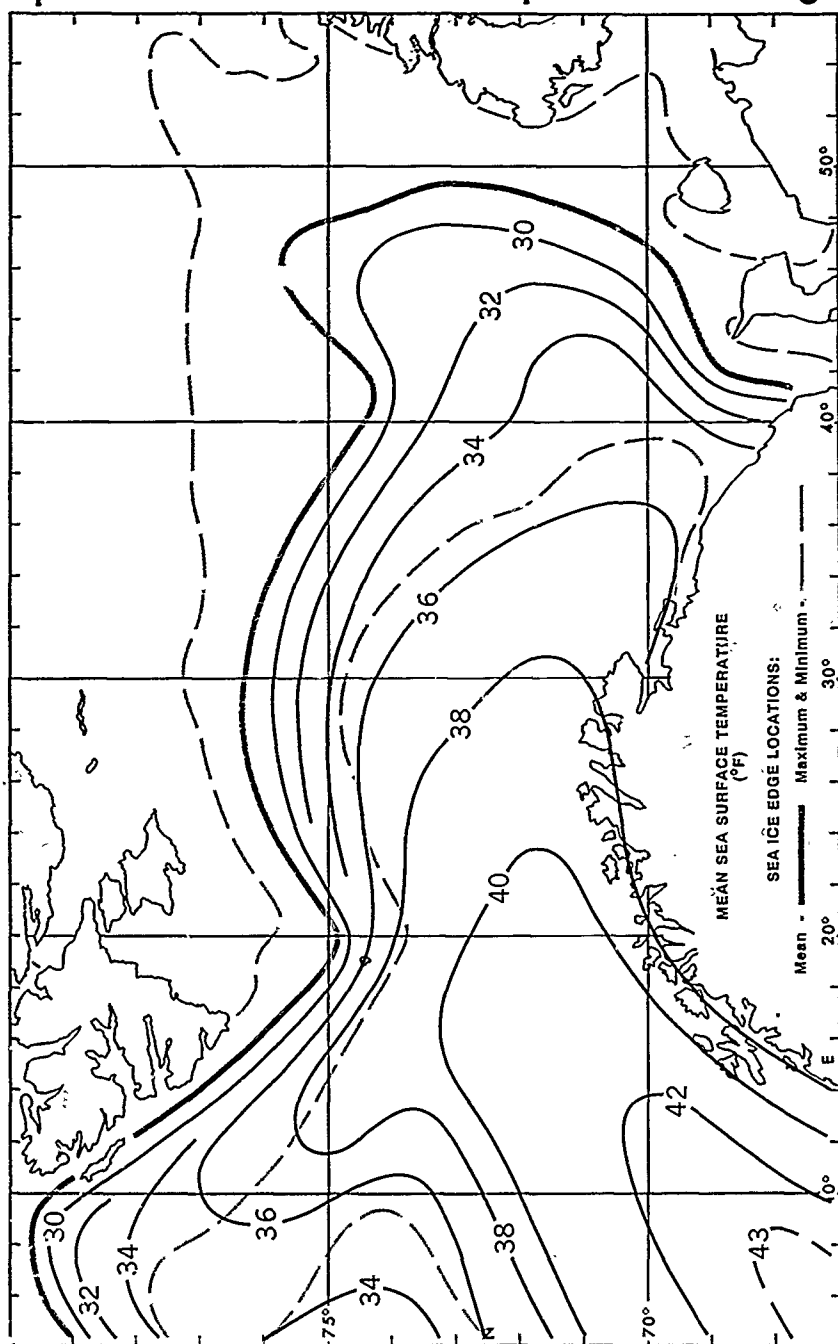
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

April

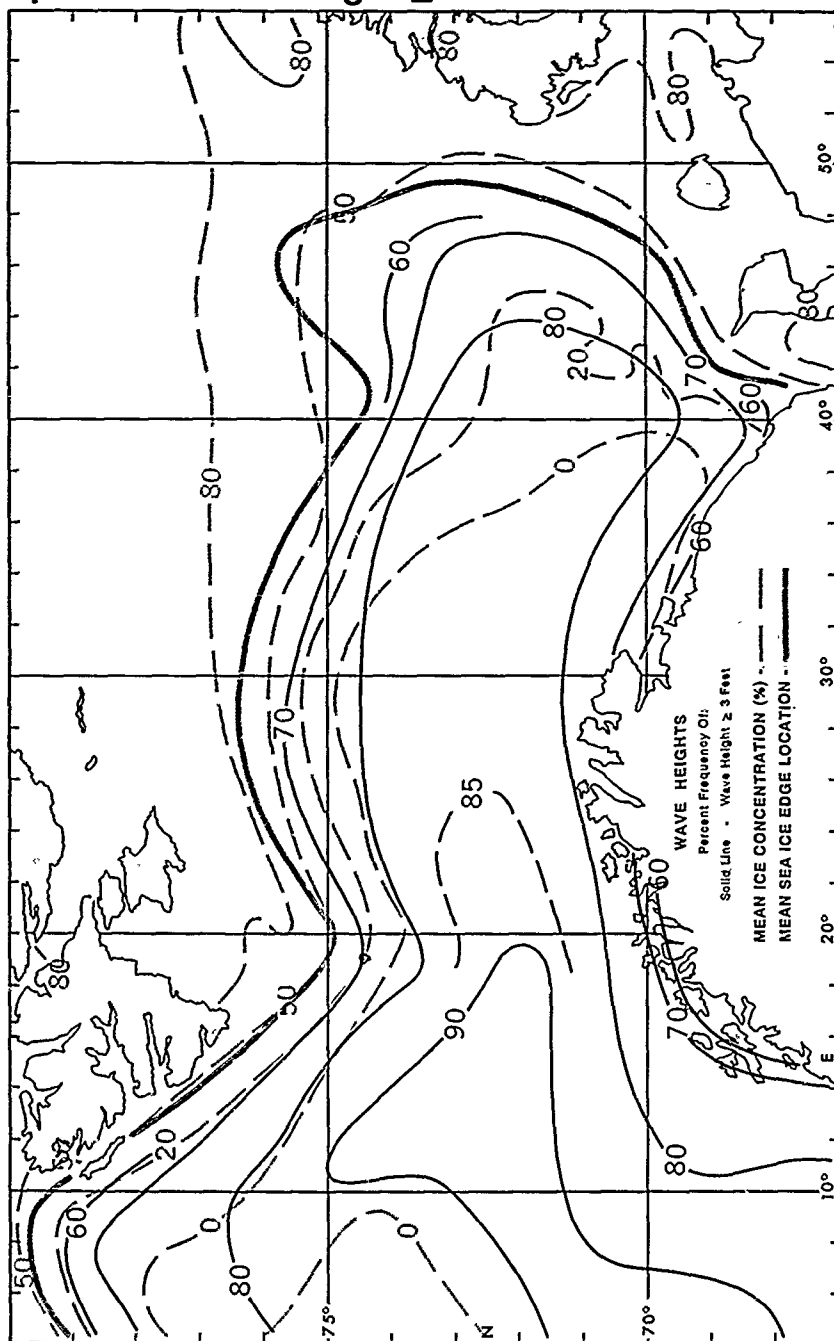
Mean Sea Temperature & Ice Edge



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

April

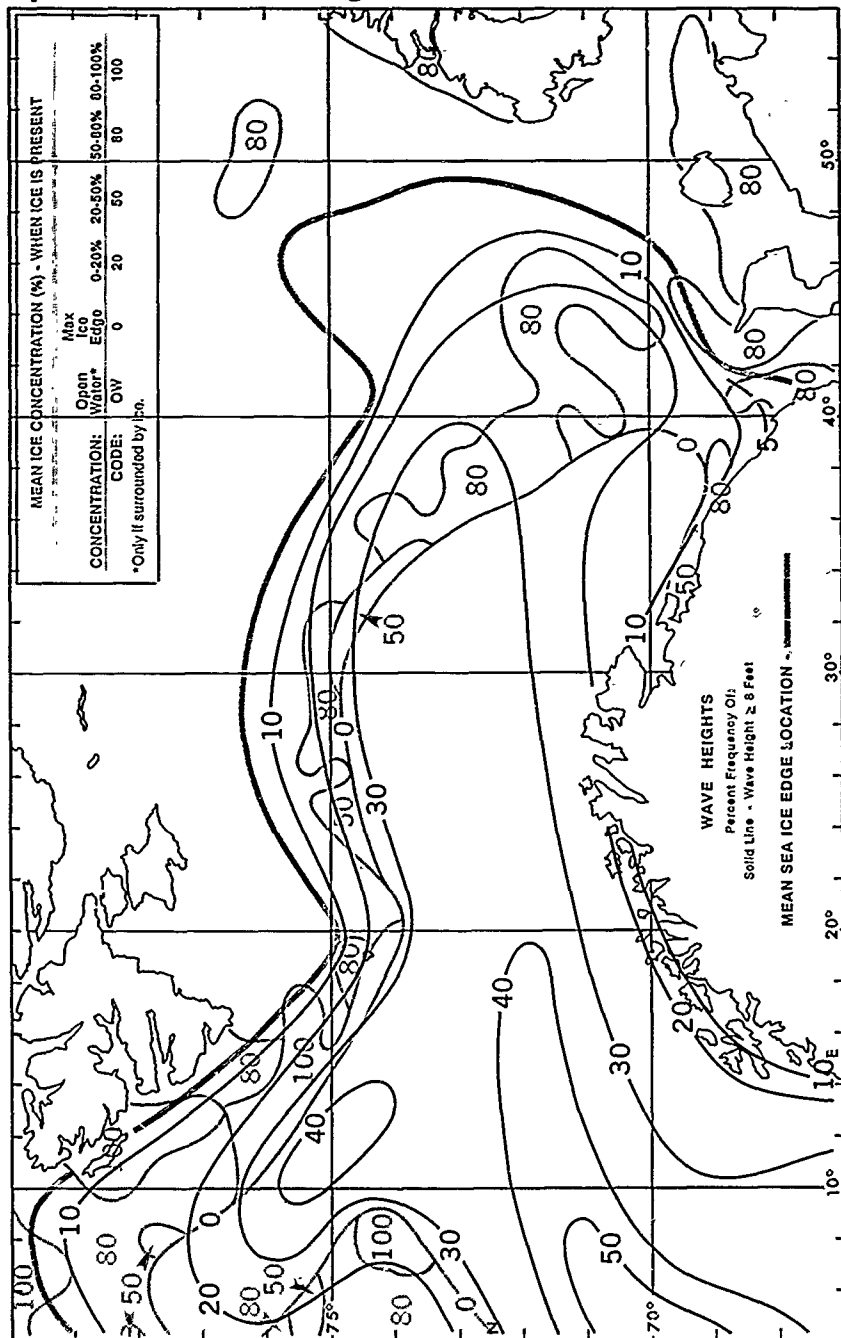
Wave Height ≥ 3 Ft. & Ice Concentration



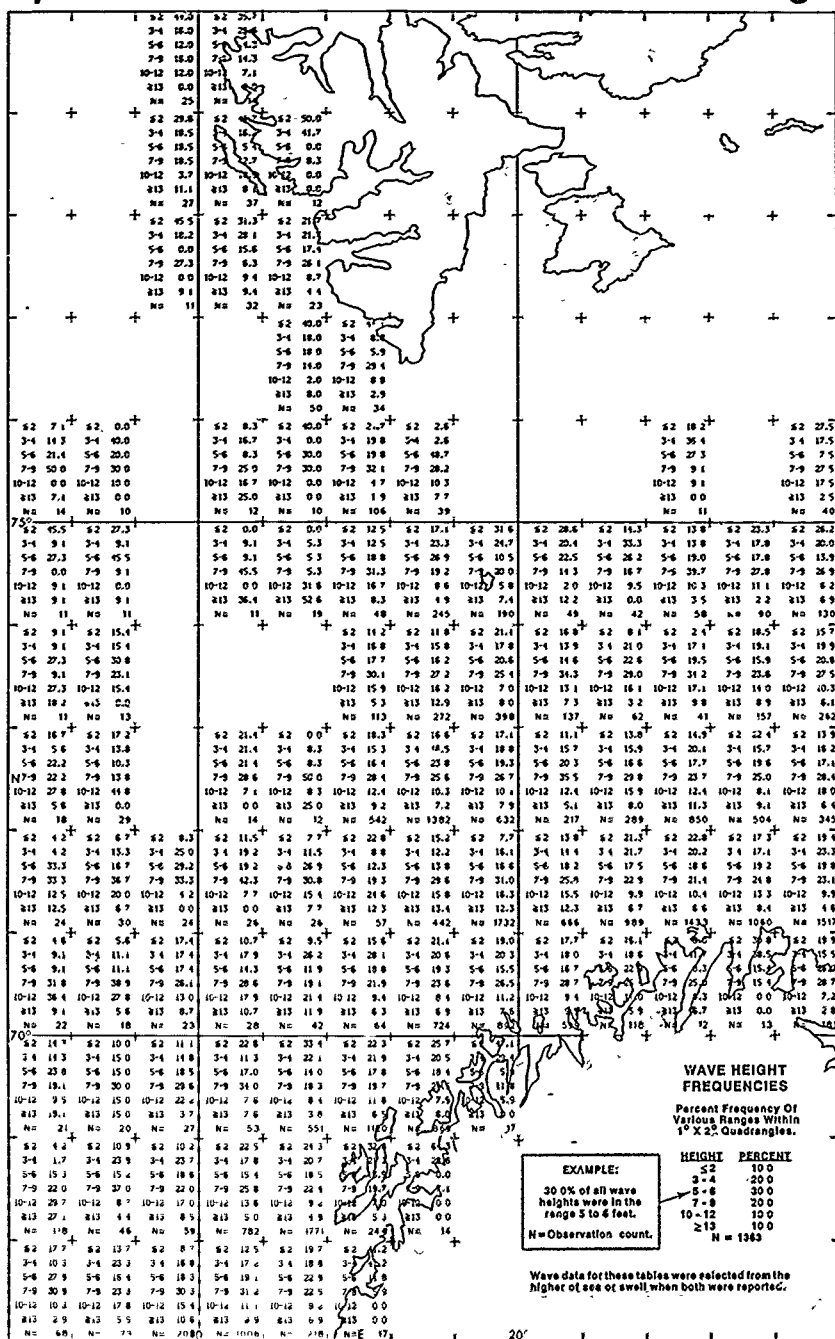
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observatio counts.

April

Wave Height ≥ 8 Ft. & Ice Concentration

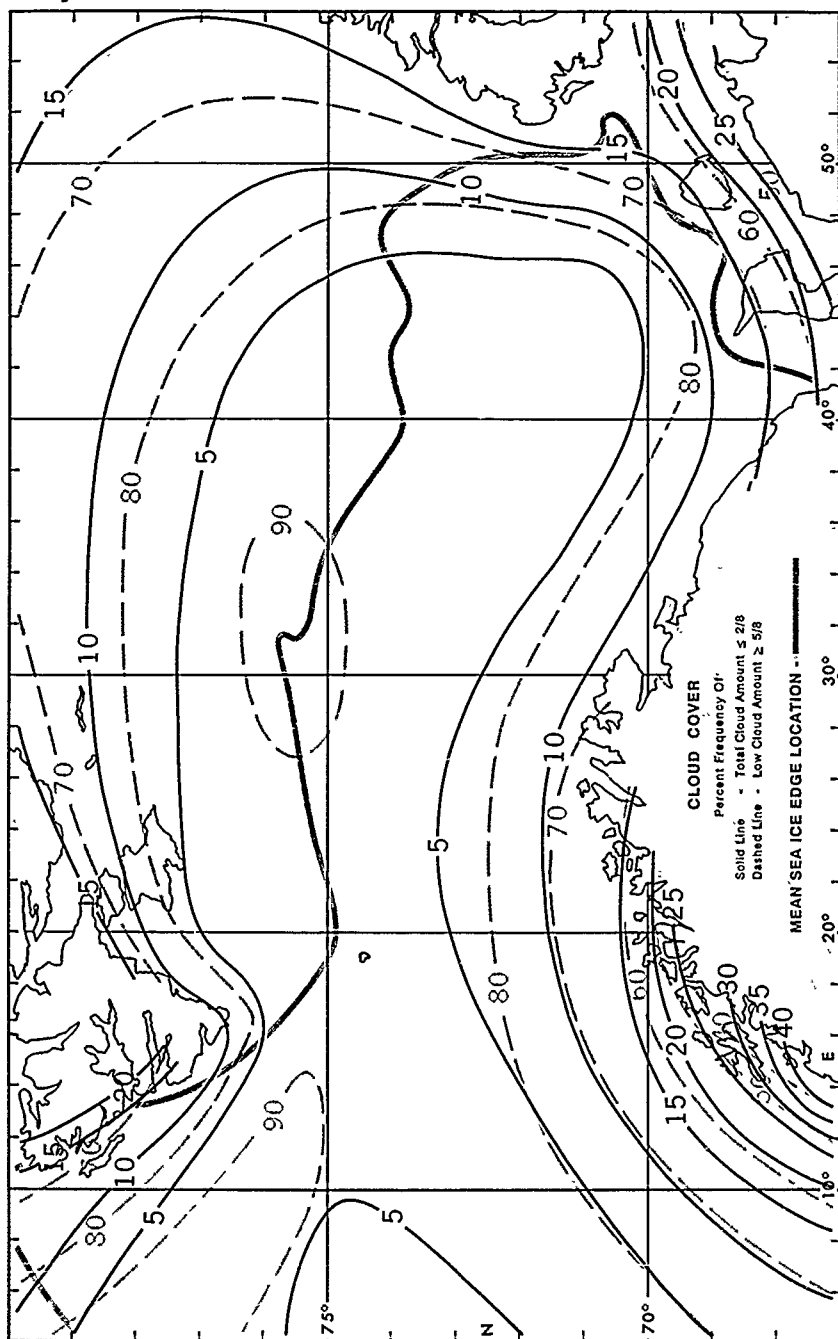


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.



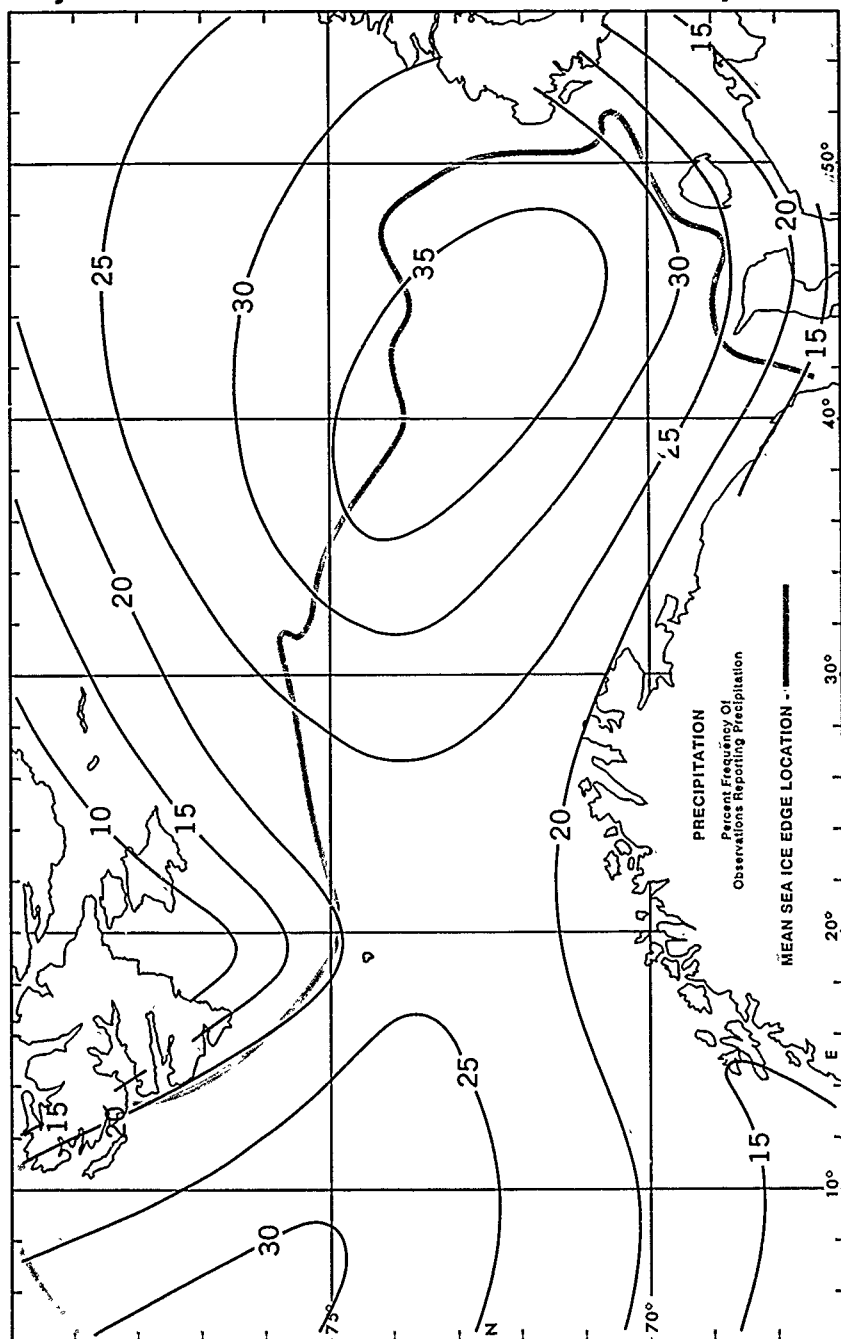
May

Clouds



May

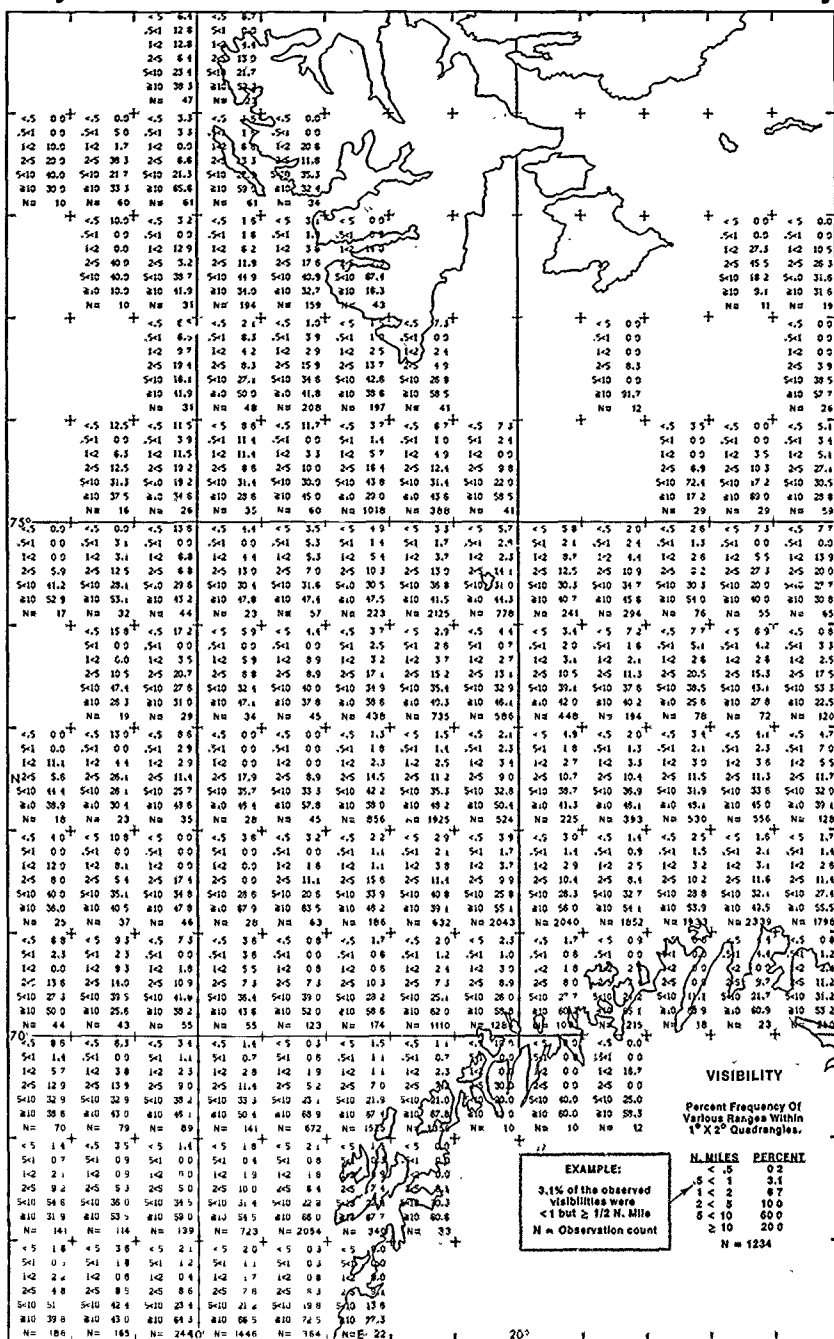
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

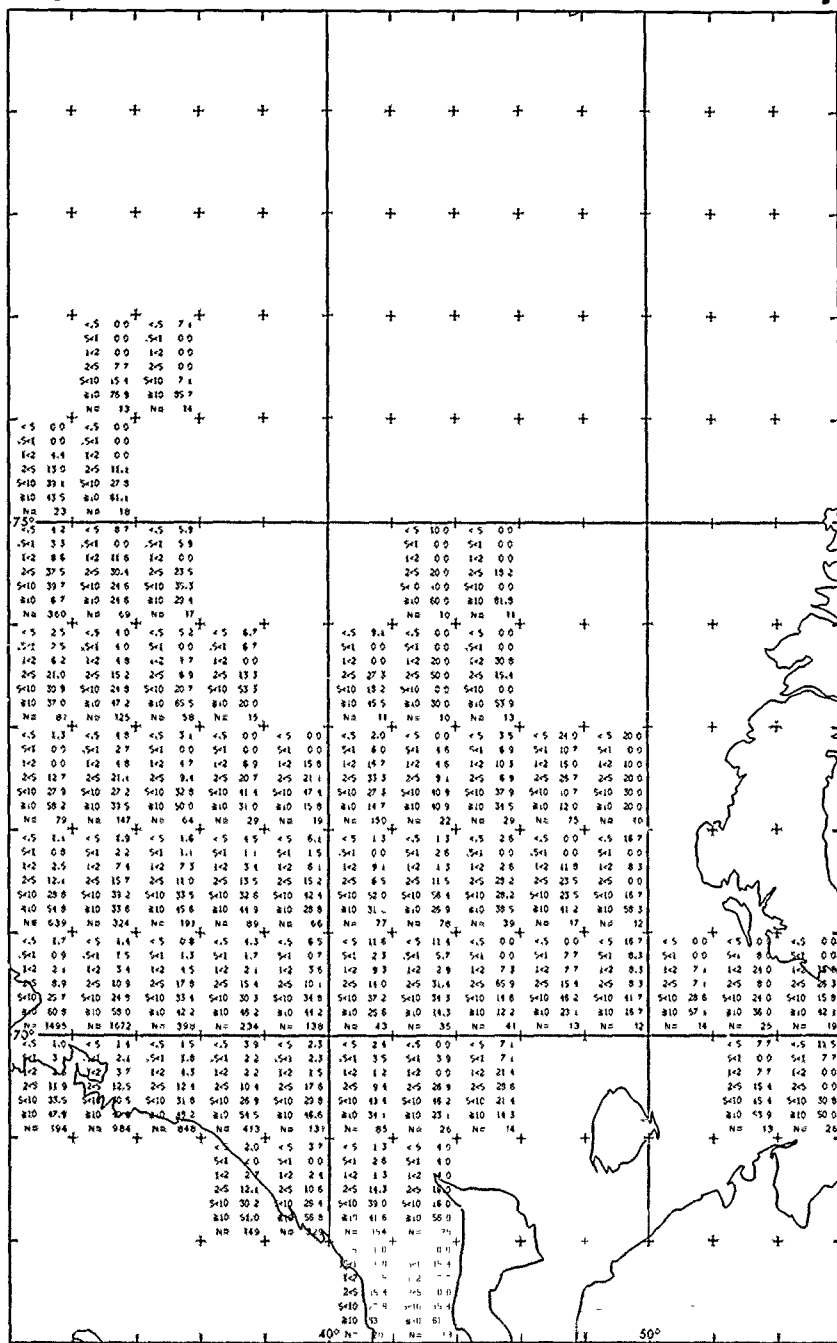
May

Visibility



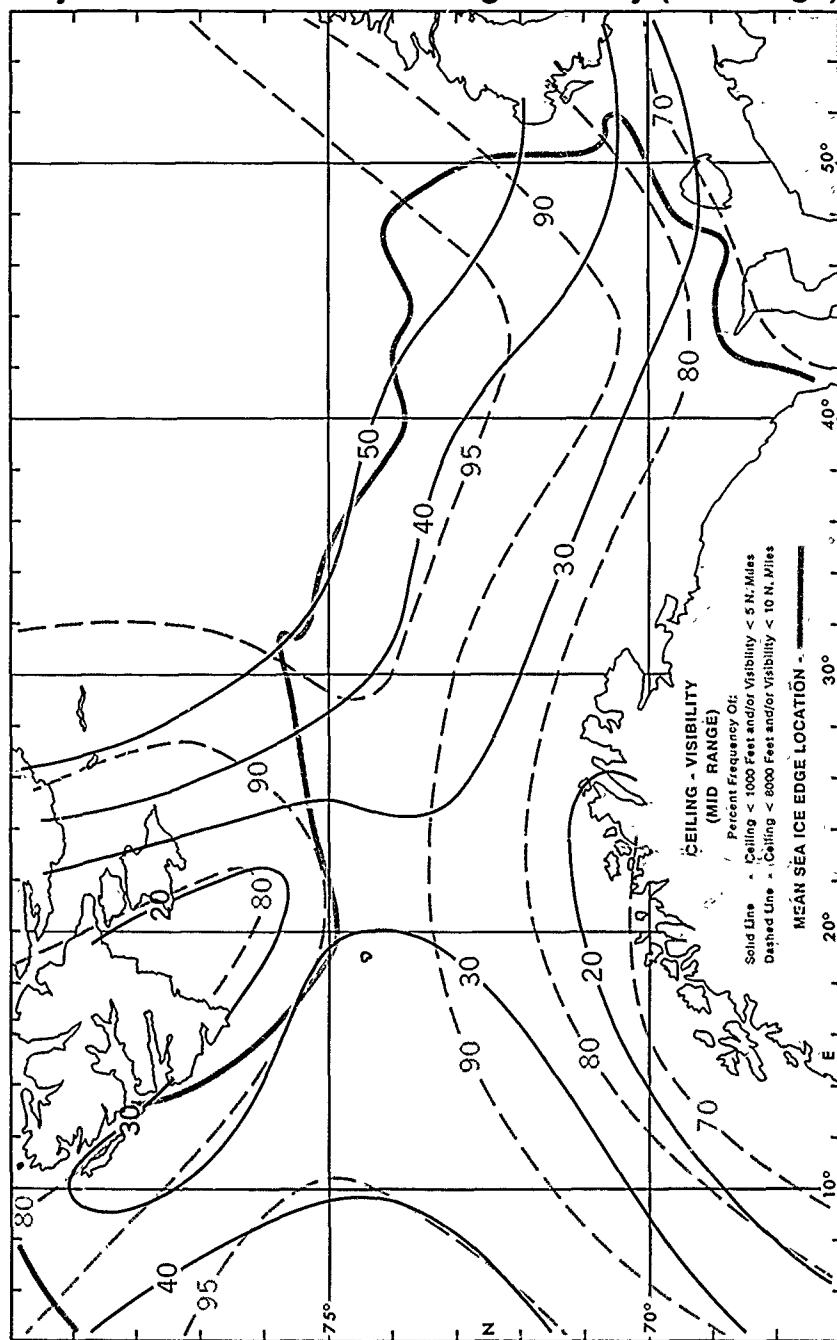
May

Visibility



May

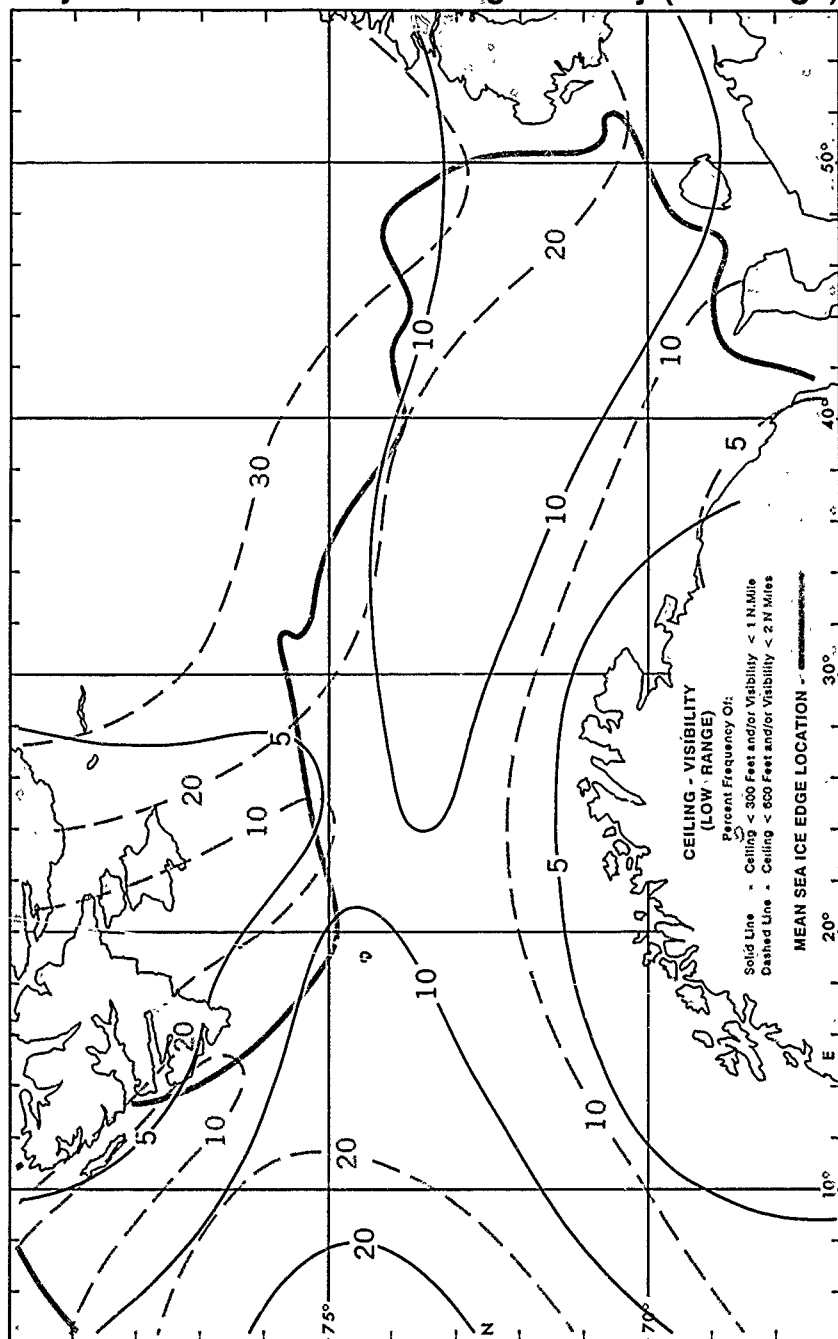
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

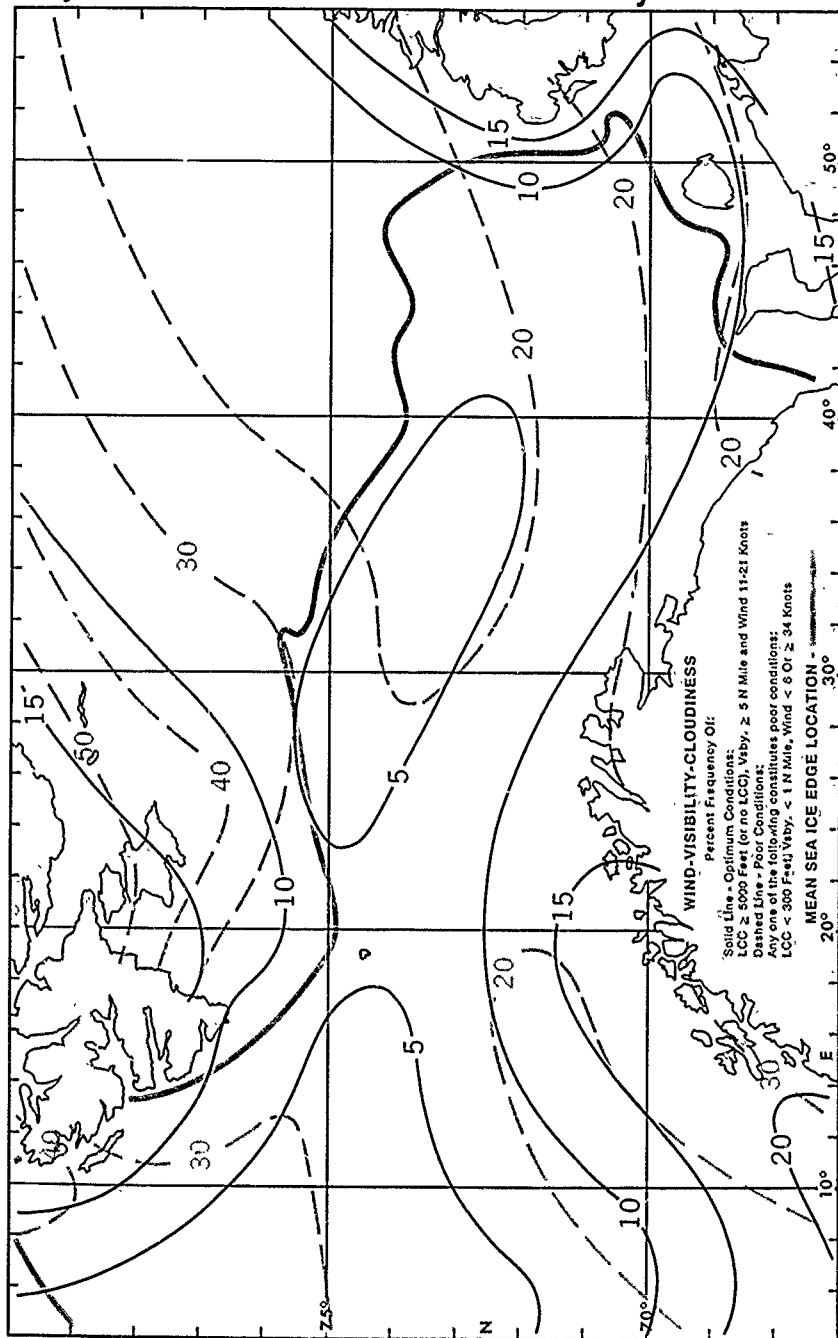
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

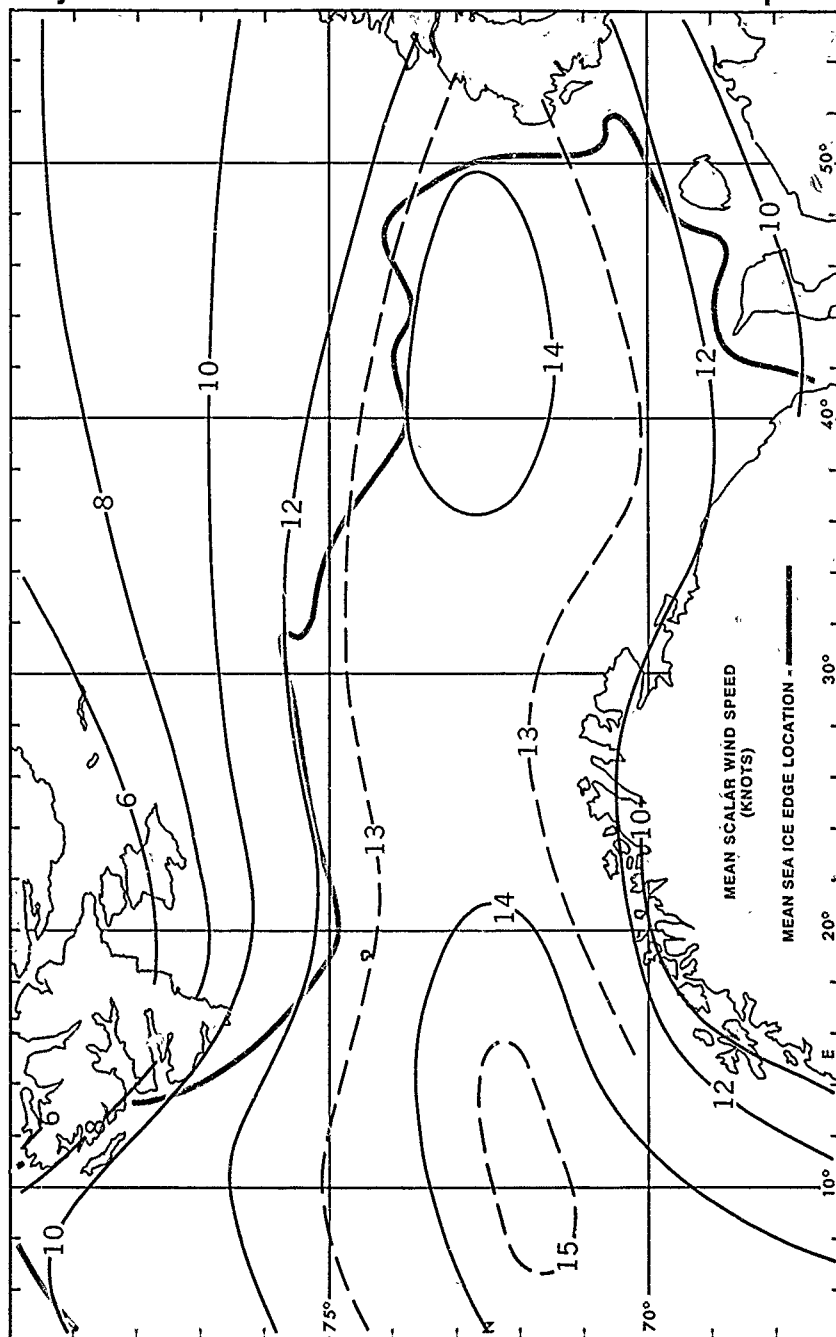
May

Wind-Visibility-Cloudiness



May

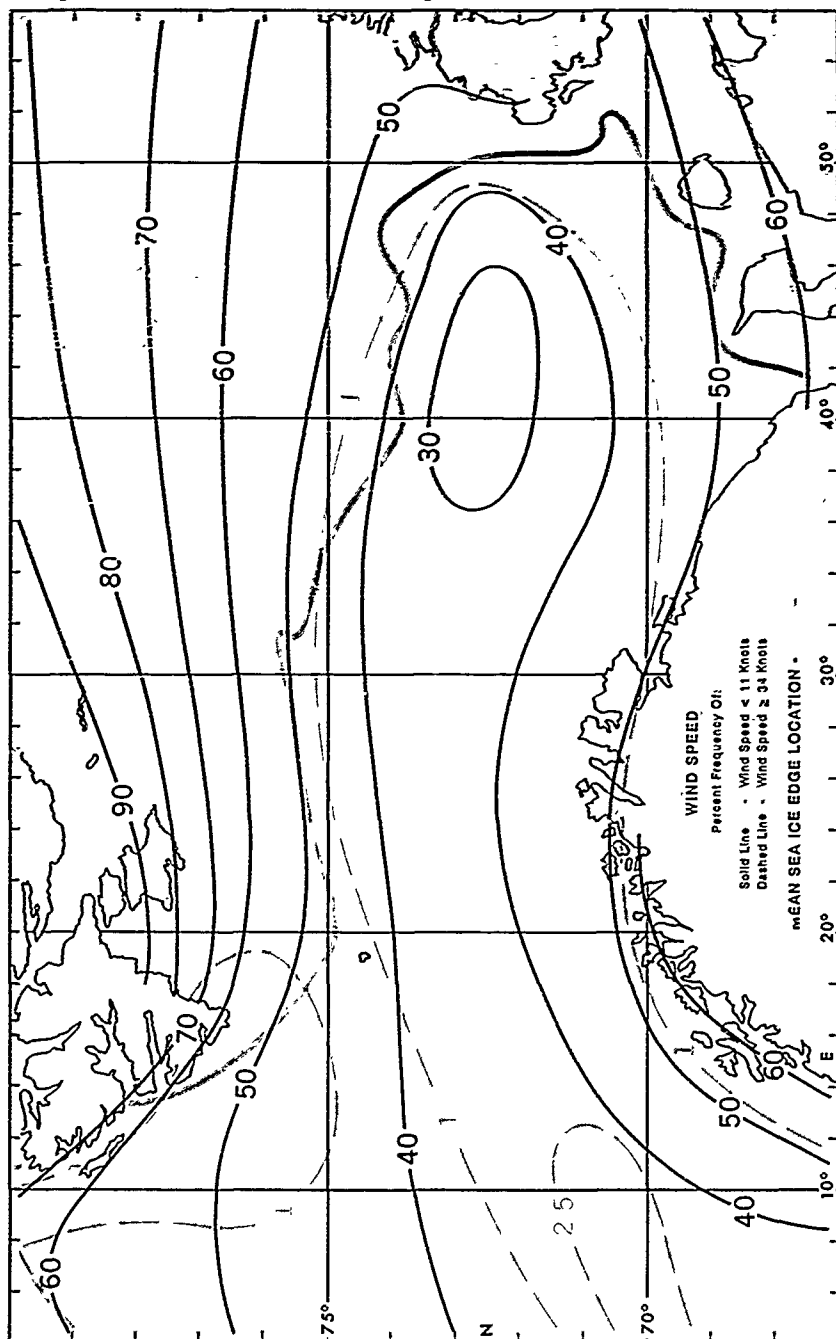
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

May

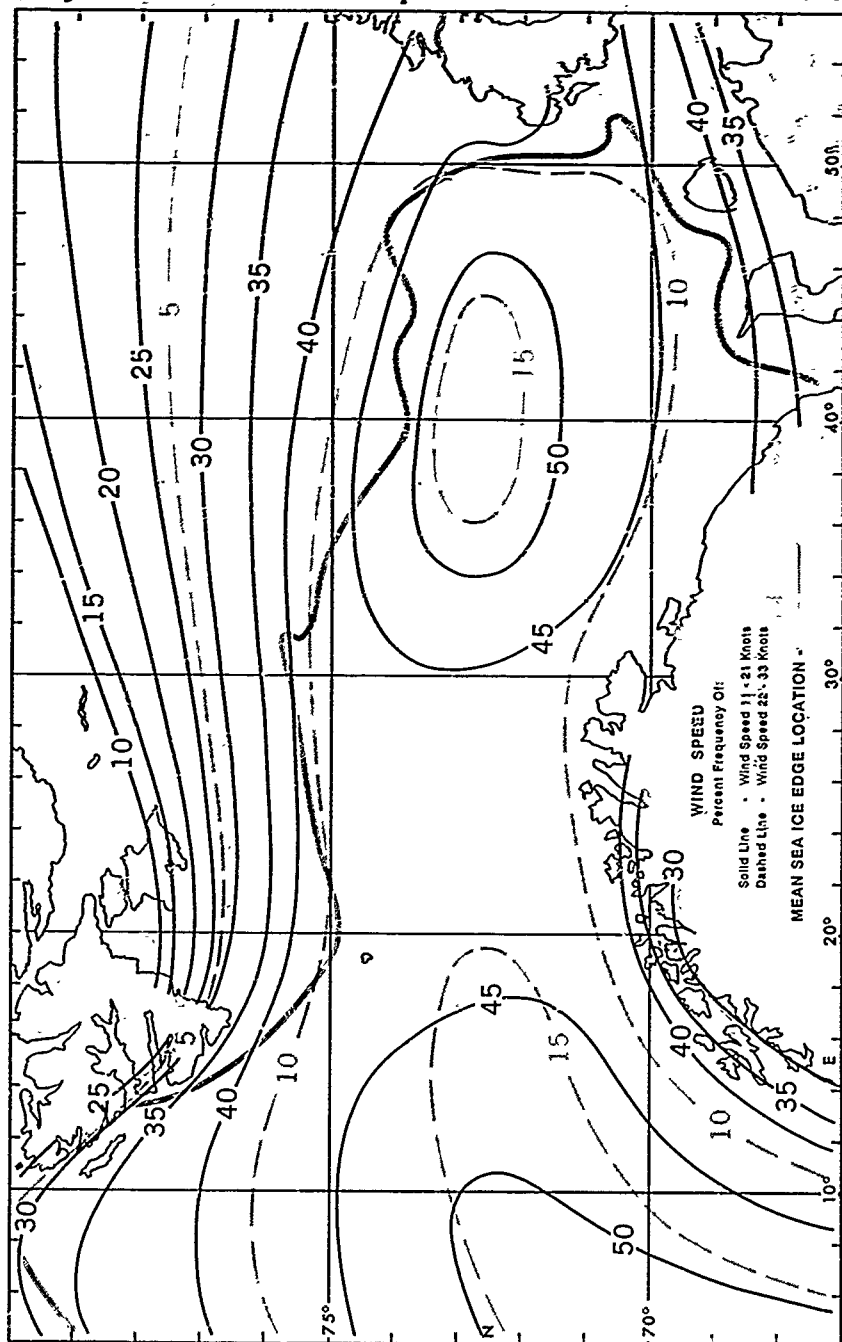
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

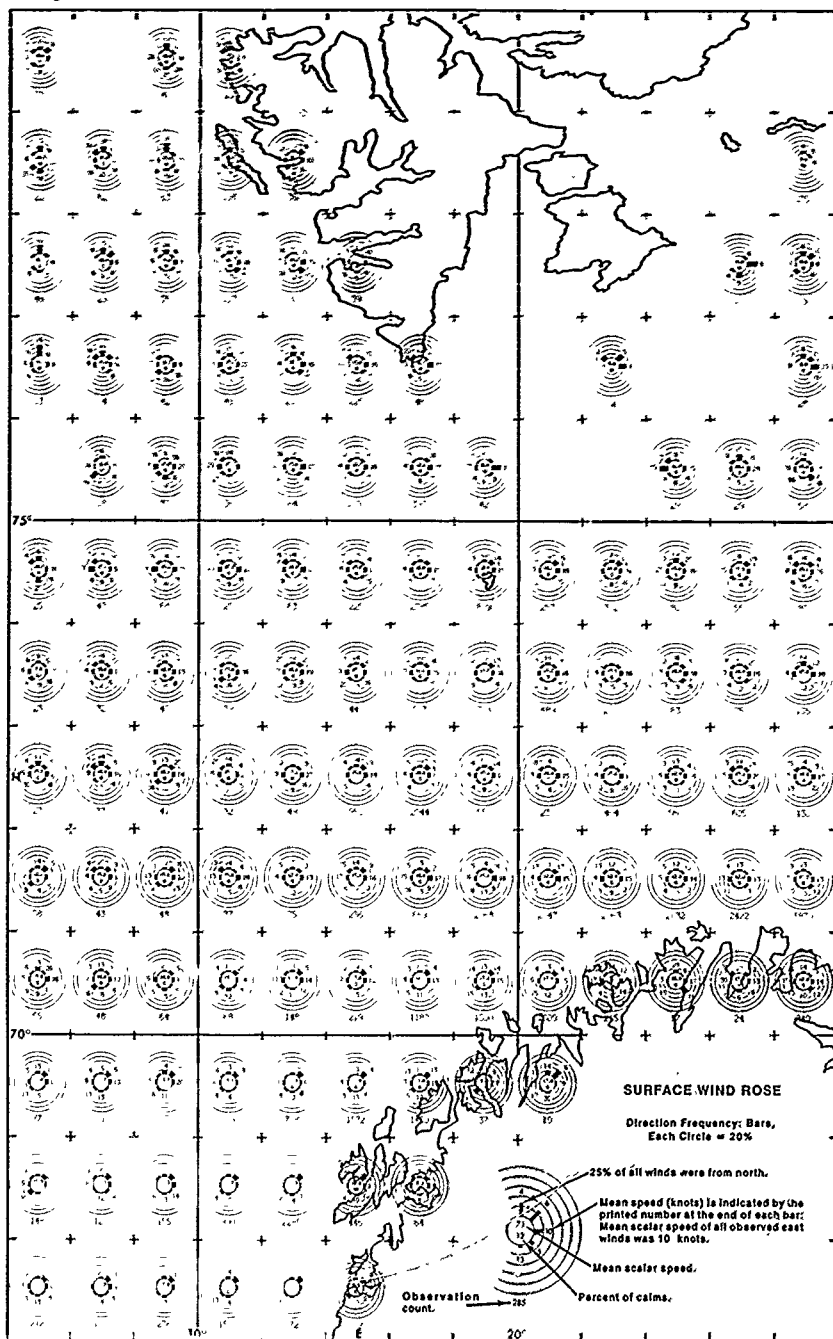
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

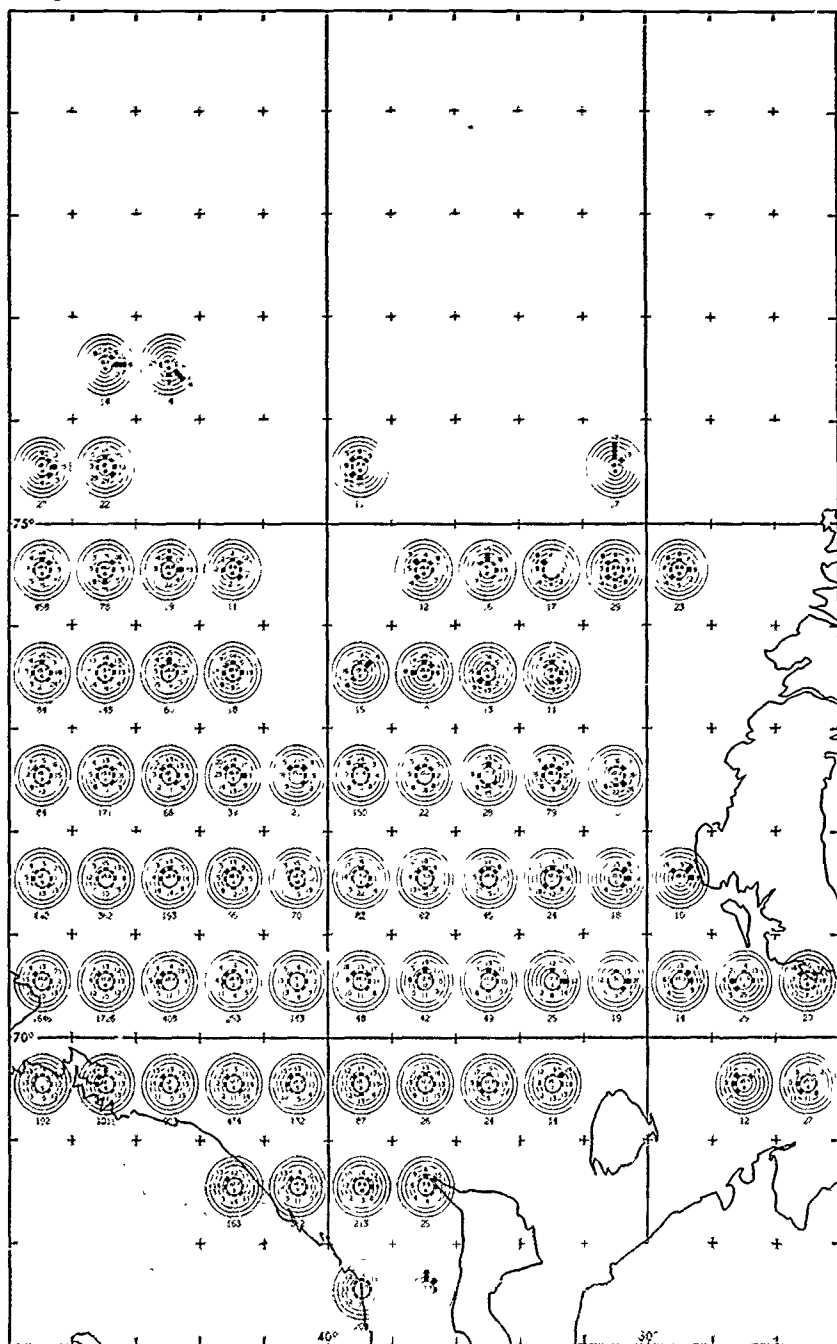
May

Surface Wind Roses



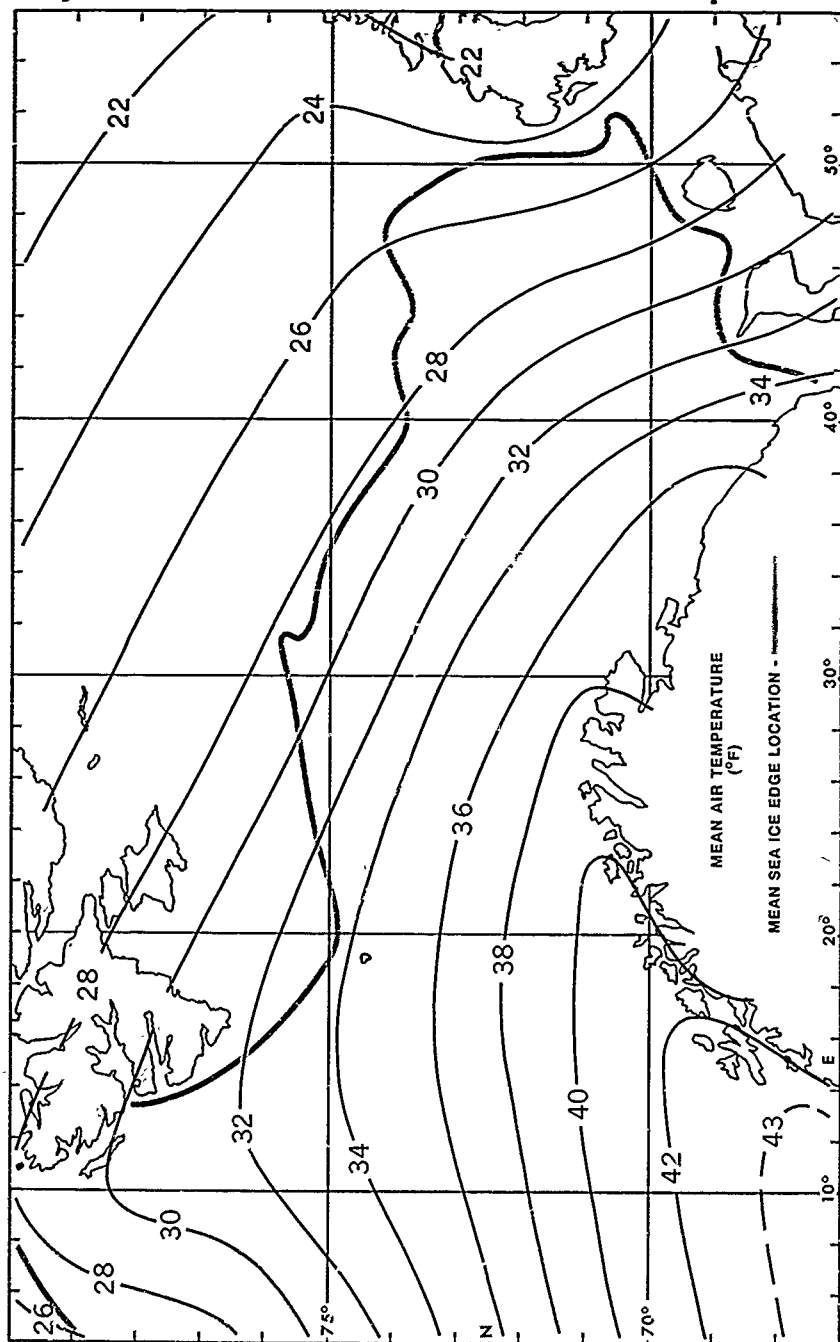
May

Surface Wind Roses



May

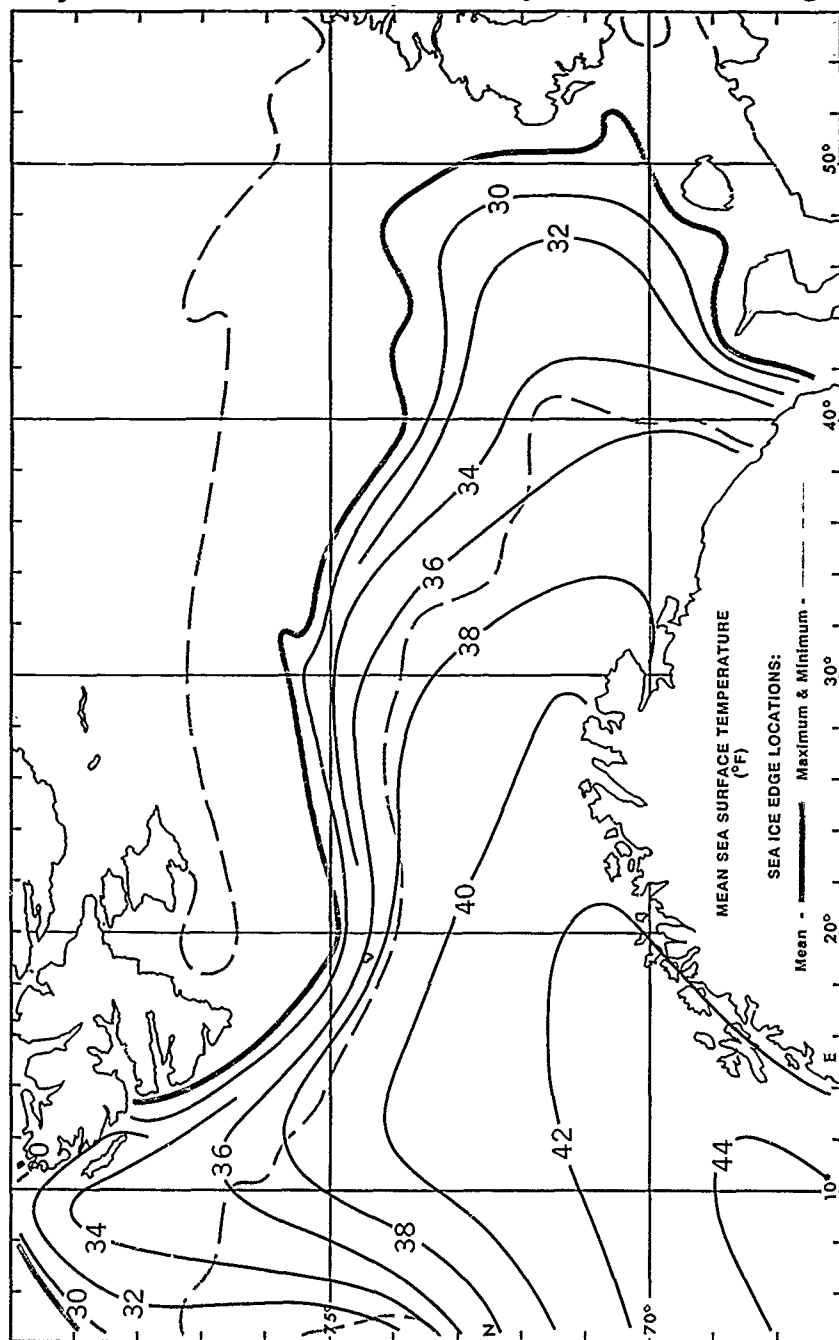
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

May

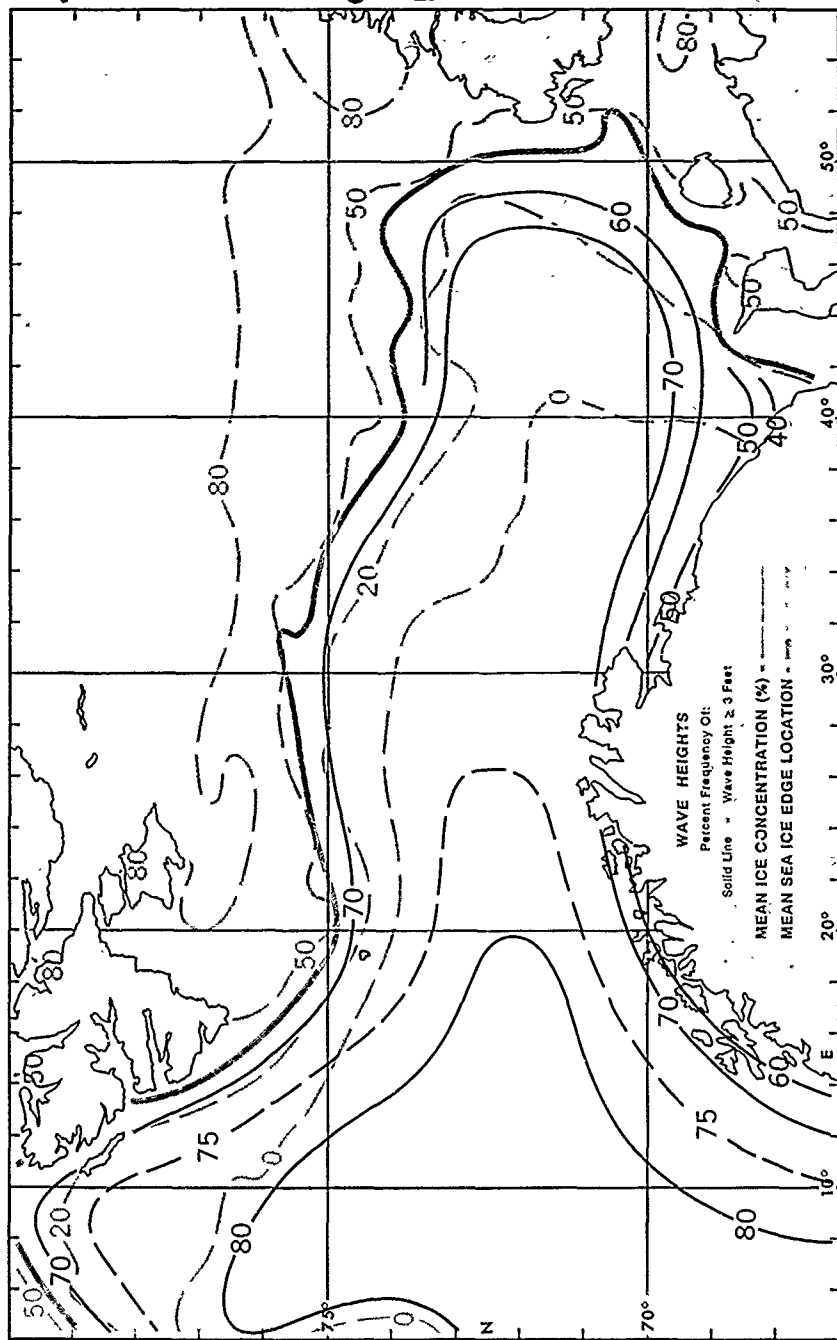
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

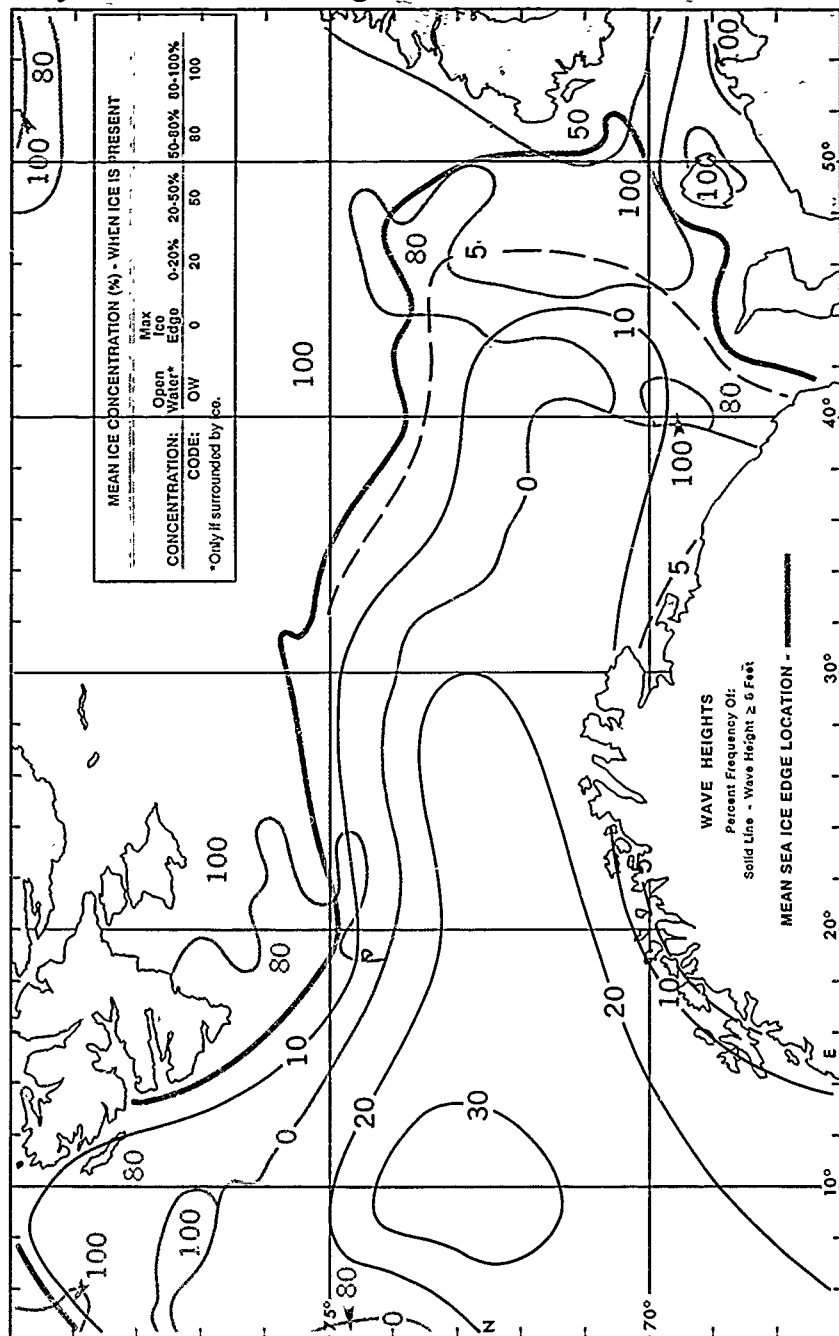
May

Wave Height ≥ 3 Ft. & Ice Concentration

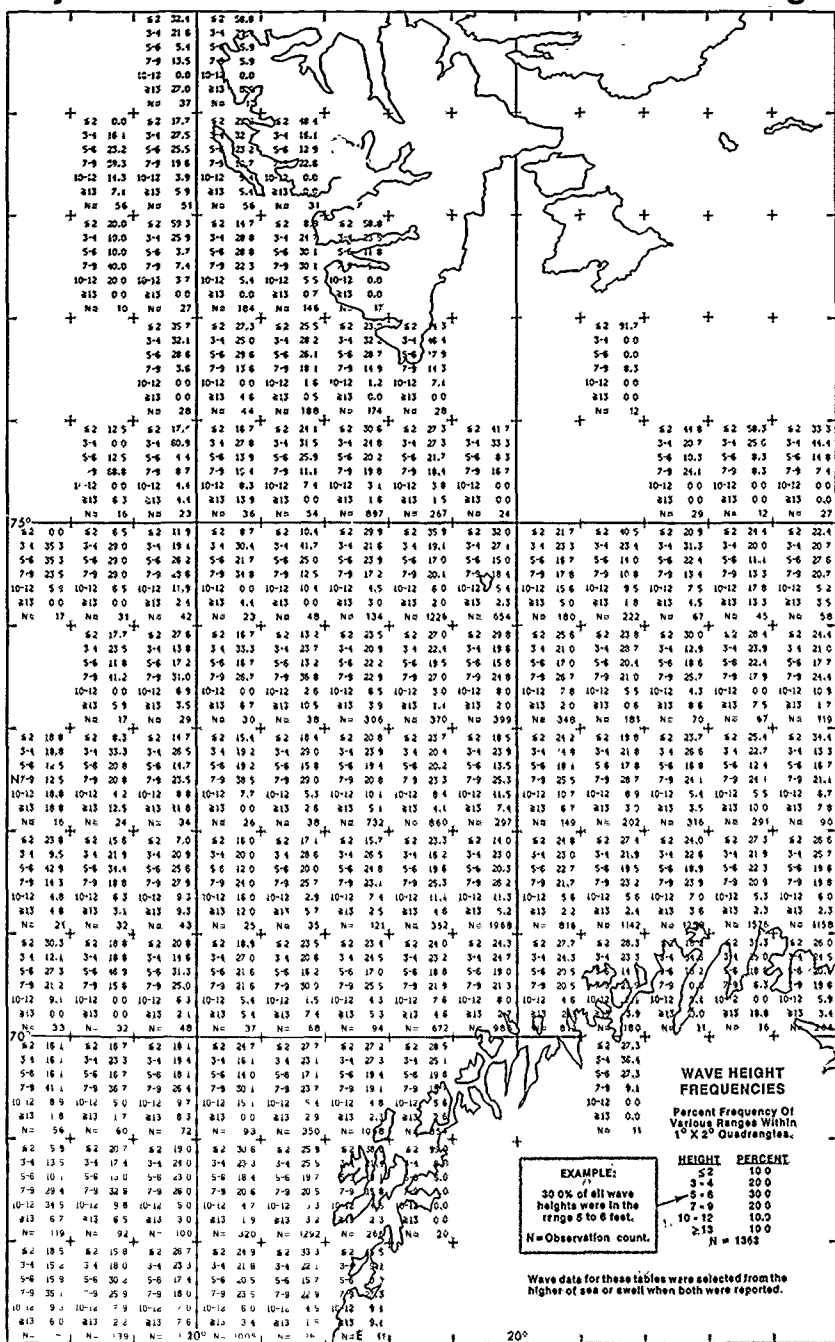


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

May

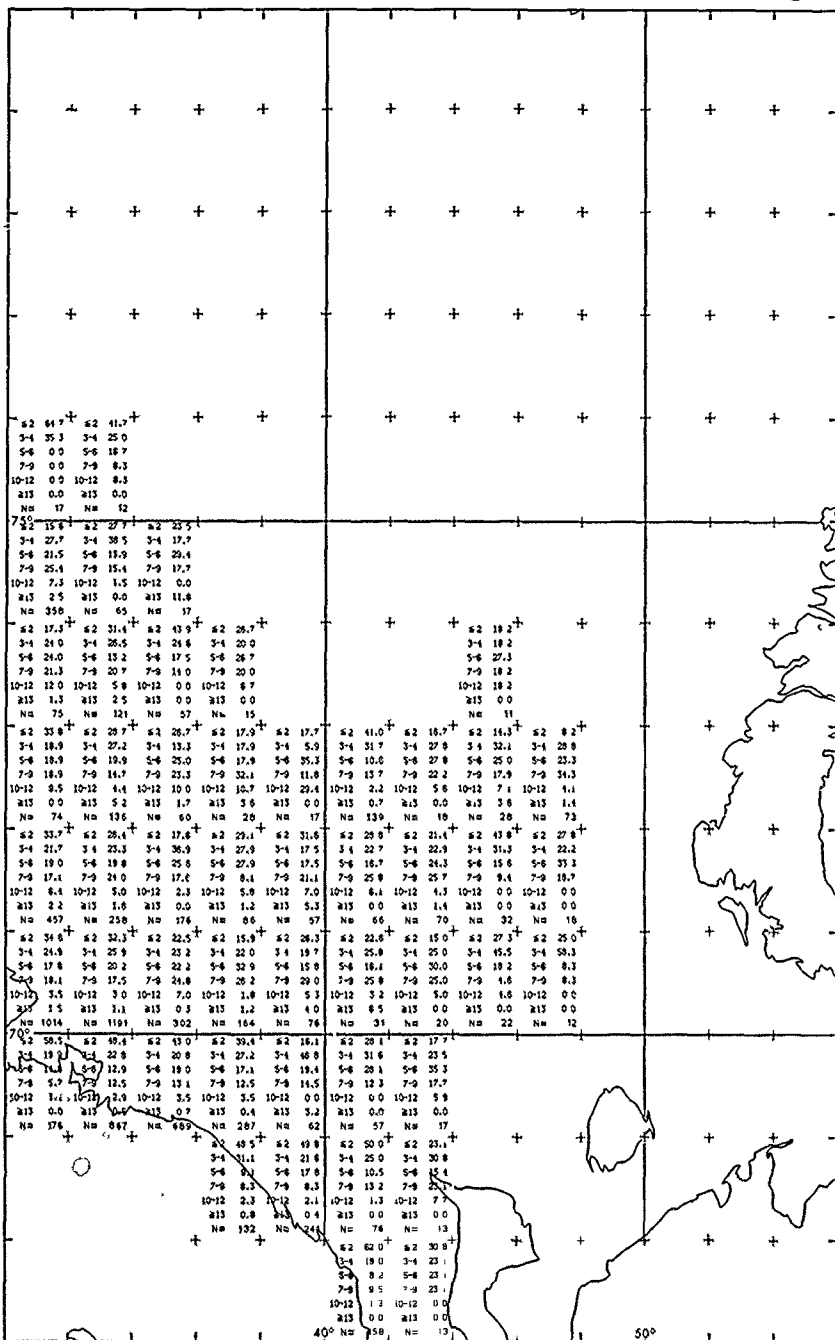
Wave Height ≥ 8 Ft. & Ice Concentration

NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



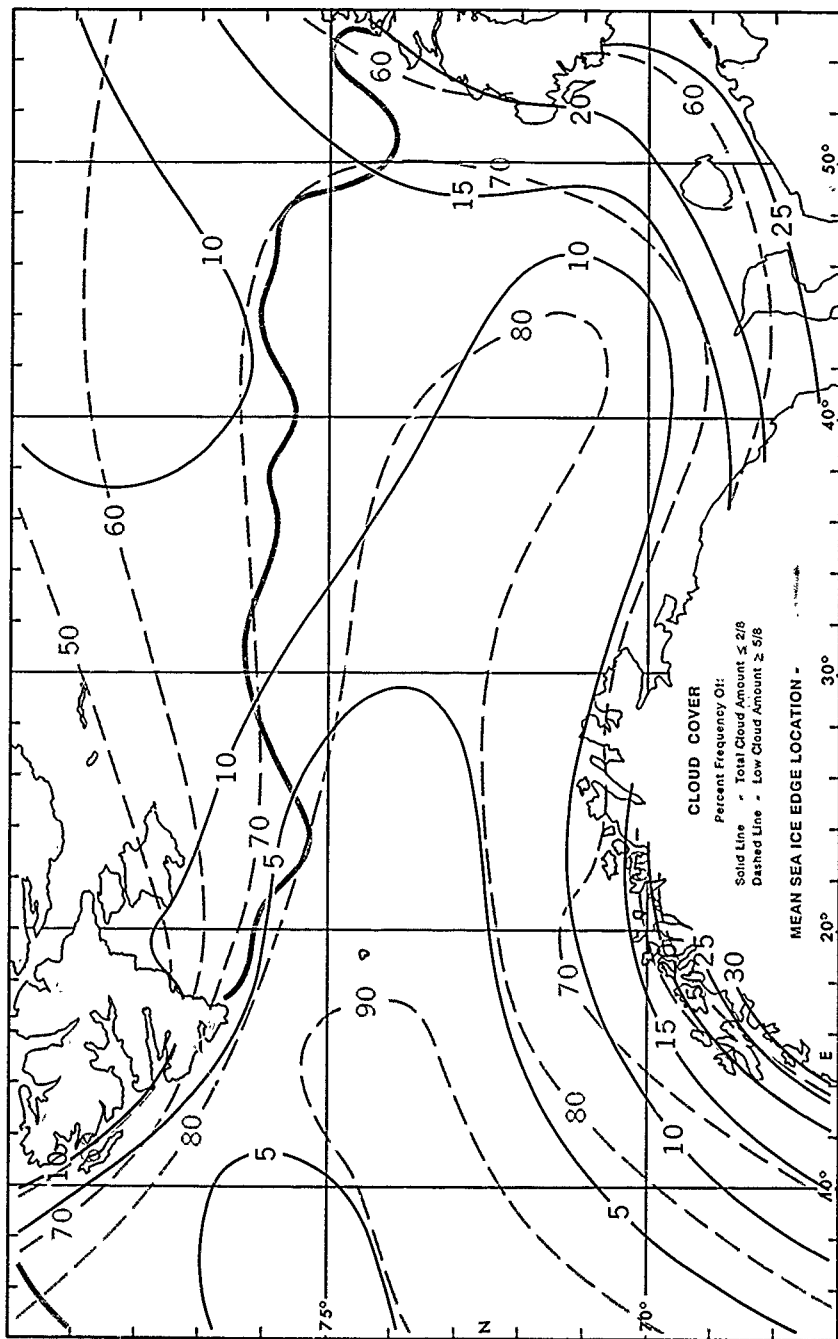
May

Wave Height



June

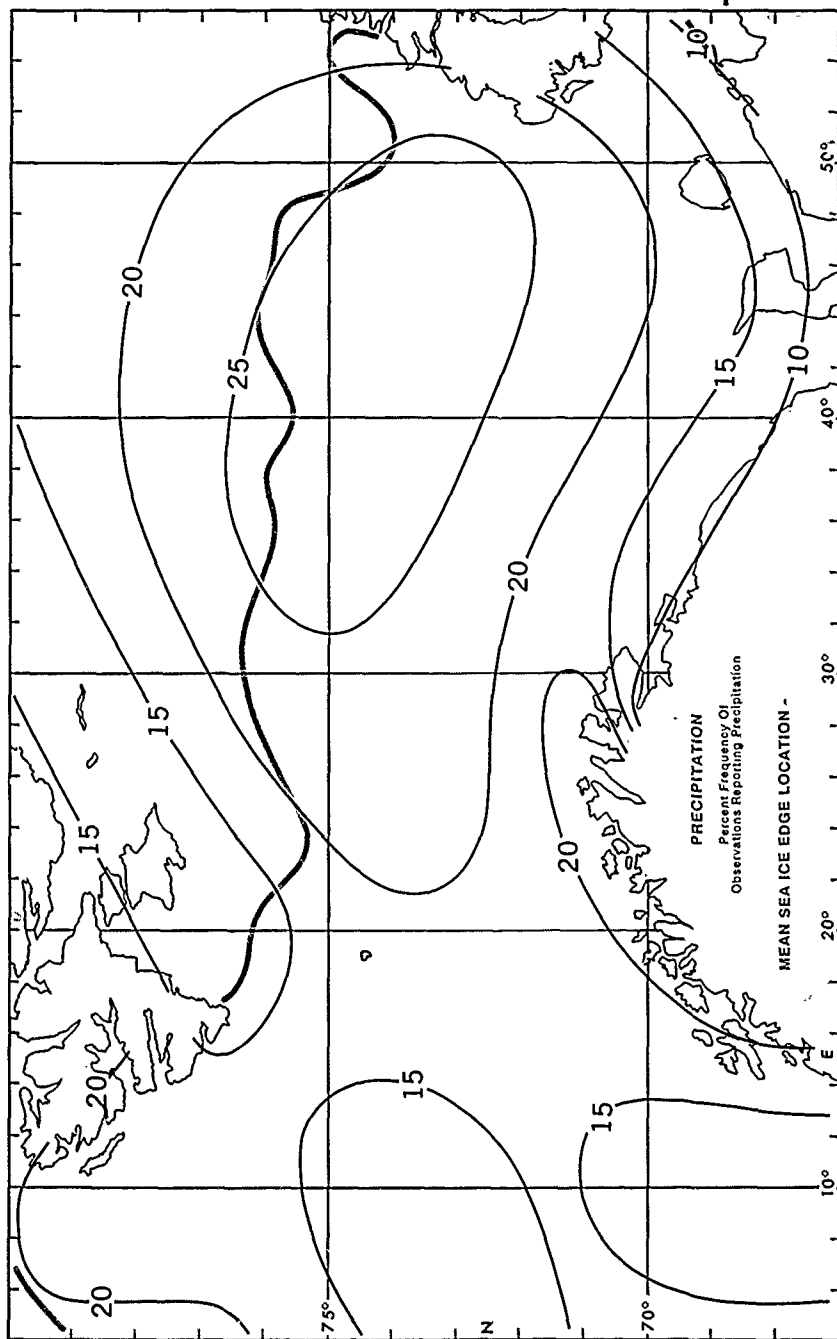
Clouds



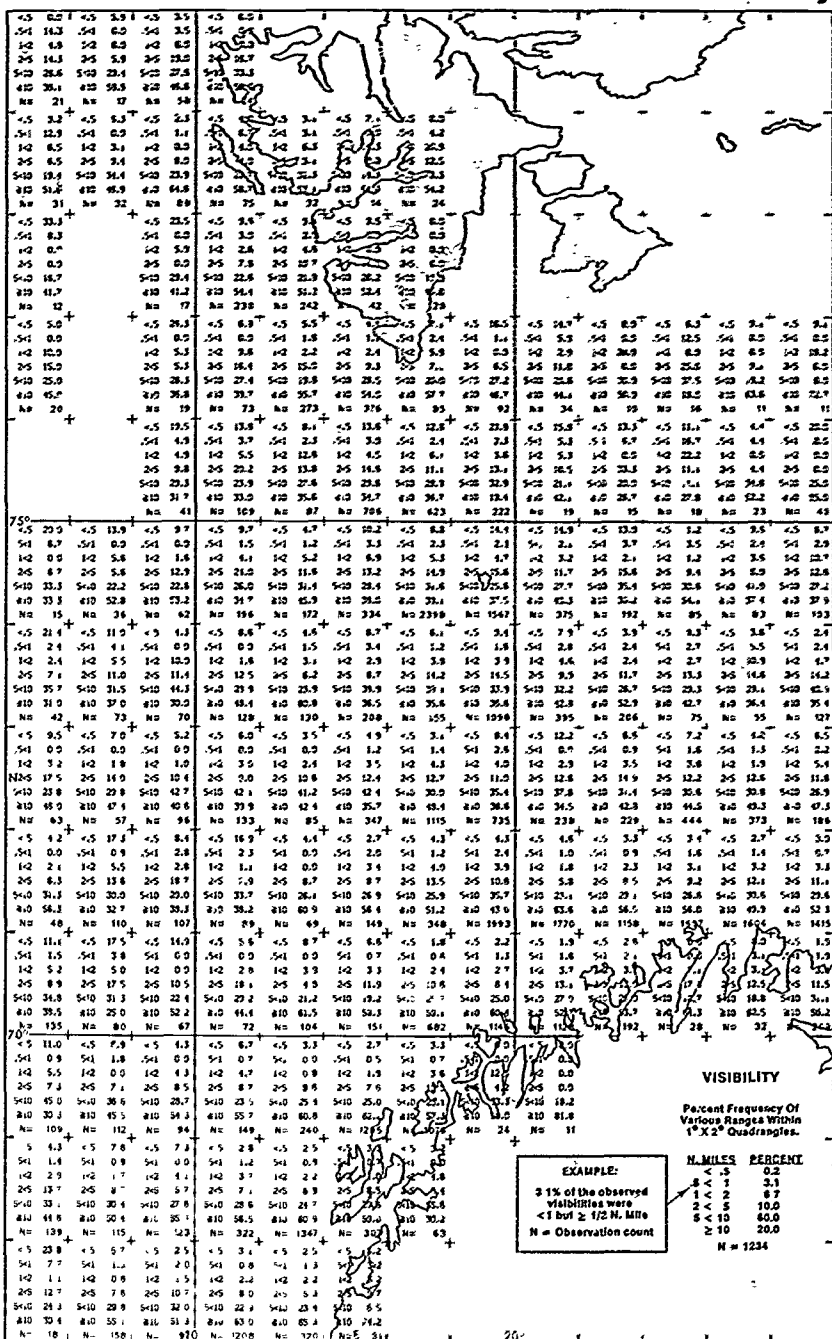
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

Precipitation

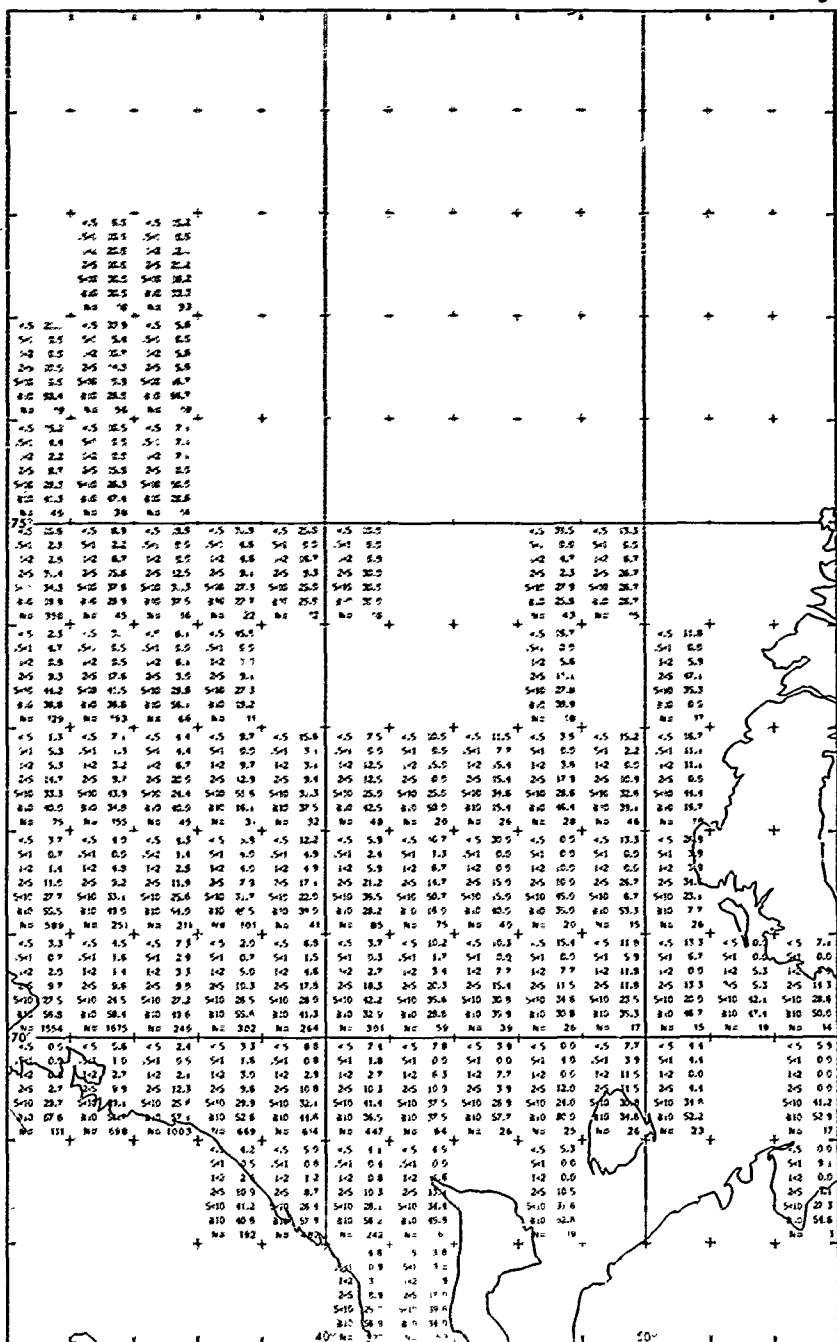


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.



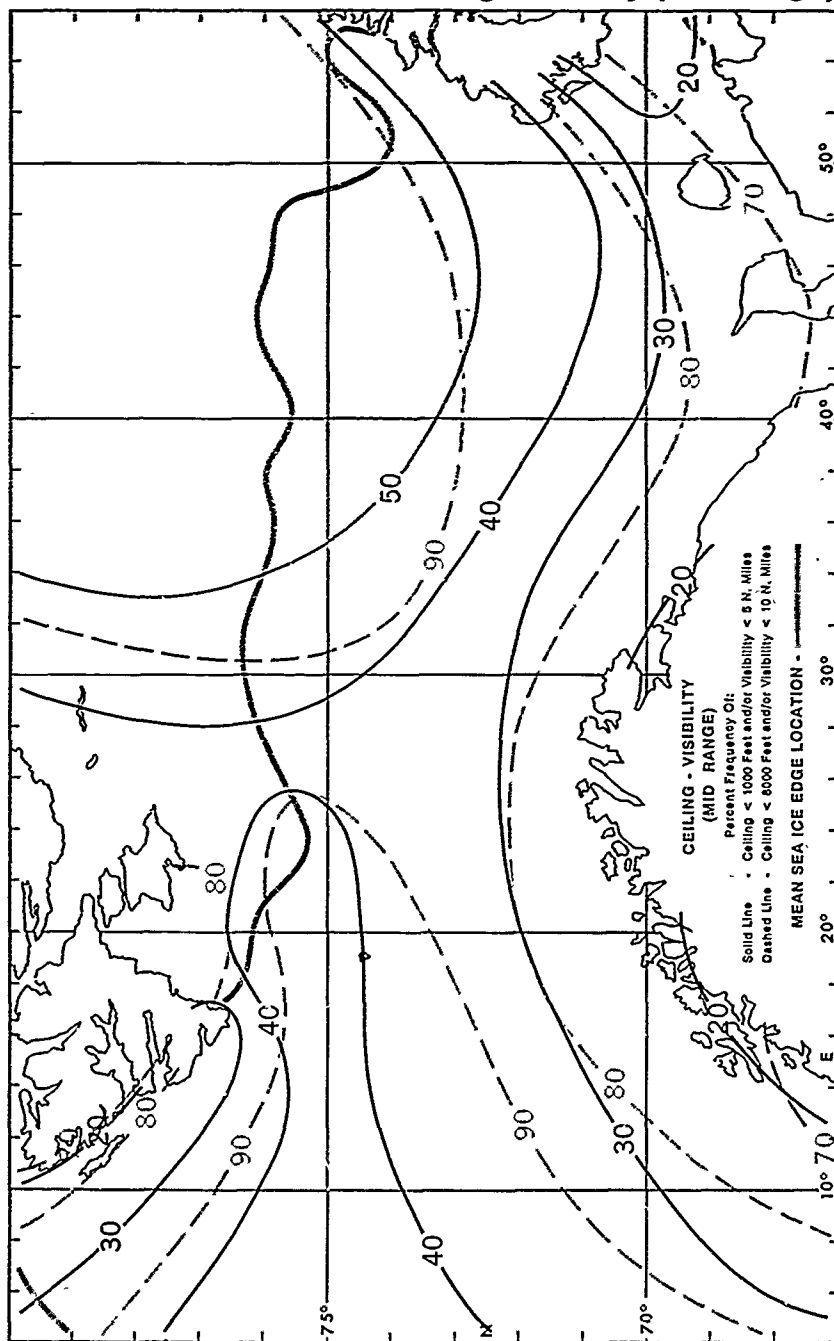
June

Visibility



June

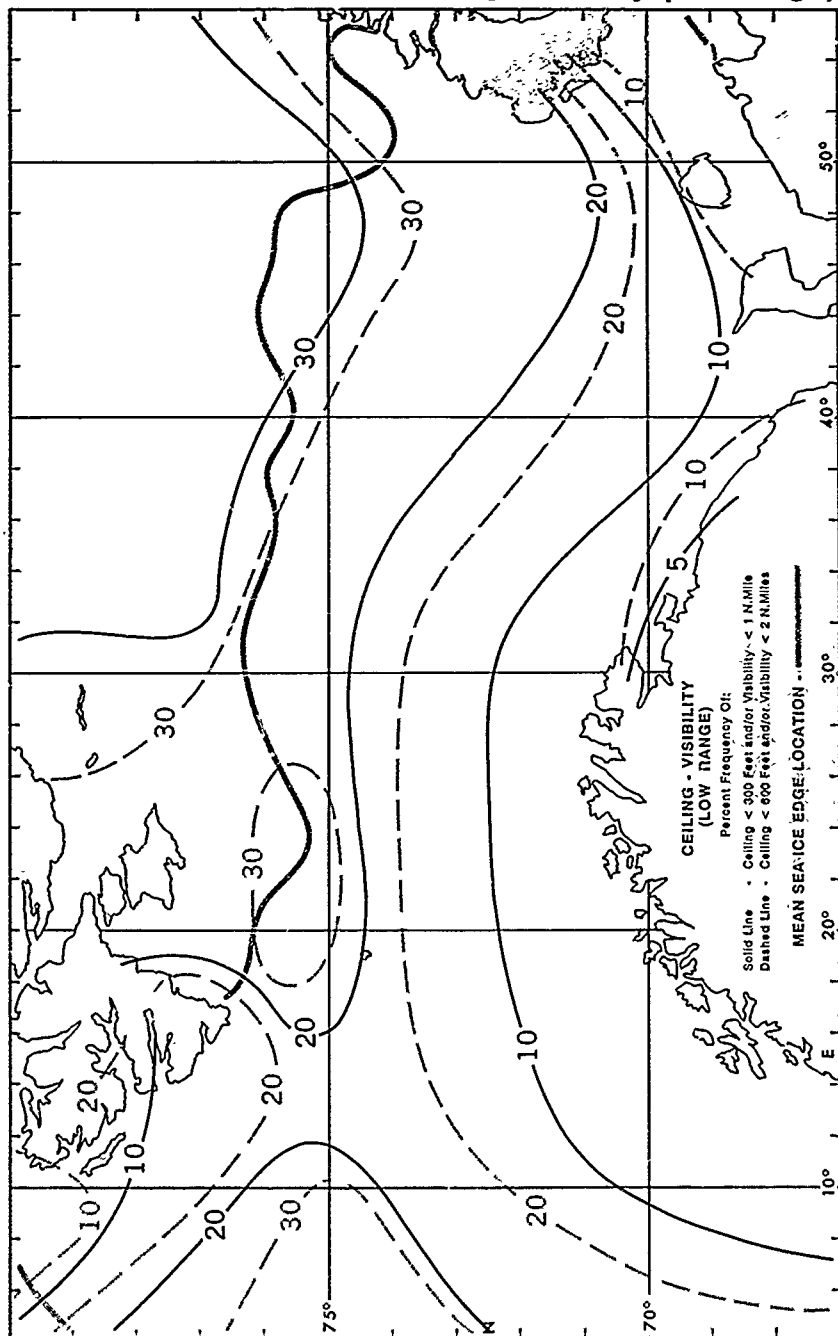
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

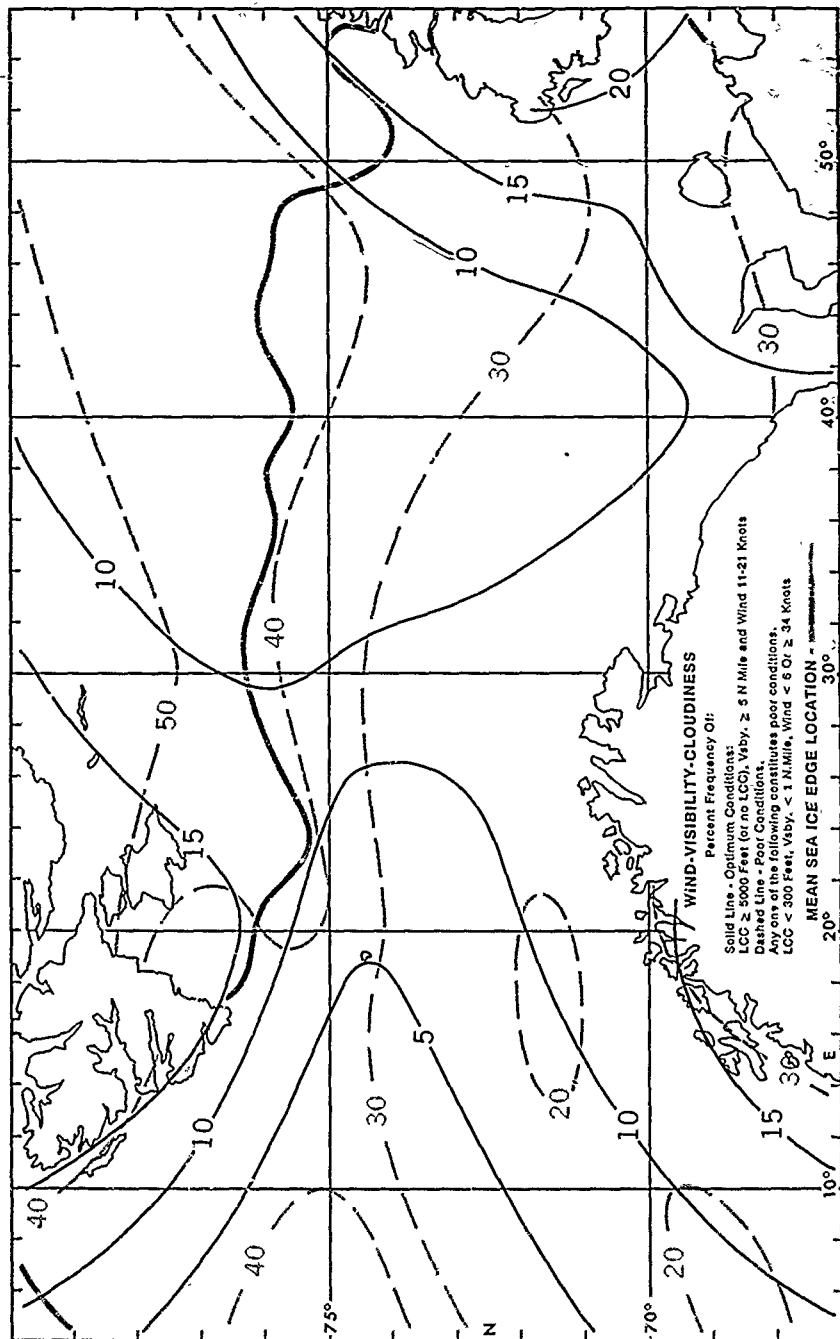
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

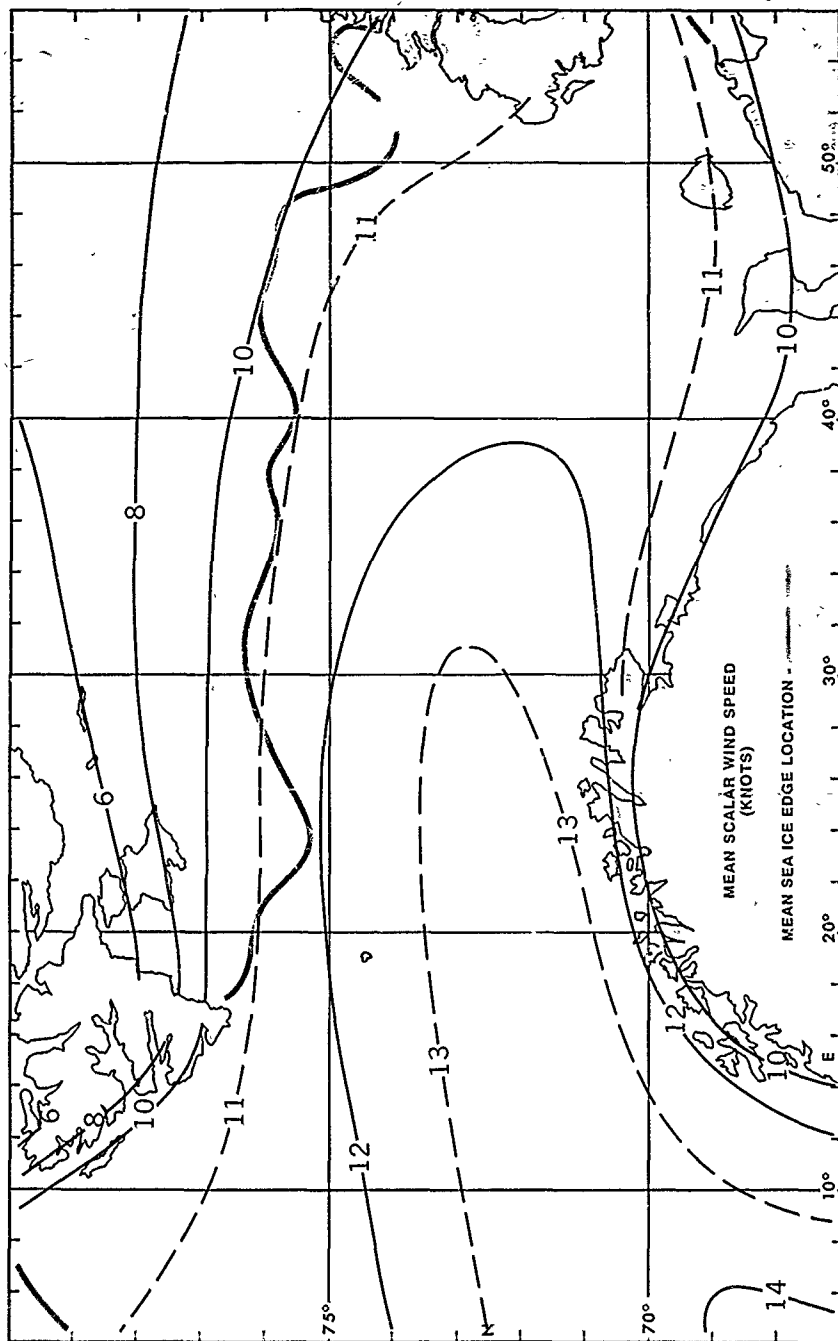
Wind-Visibility-Cloudiness



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

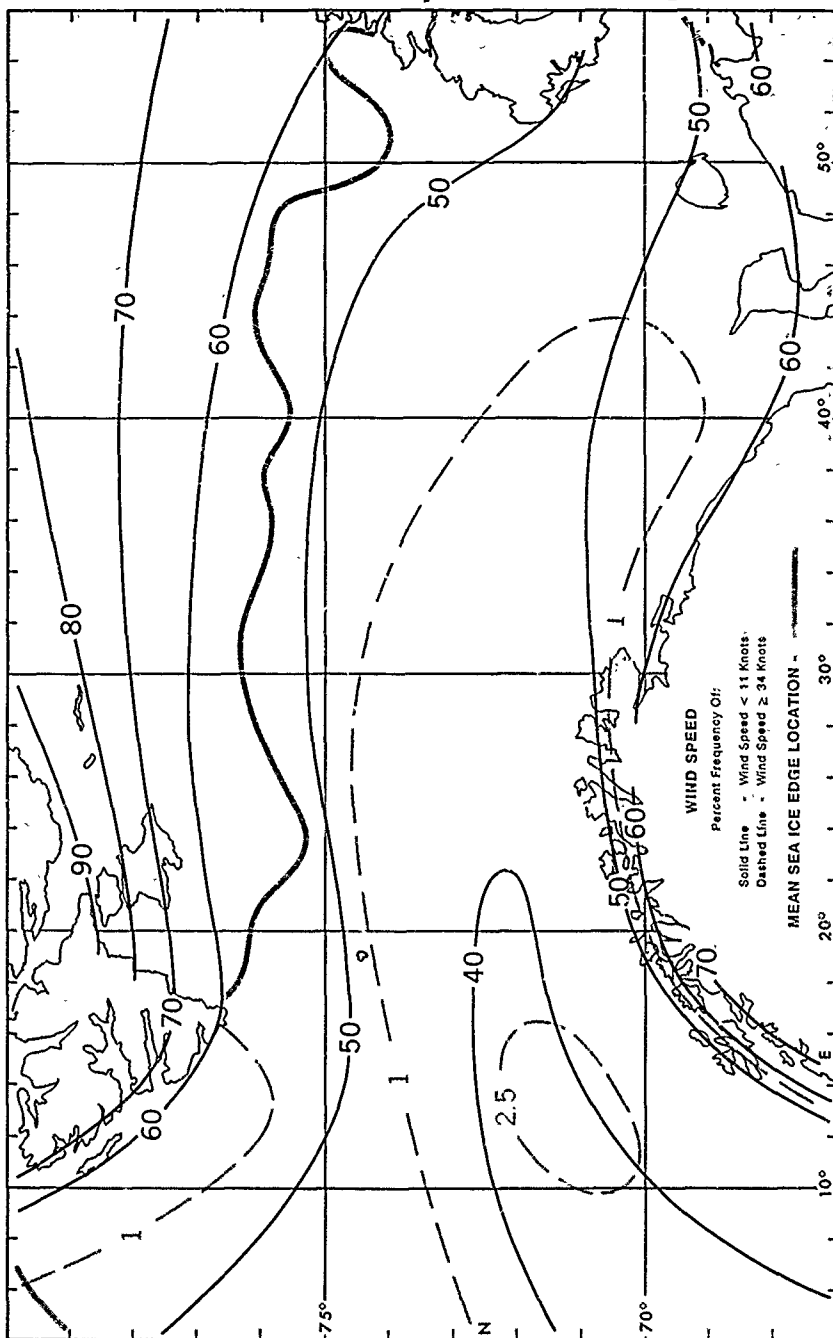
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

June

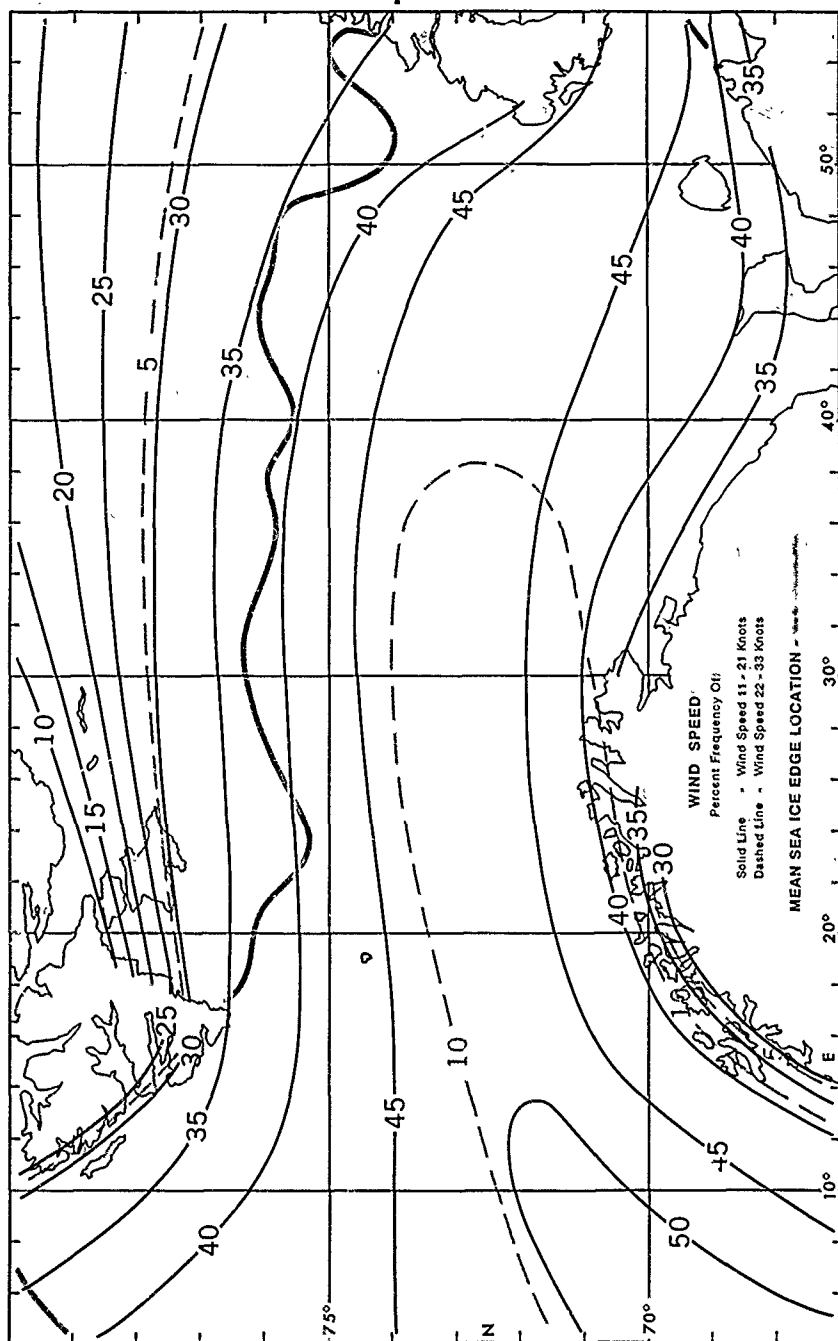
Wind Speed < 11 and ≥ 34 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

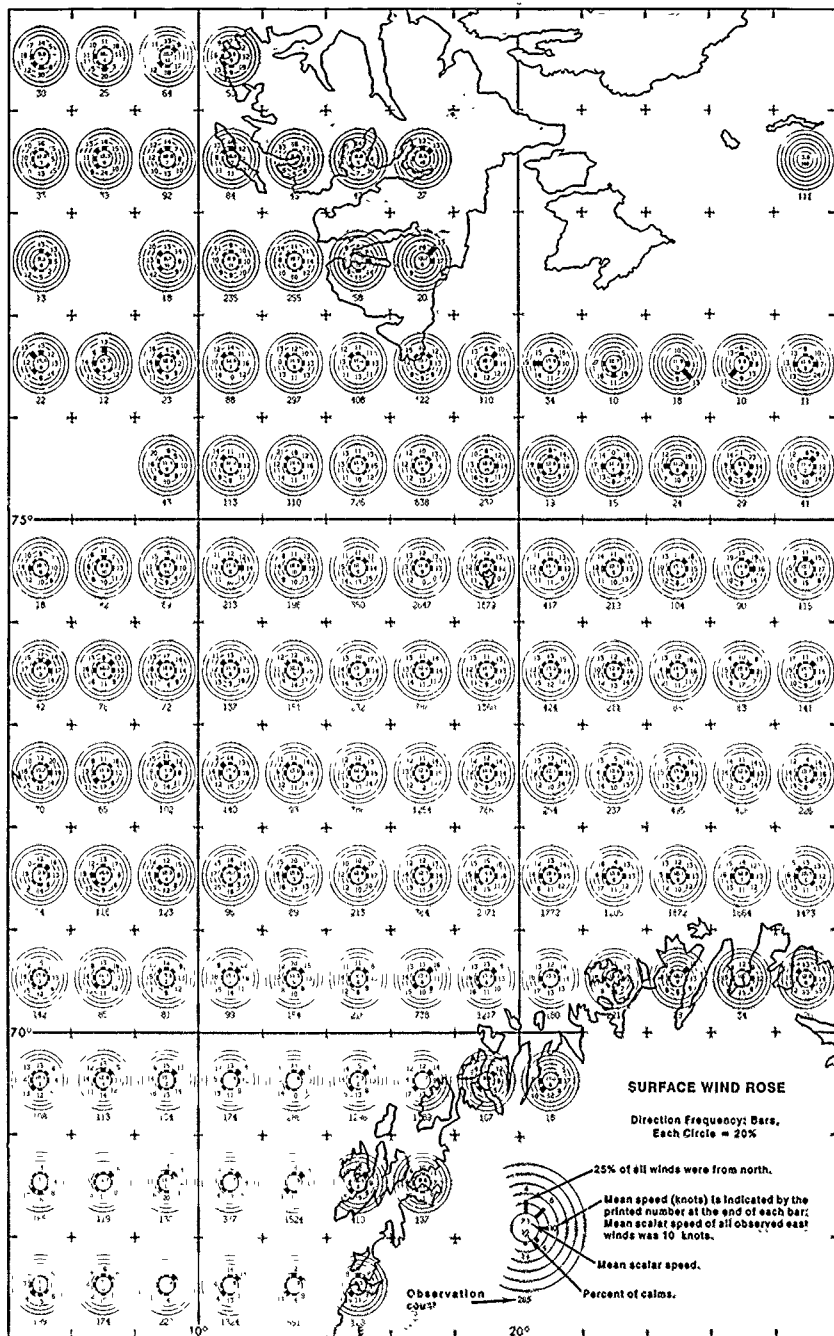
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

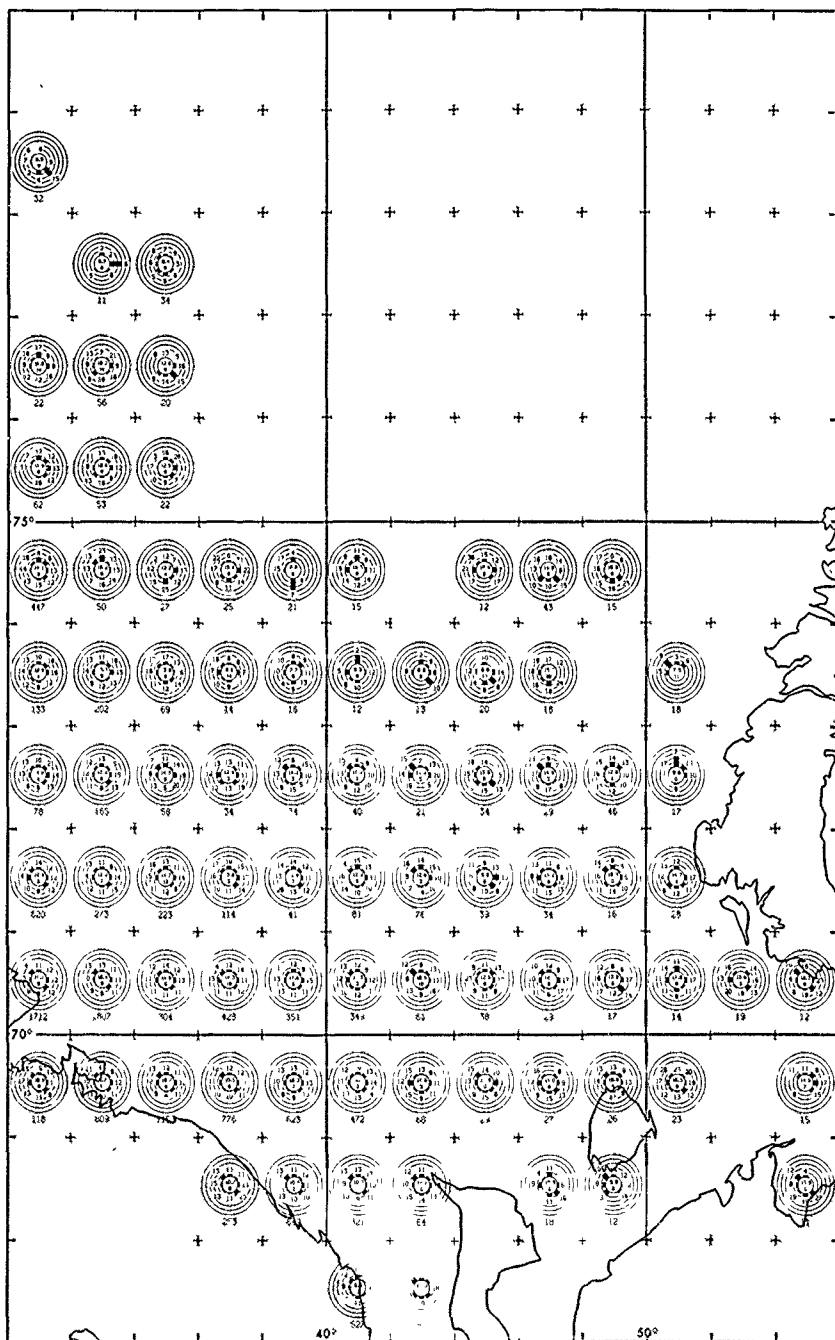
June

Surface Wind Roses



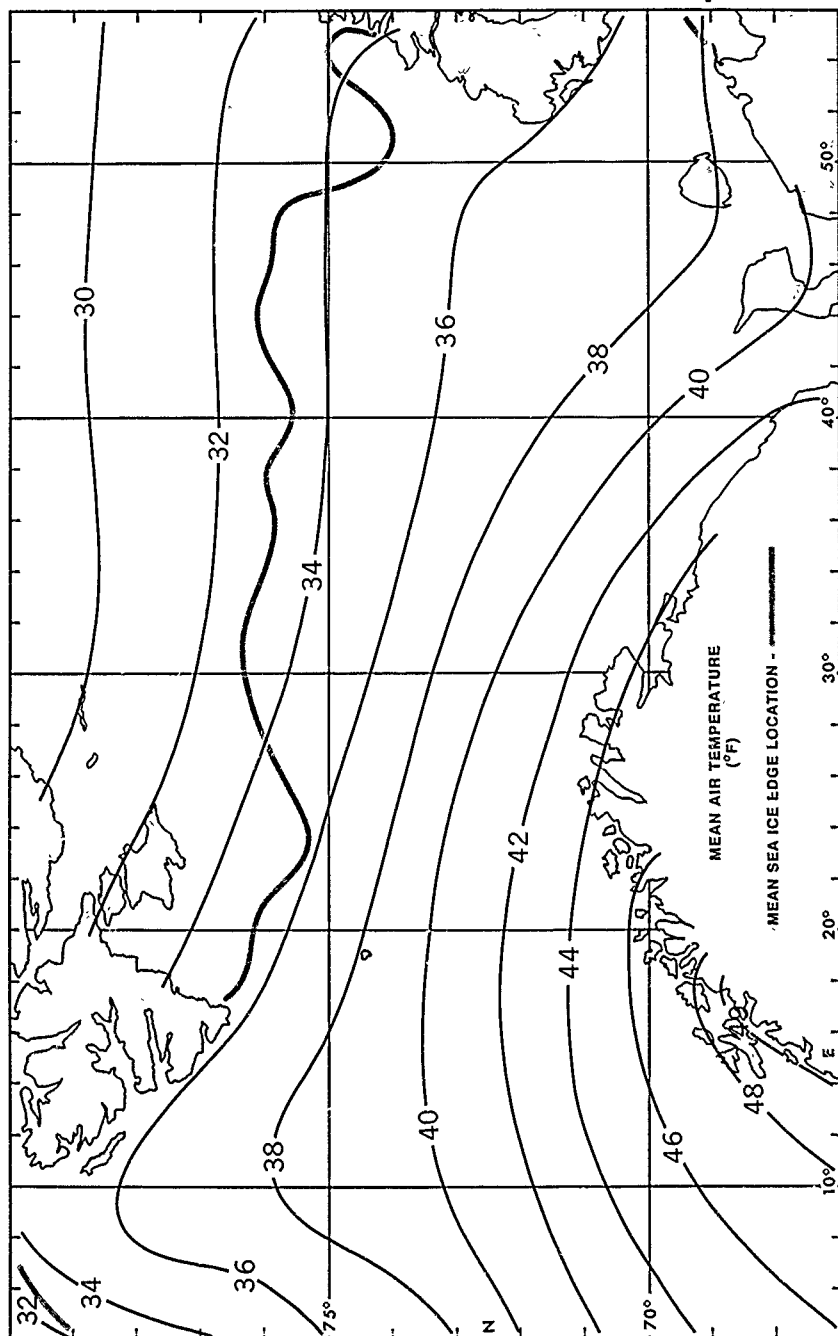
June

Surface Wind Roses



June

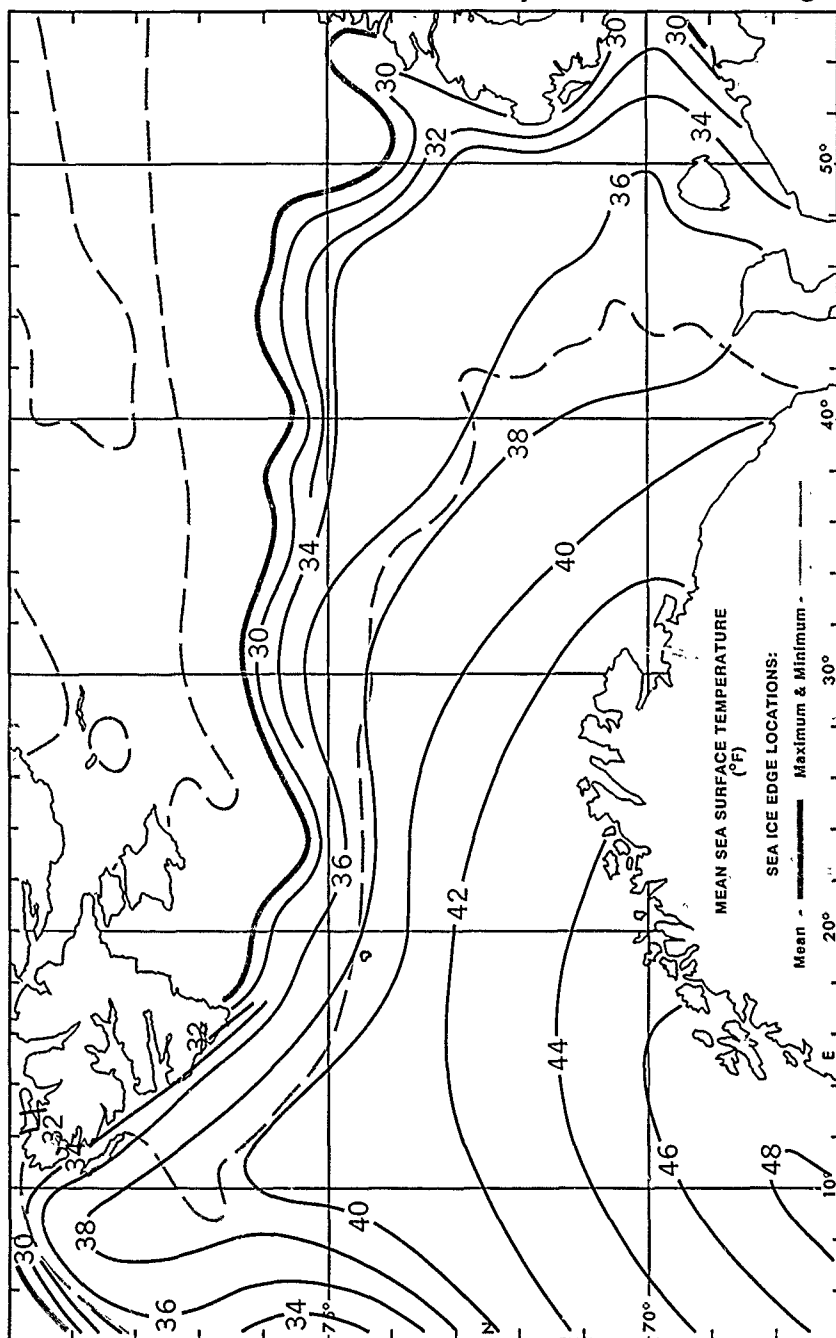
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

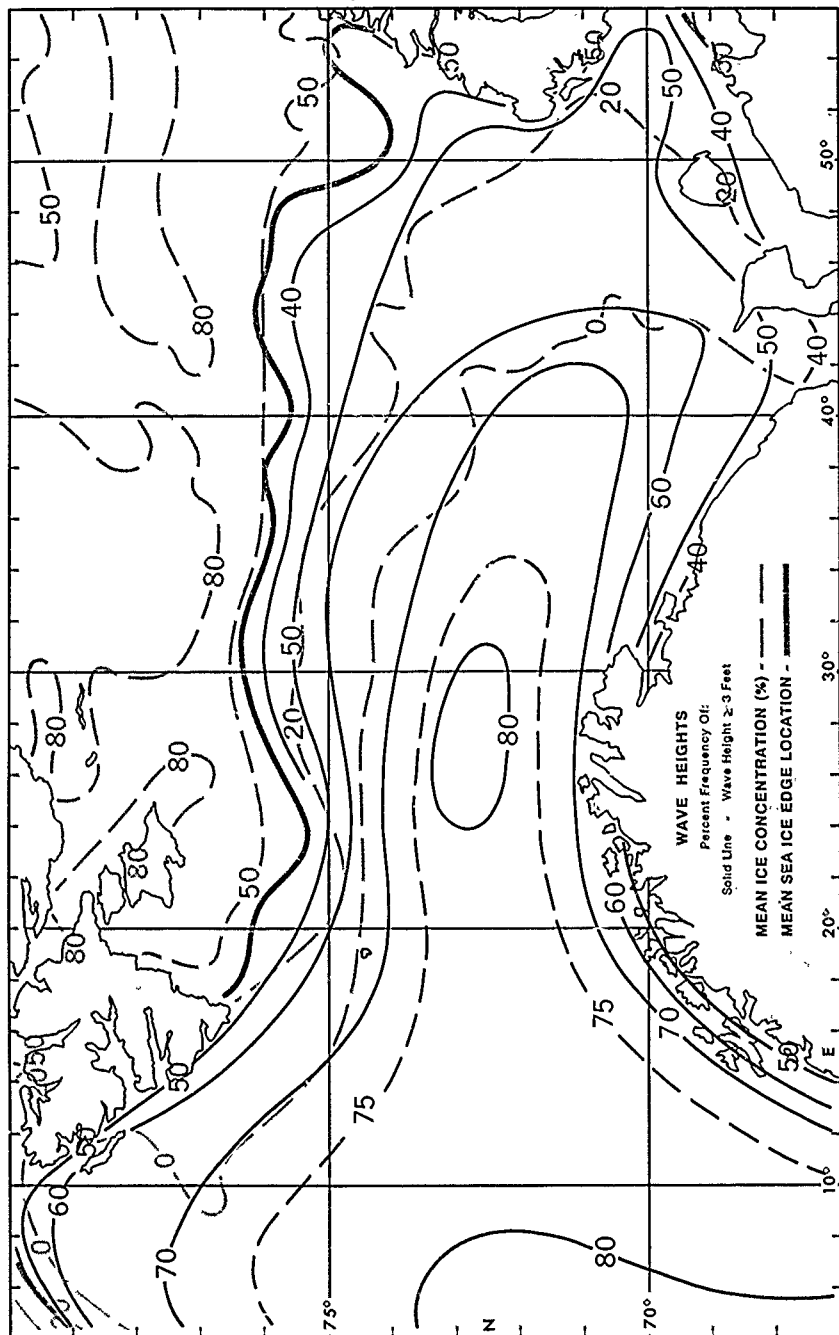
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

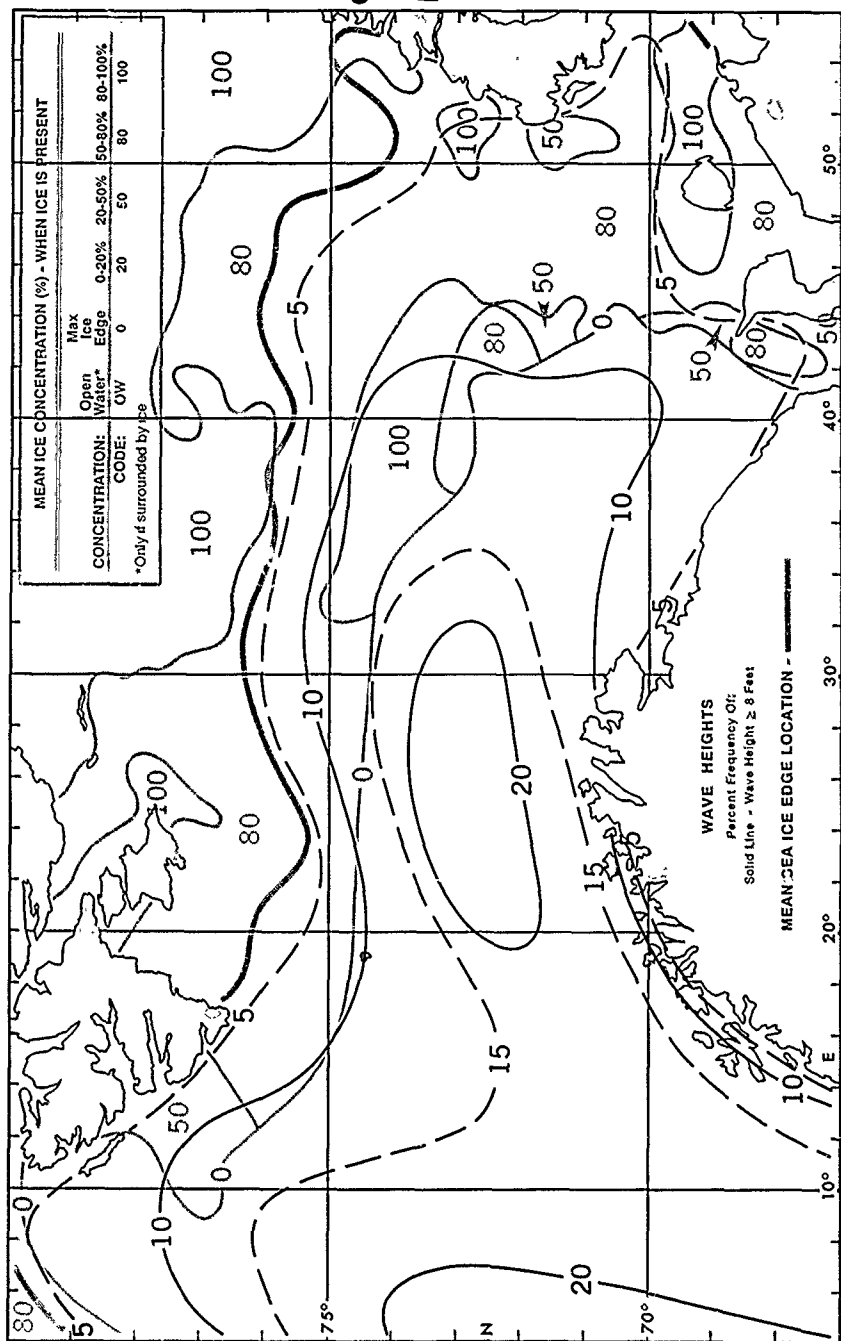
Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

June

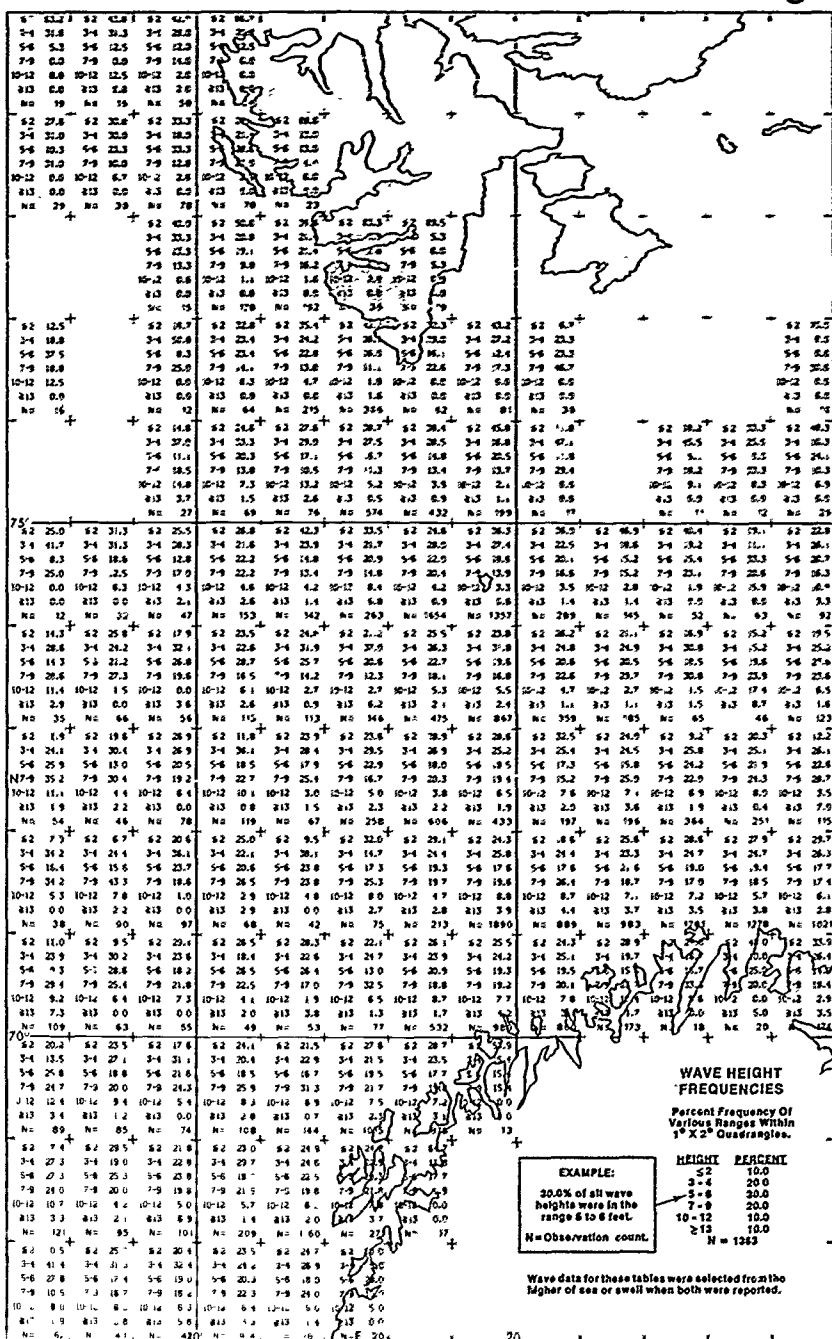
Wave Height ≥ 8 Ft. & Ice Concentration



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

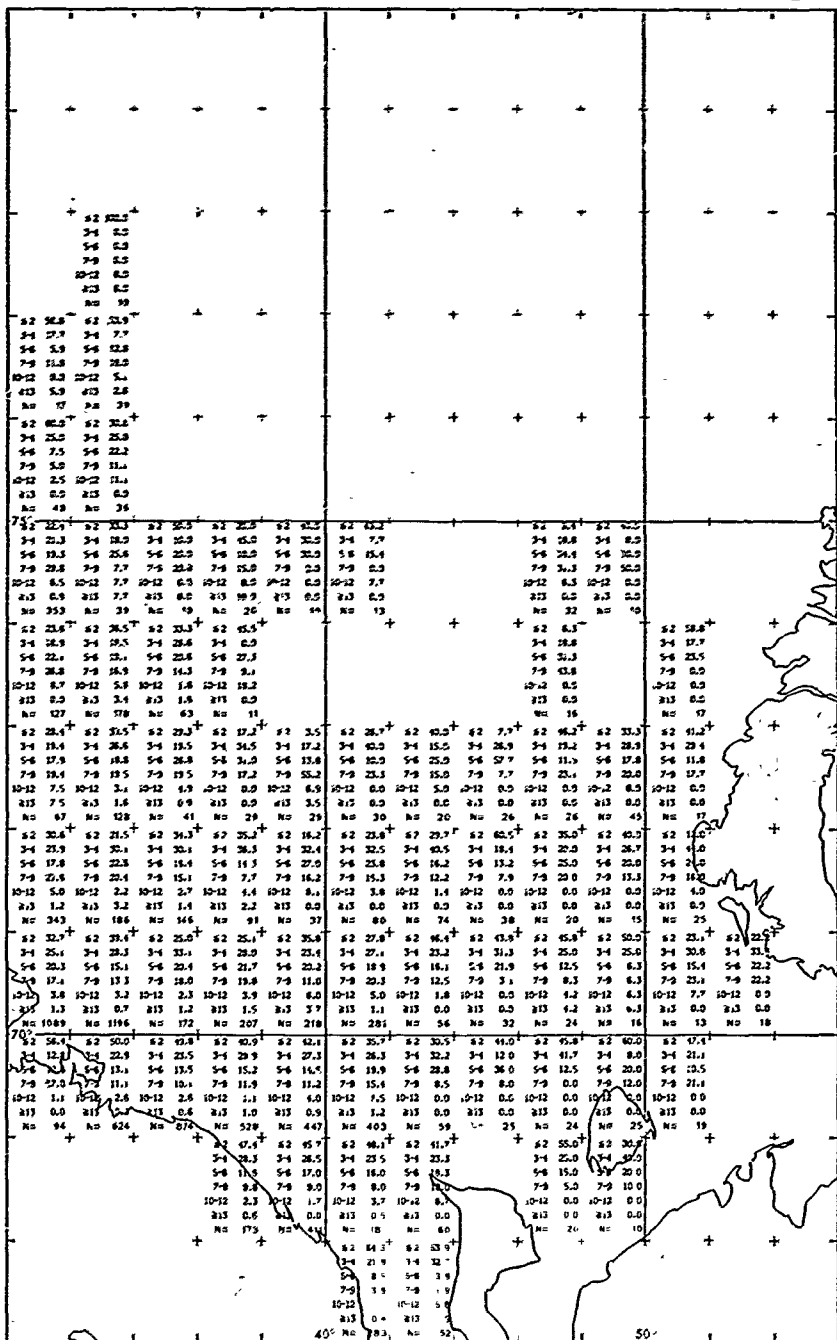
June

Wave Height



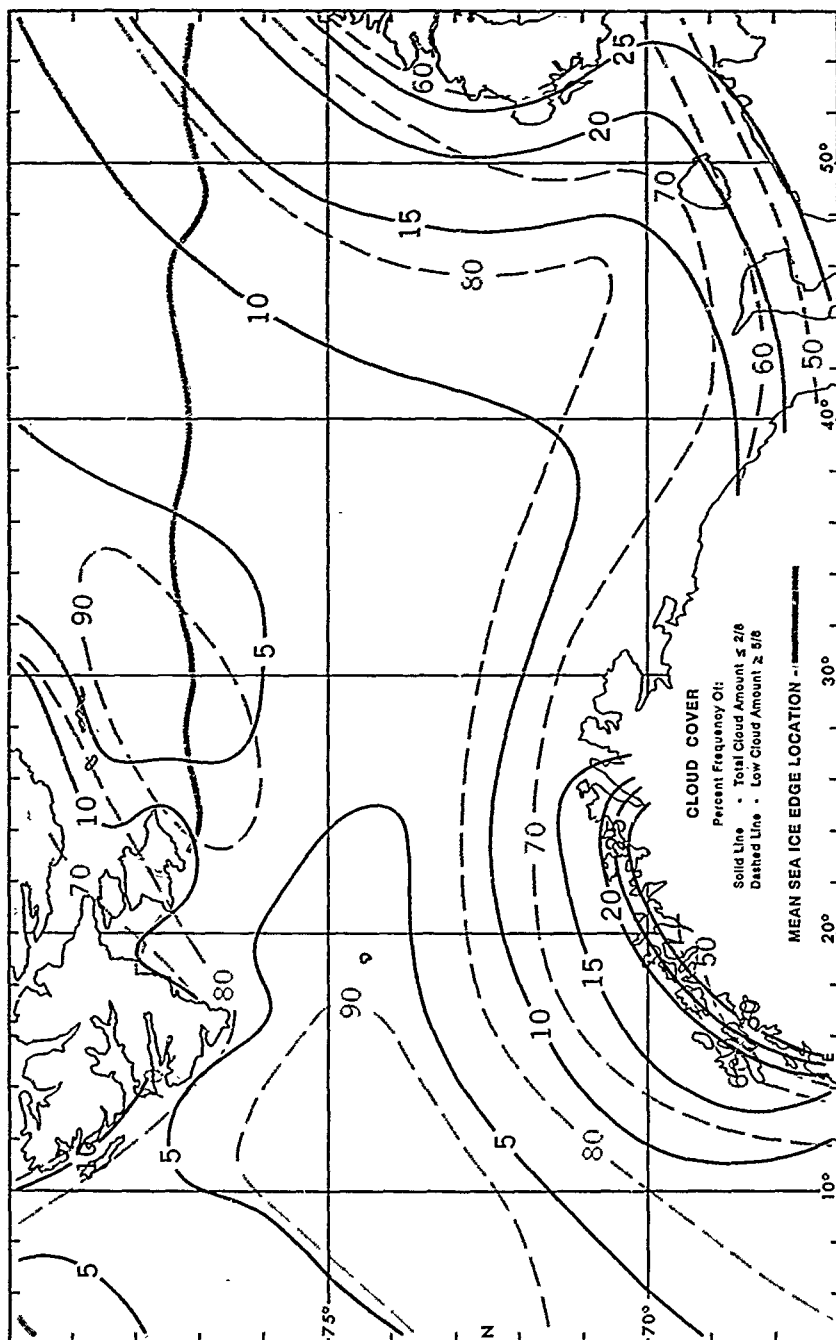
June

Wave Height



July

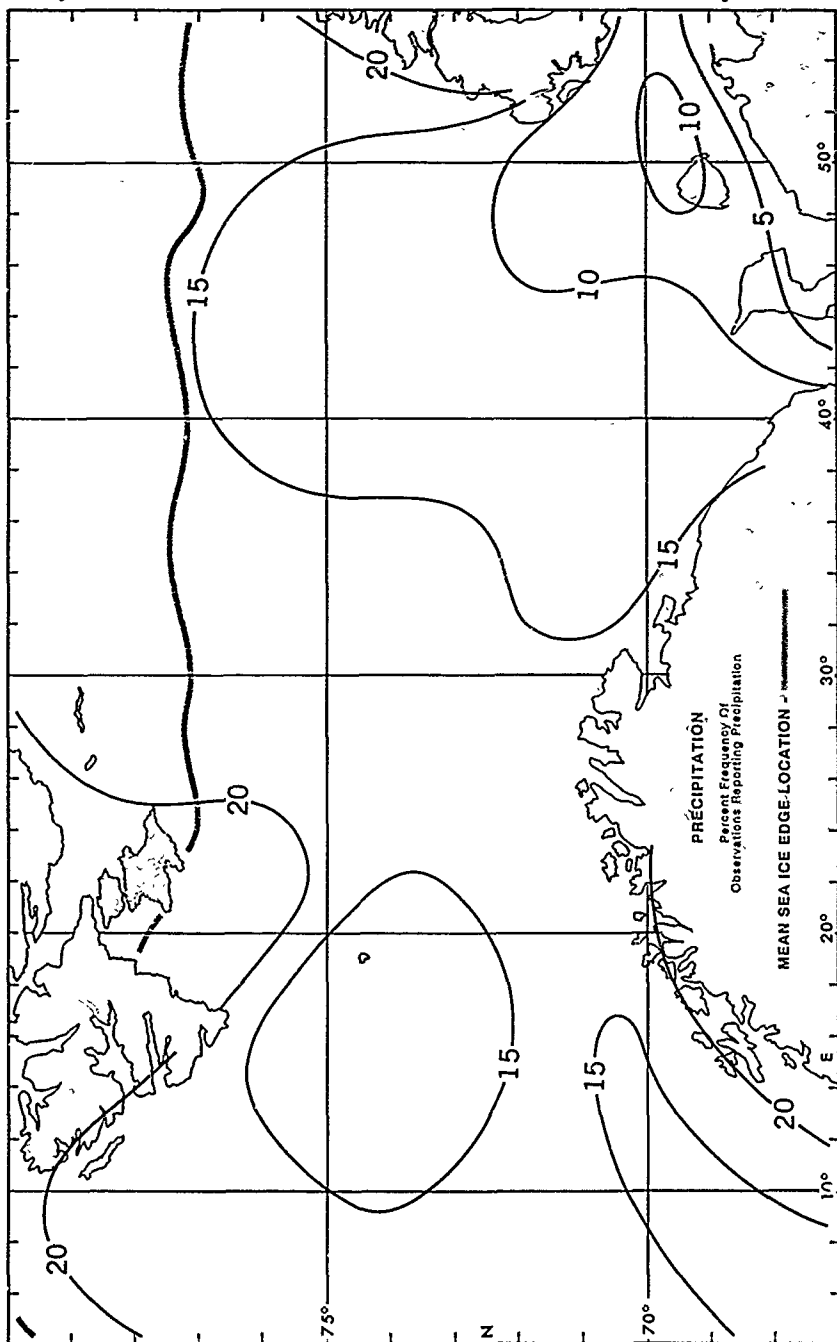
Clouds



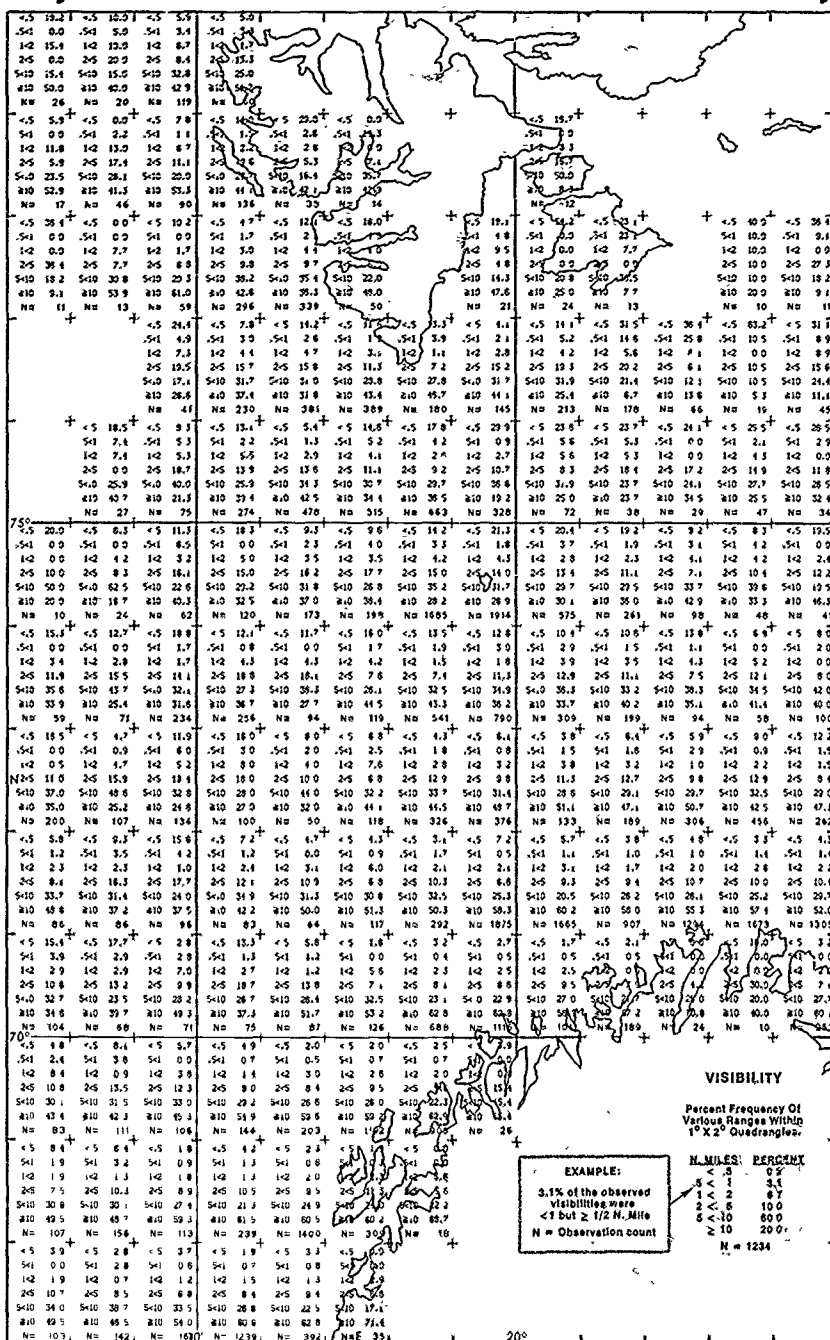
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

Precipitation

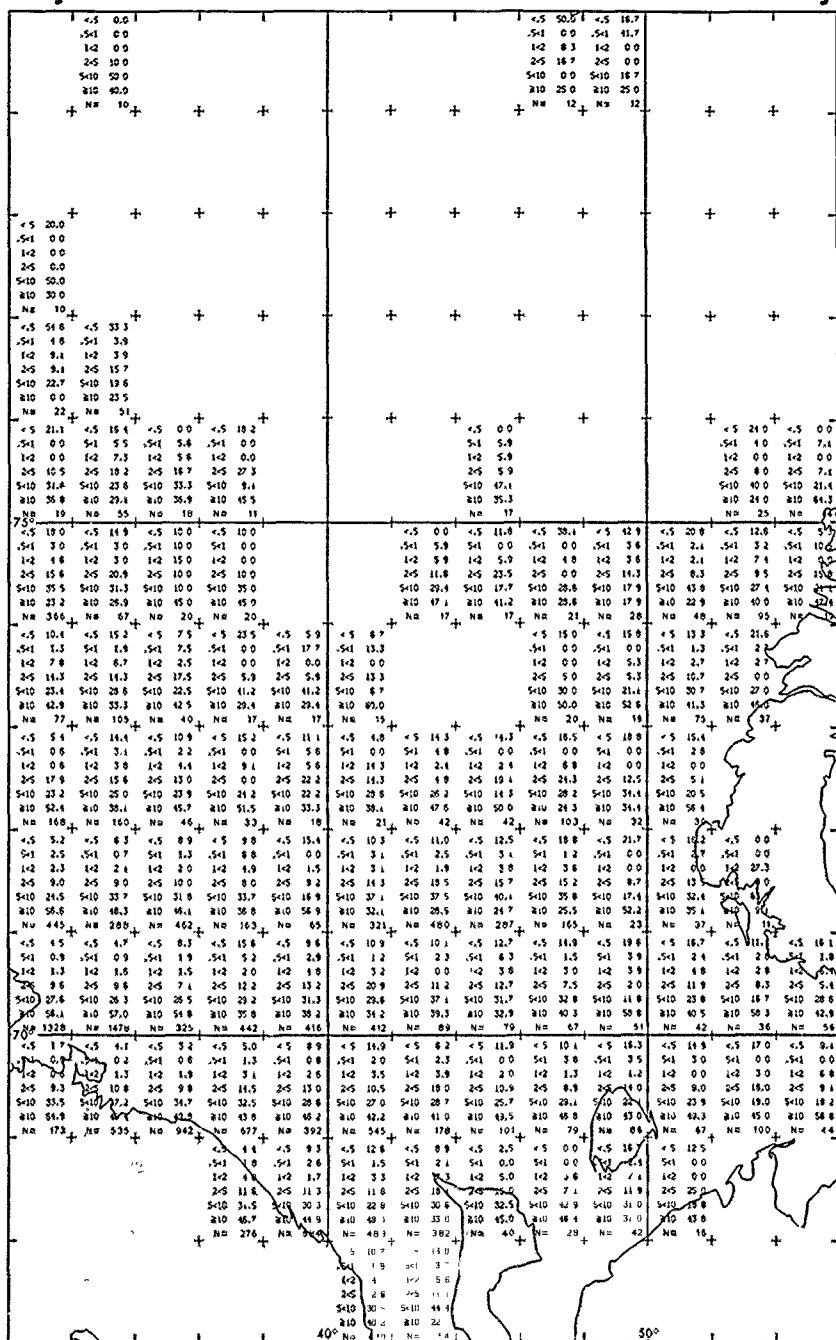


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.



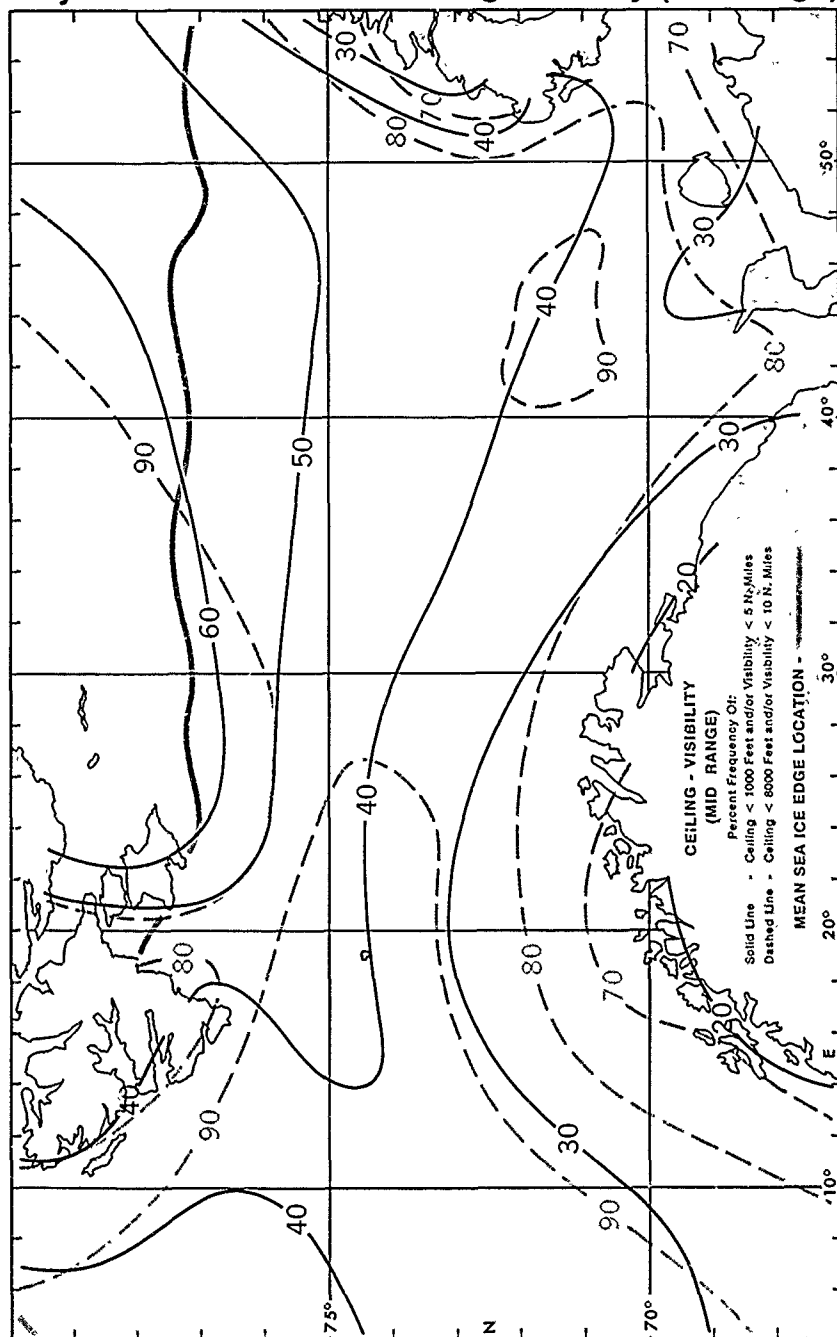
July

Visibility



July

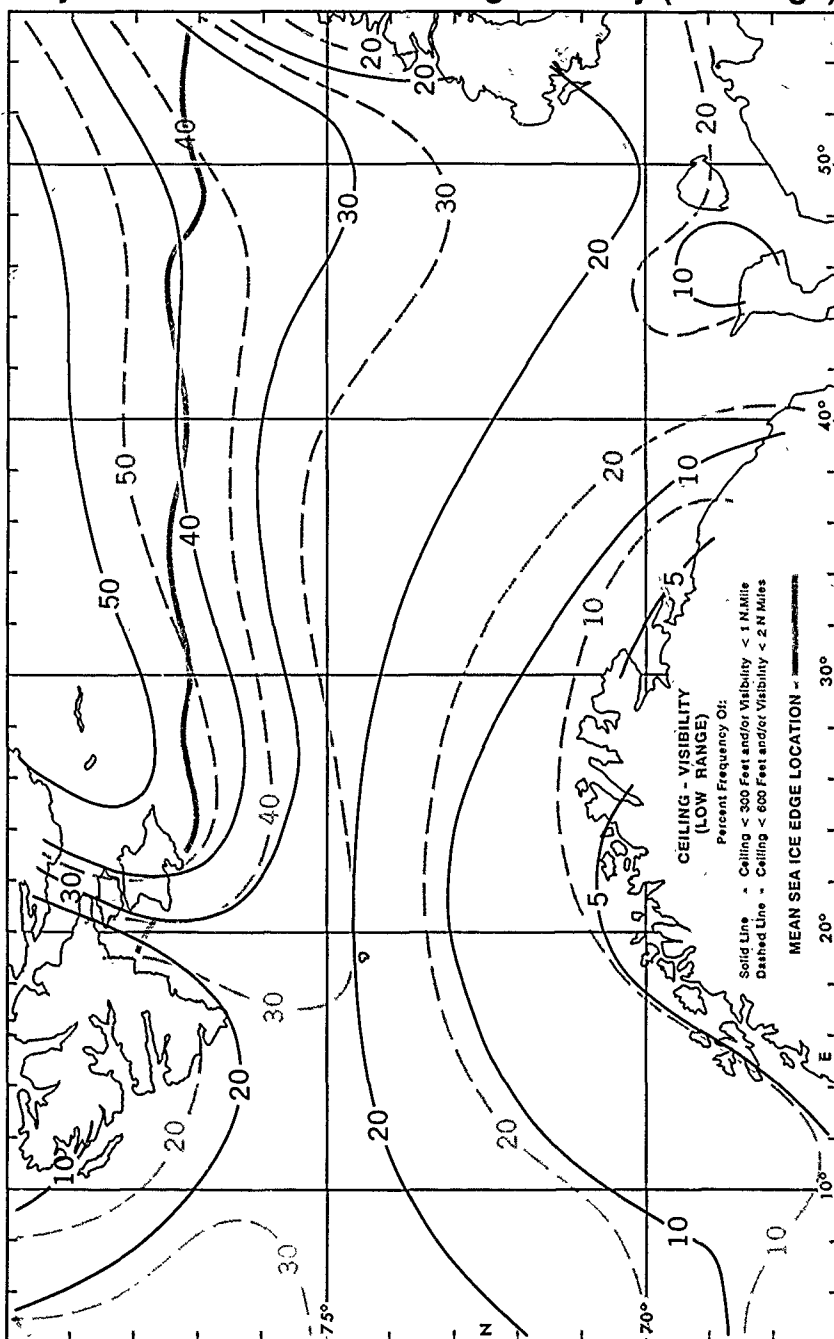
Ceiling-Visibility (mid range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

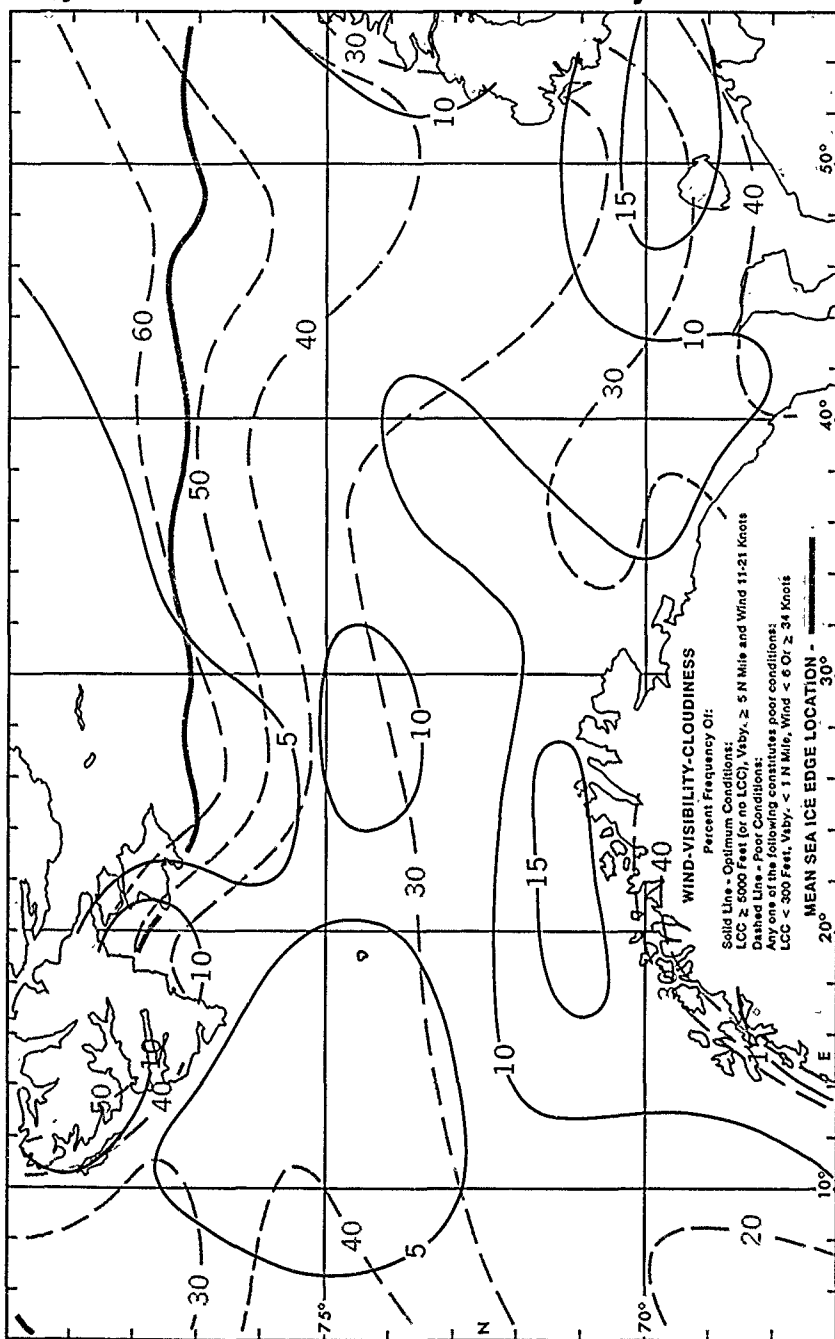
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

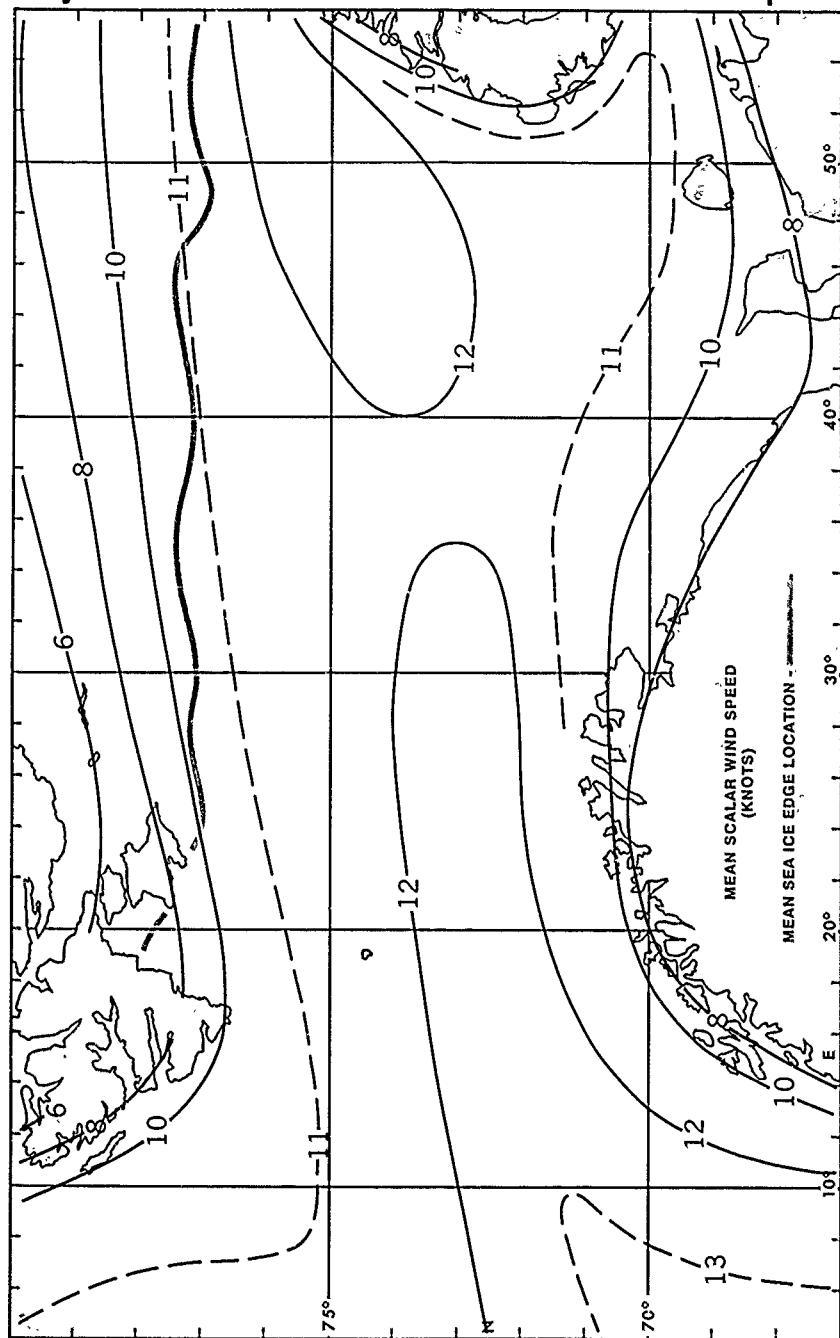
July

Wind-Visibility-Cloudiness



July

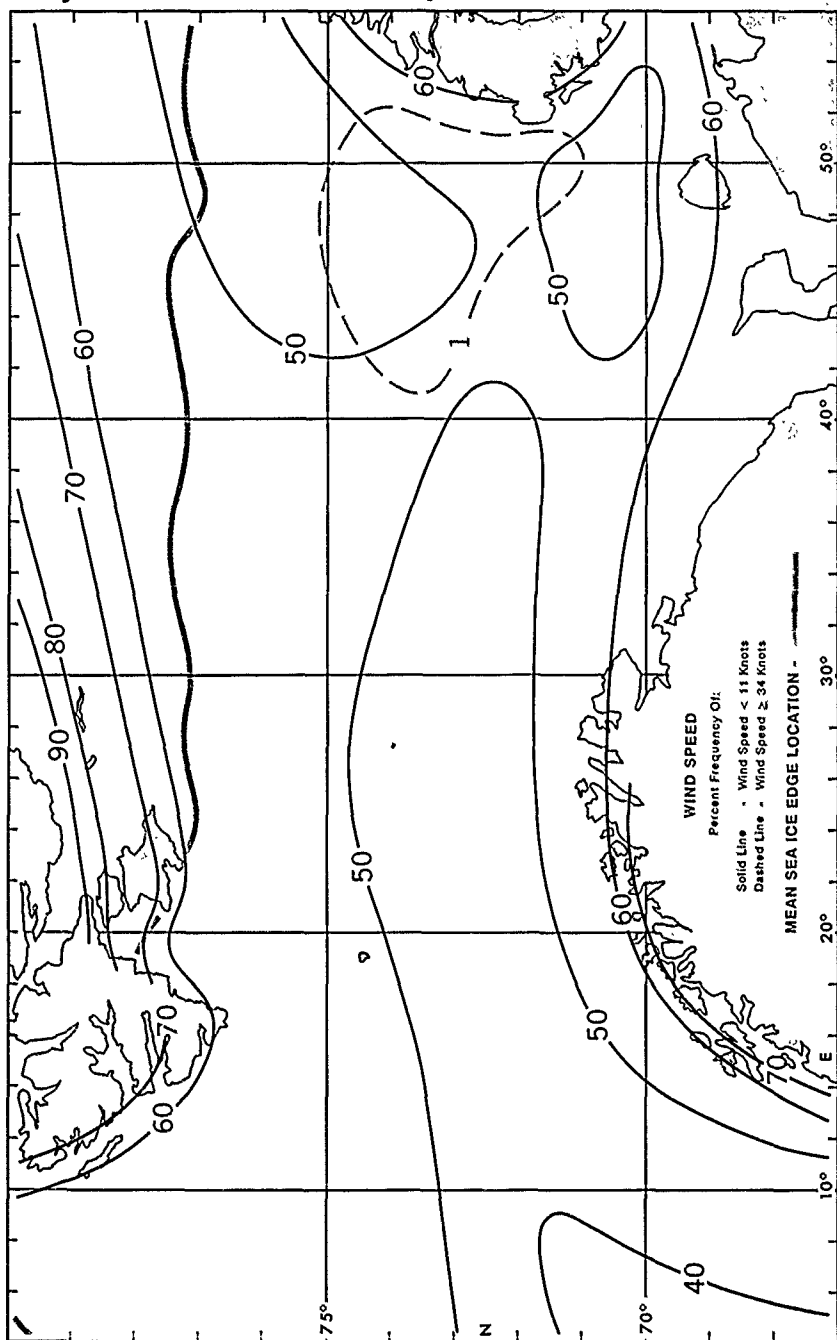
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

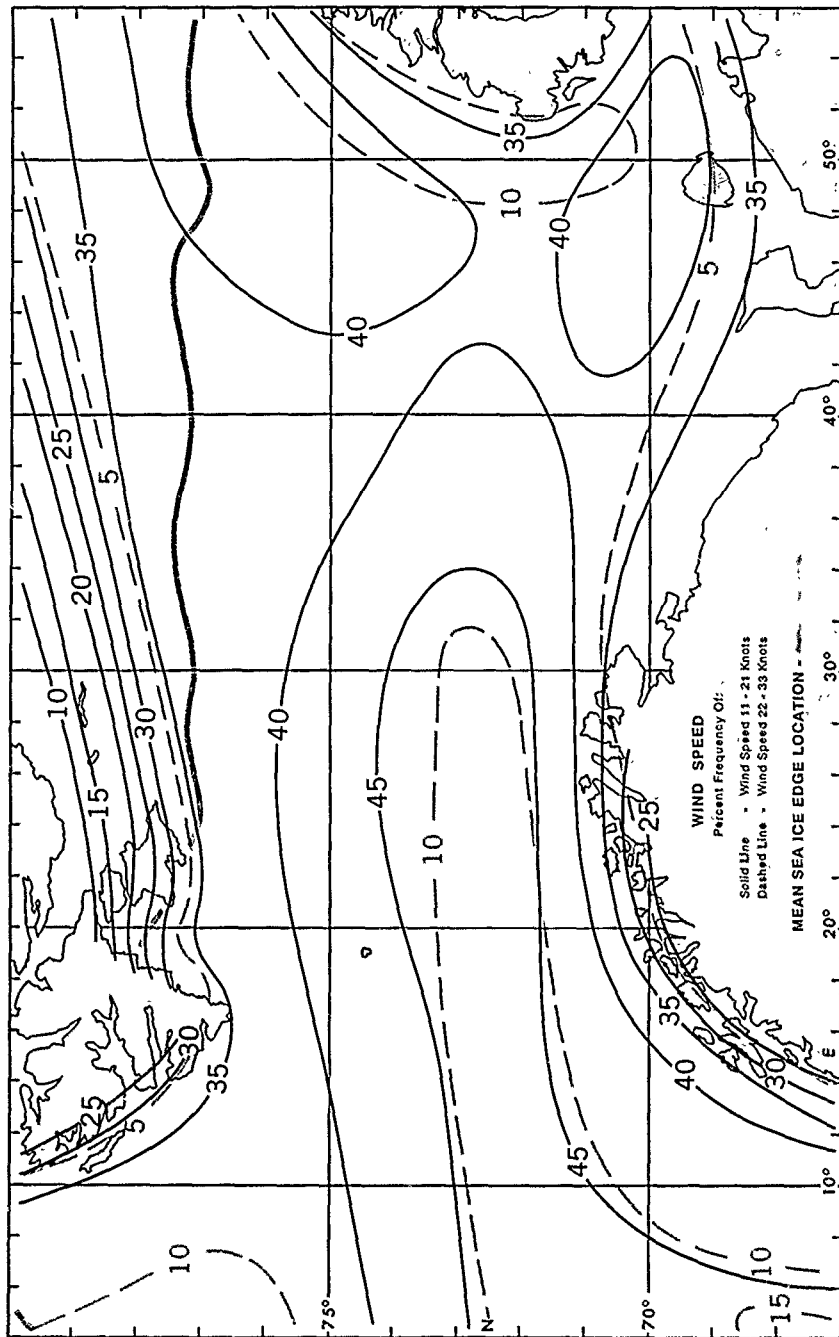
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

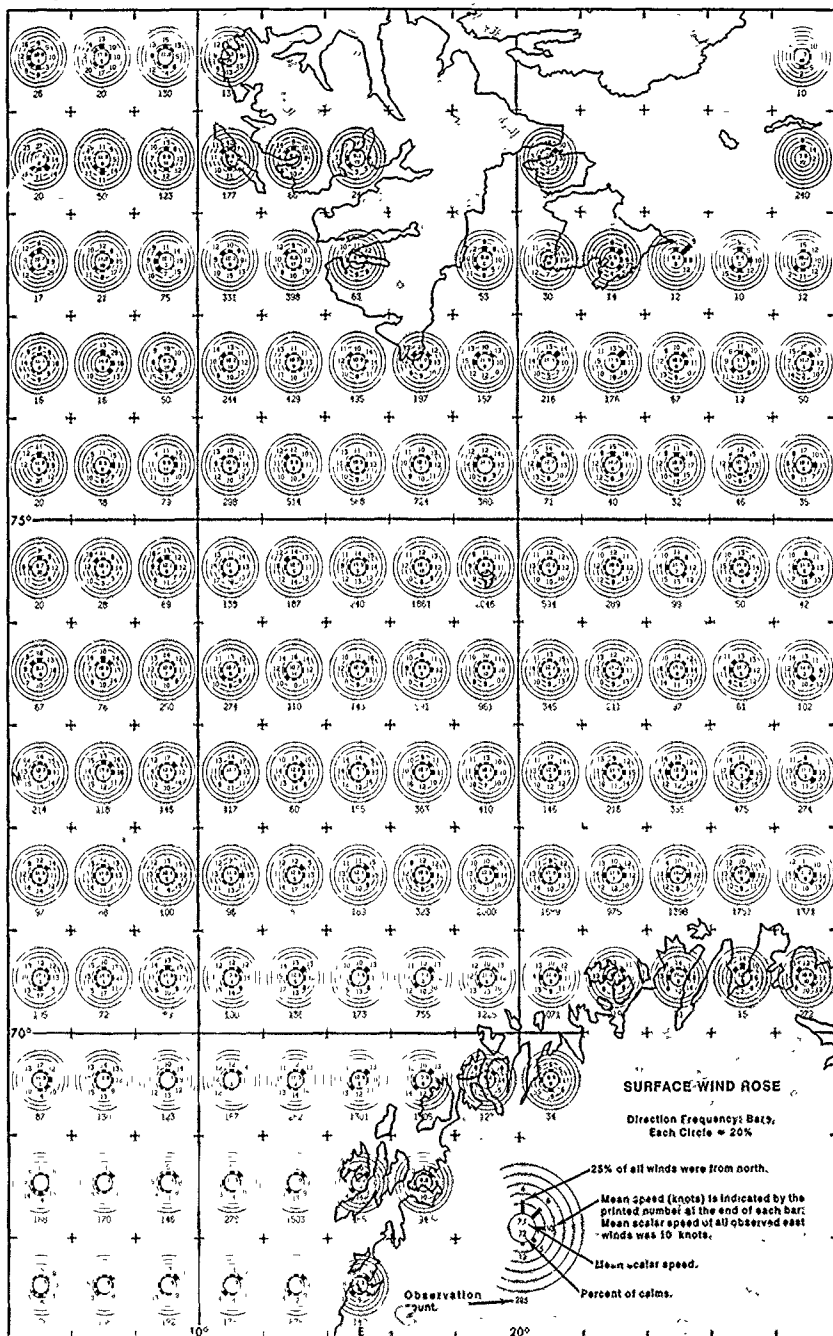
Wind Speed 11-21 and 22-33 Knots



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

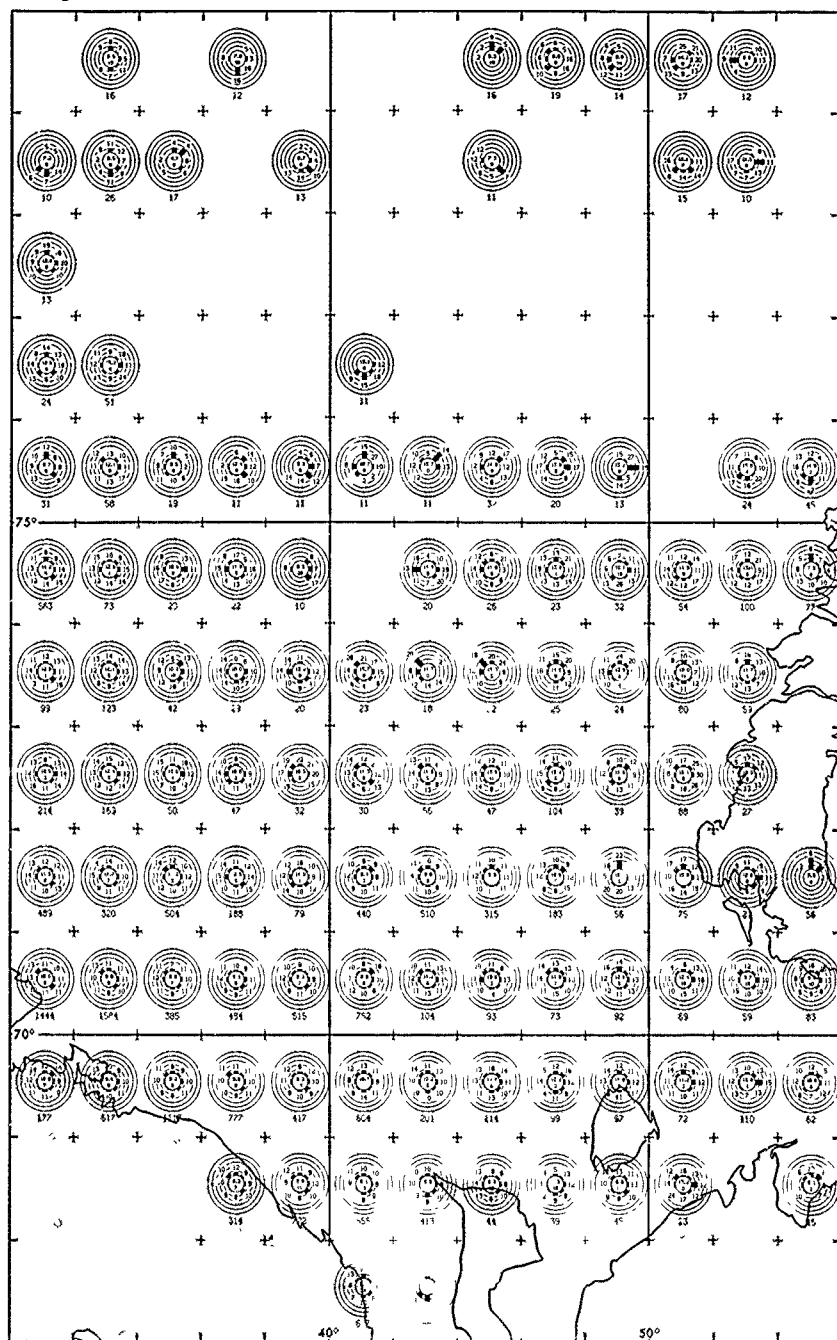
July

Surface Wind Roses



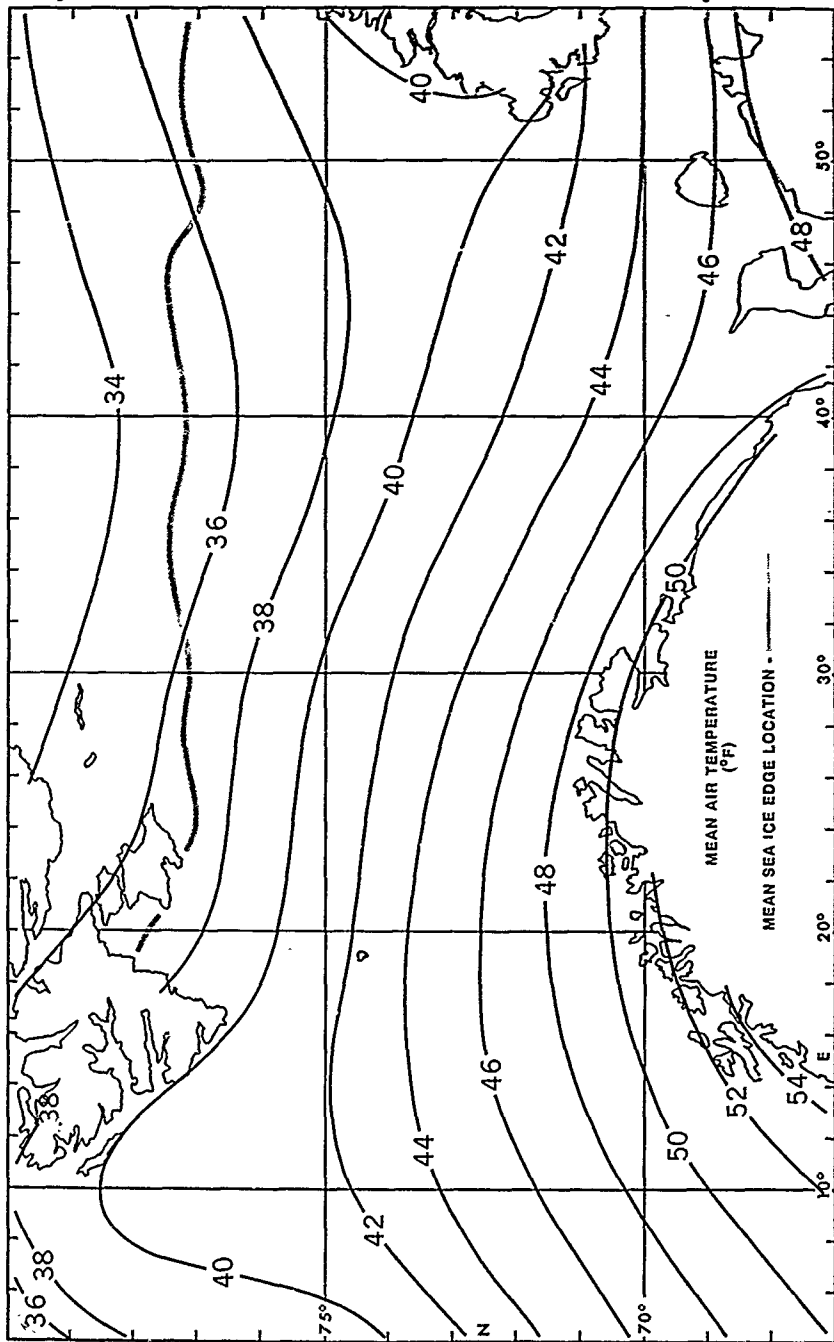
July

Surface Wind Roses



July

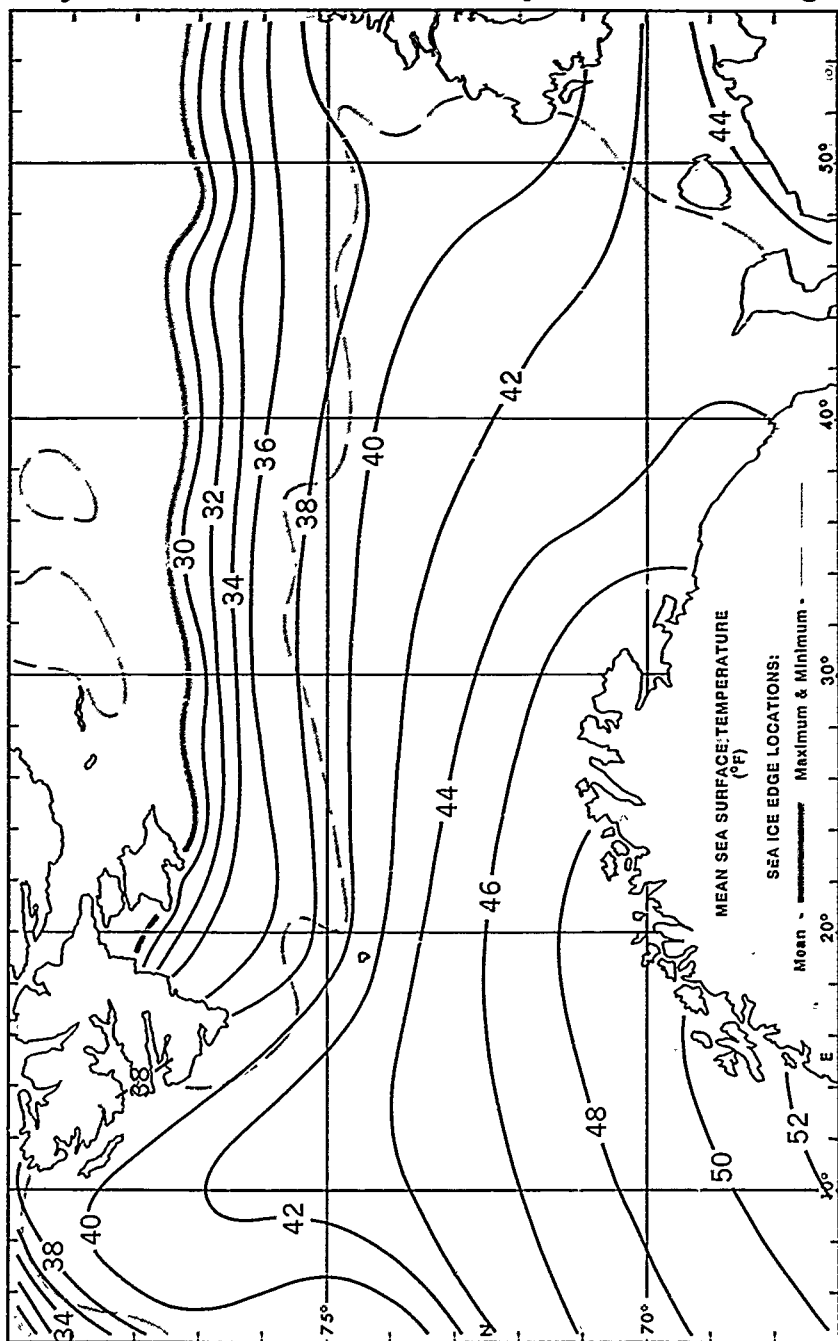
Mean Air Temperature



NOTE • Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

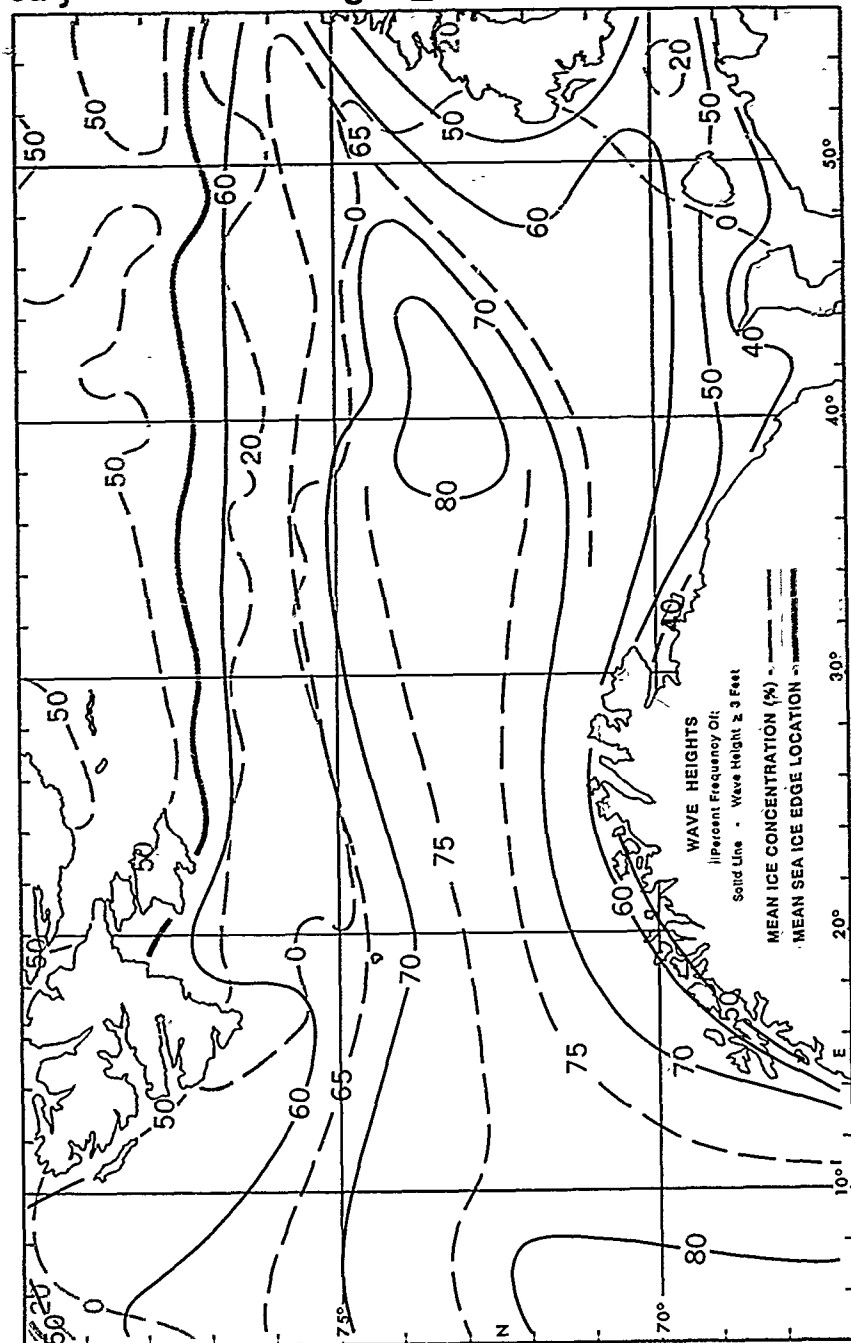
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

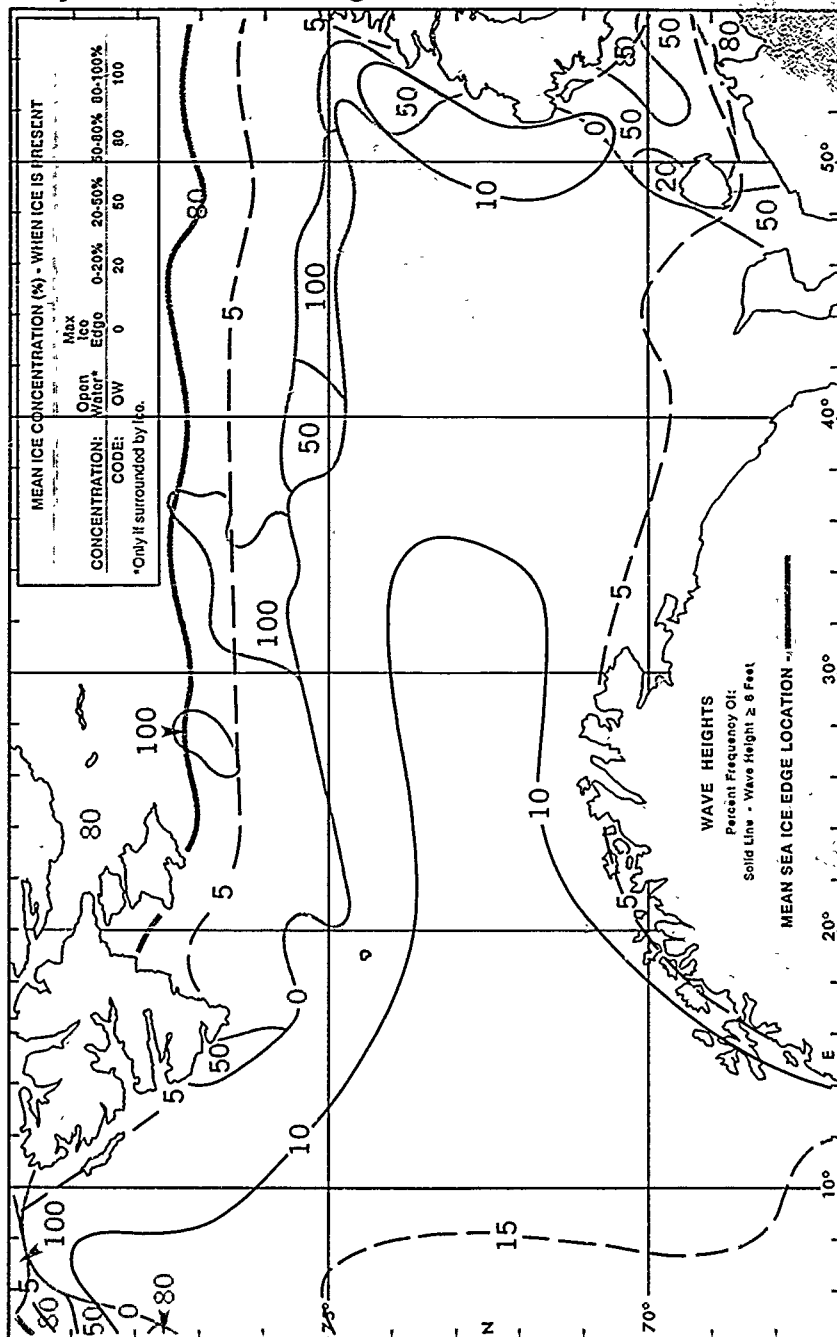
Wave Height ≥ 3 Ft. & Ice Concentration



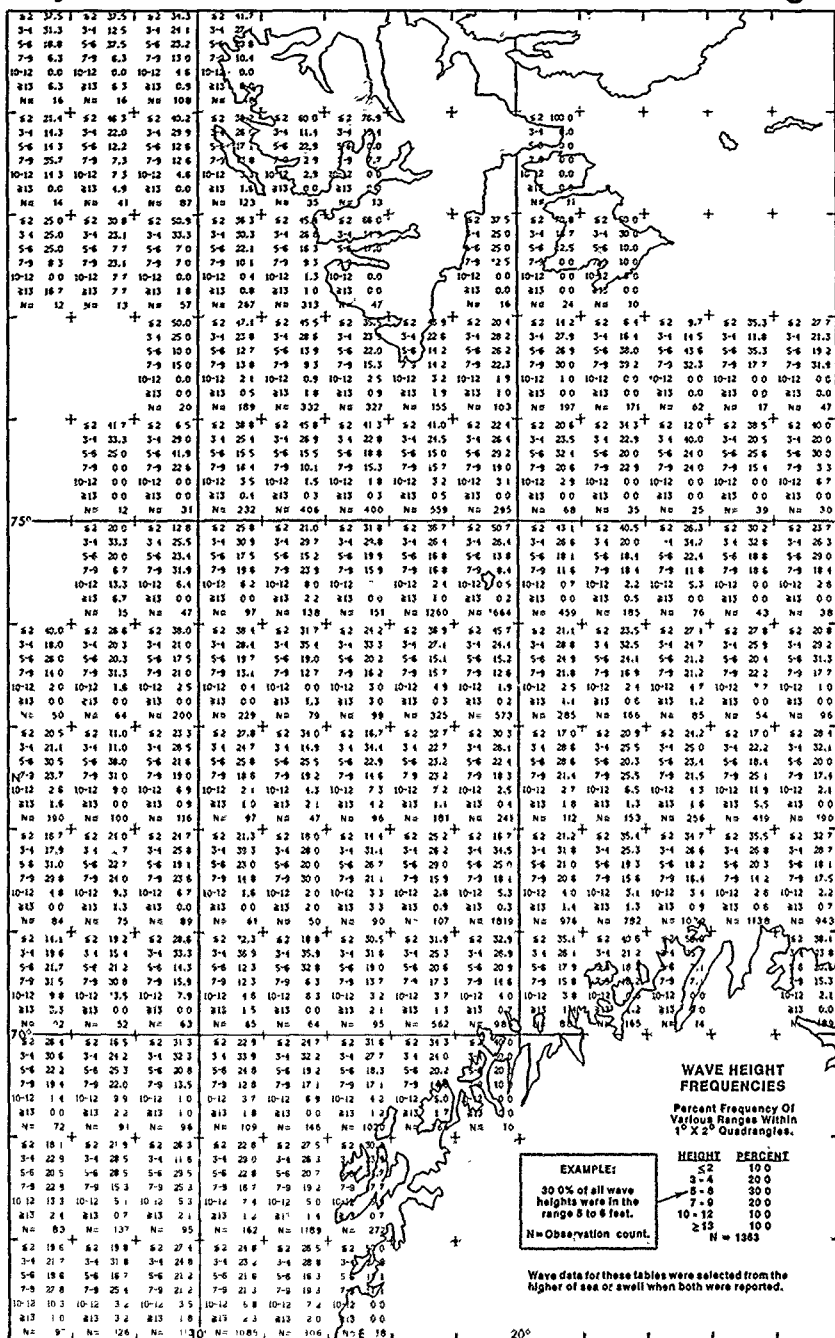
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

July

Wave Height ≥ 8 Ft. & Ice Concentration

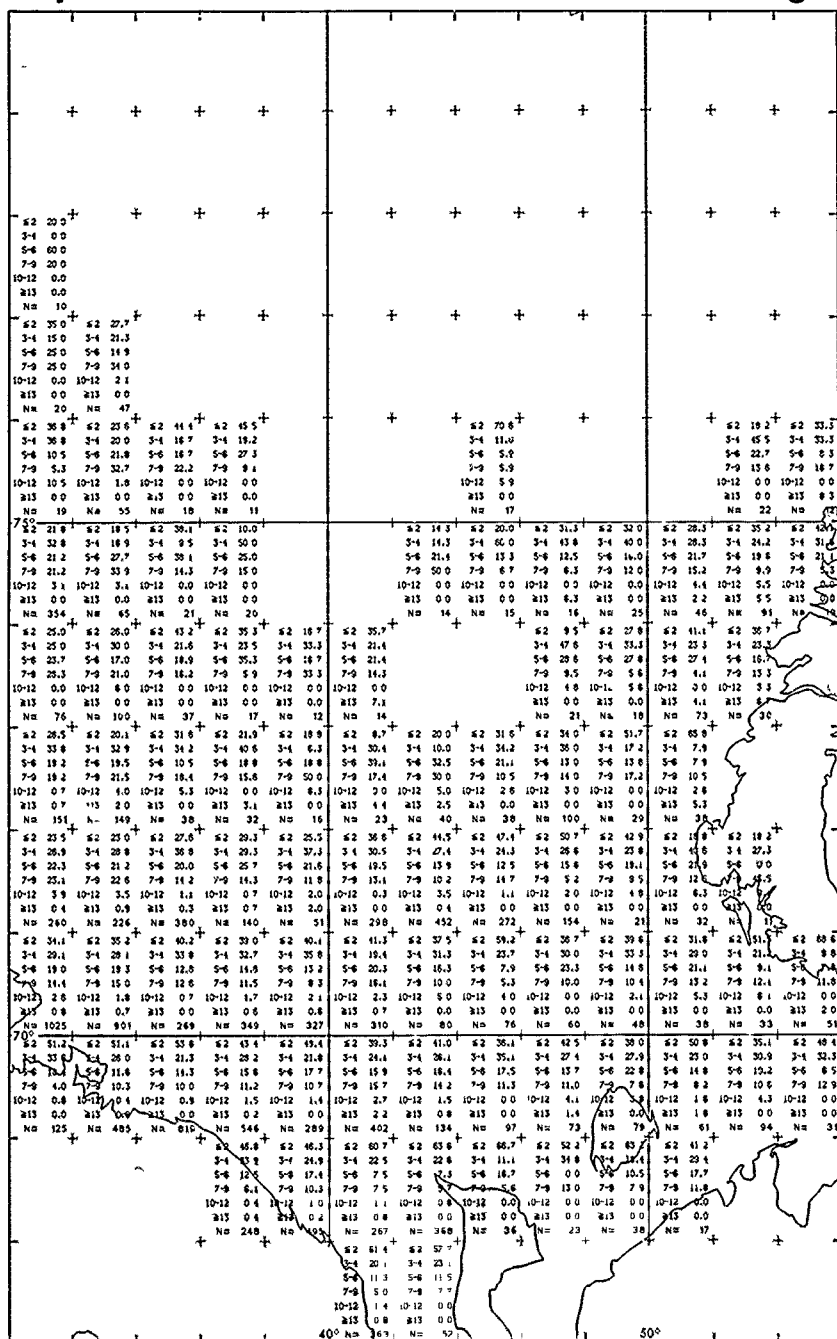


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



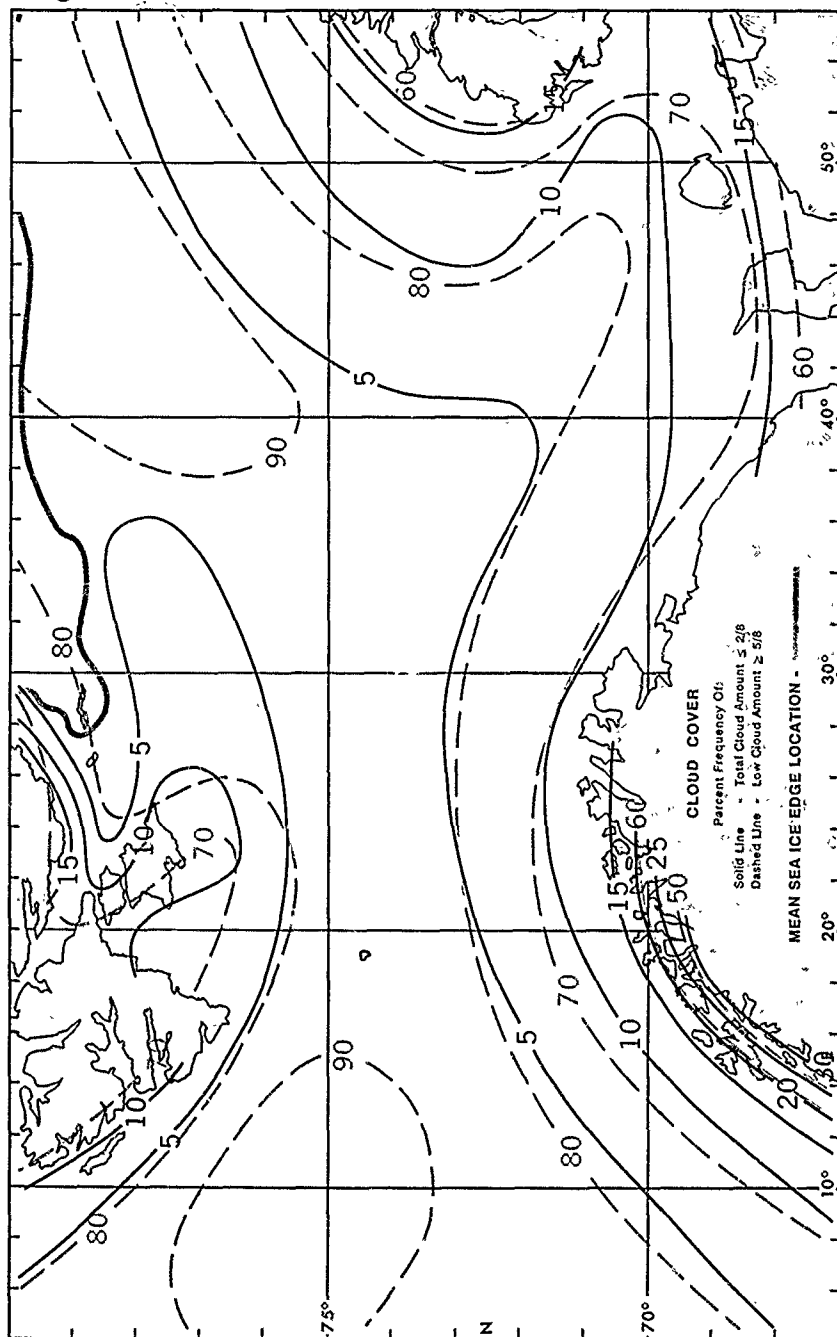
July

Wave Height



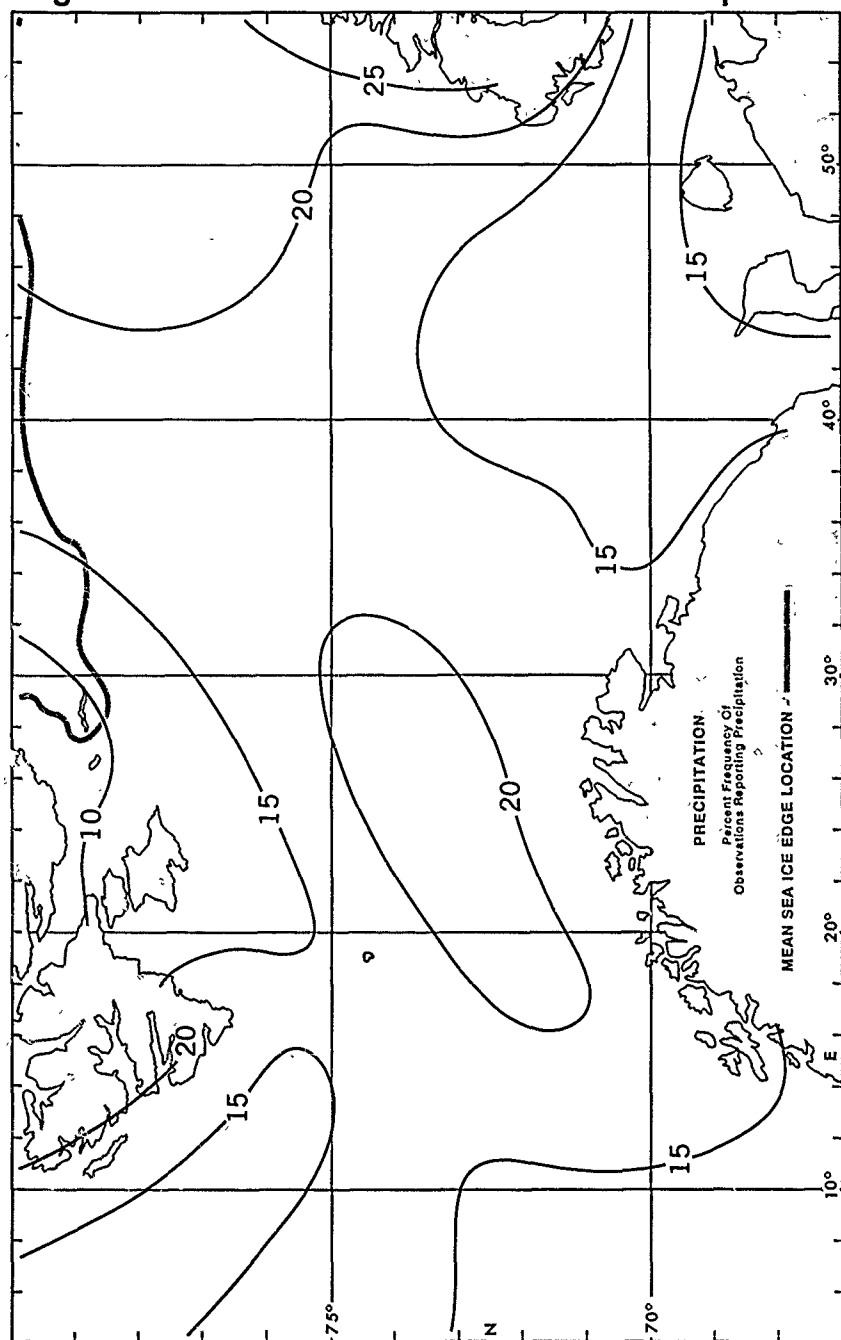
August

Clouds



August

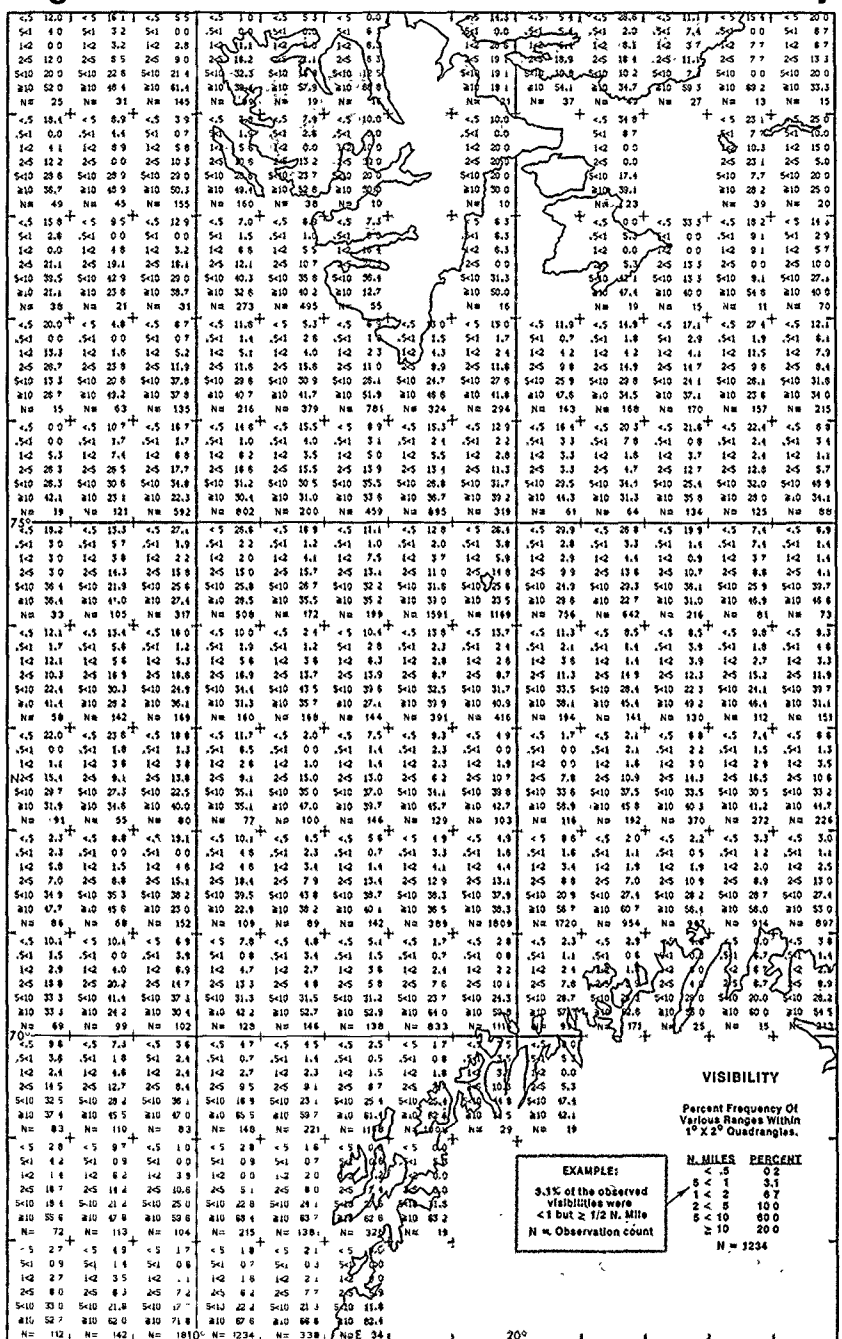
Precipitation



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

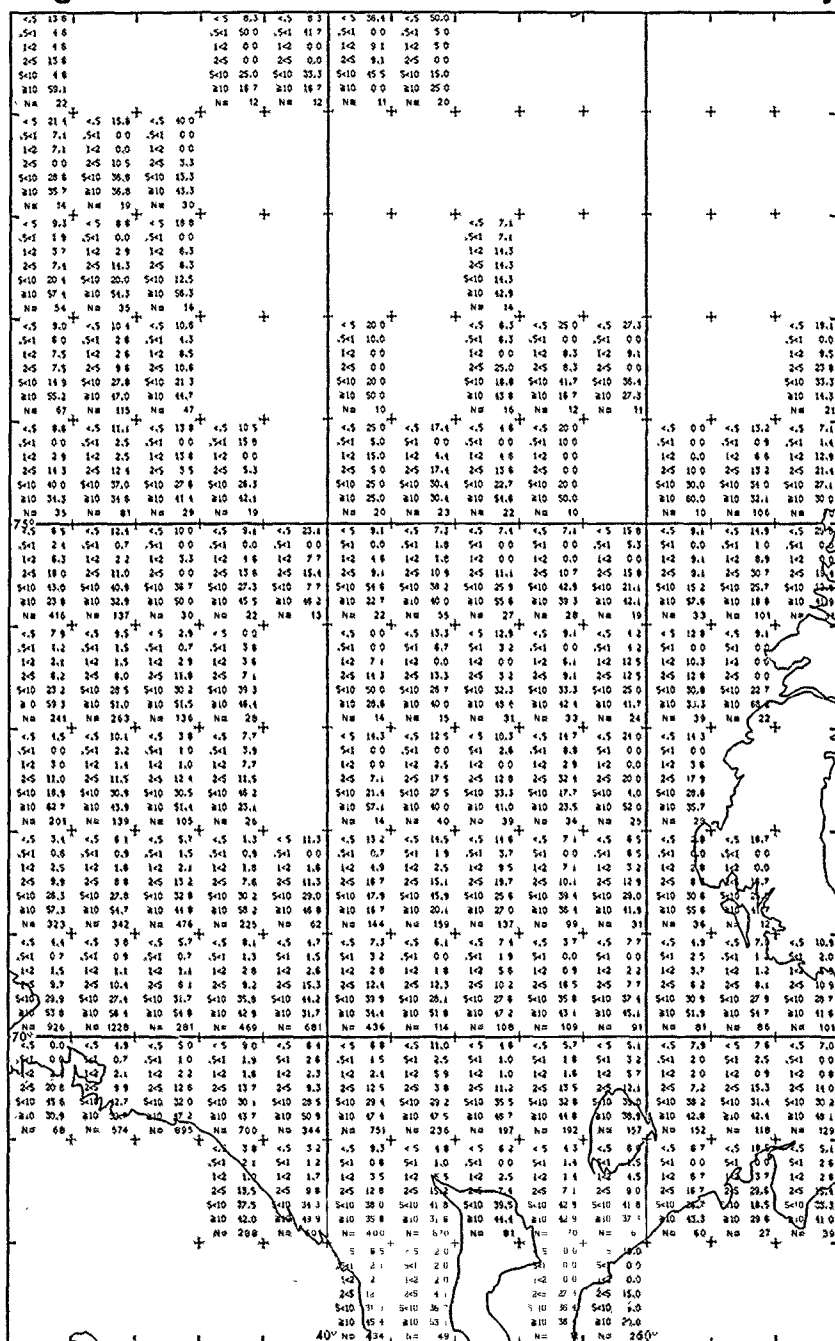
August

Visibility



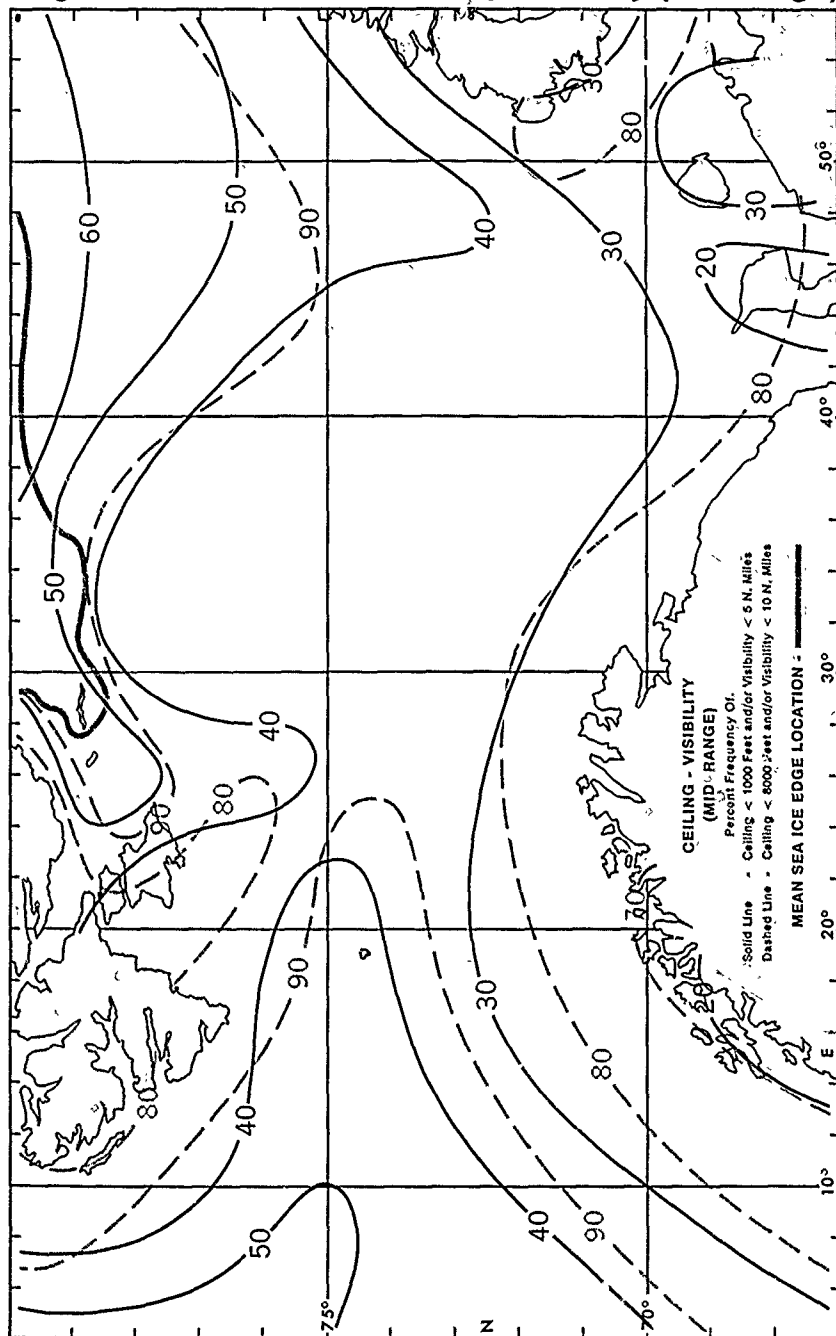
August

Visibility



August

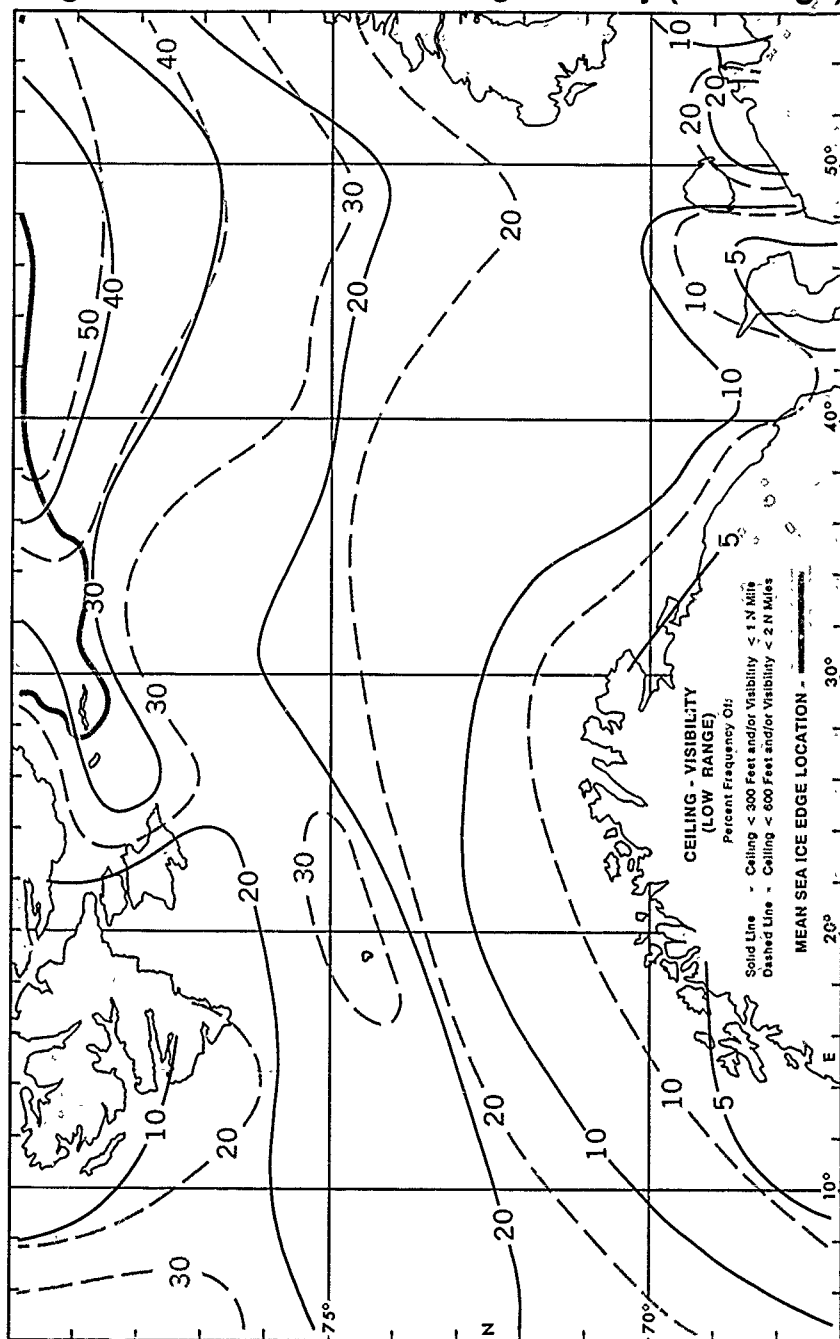
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

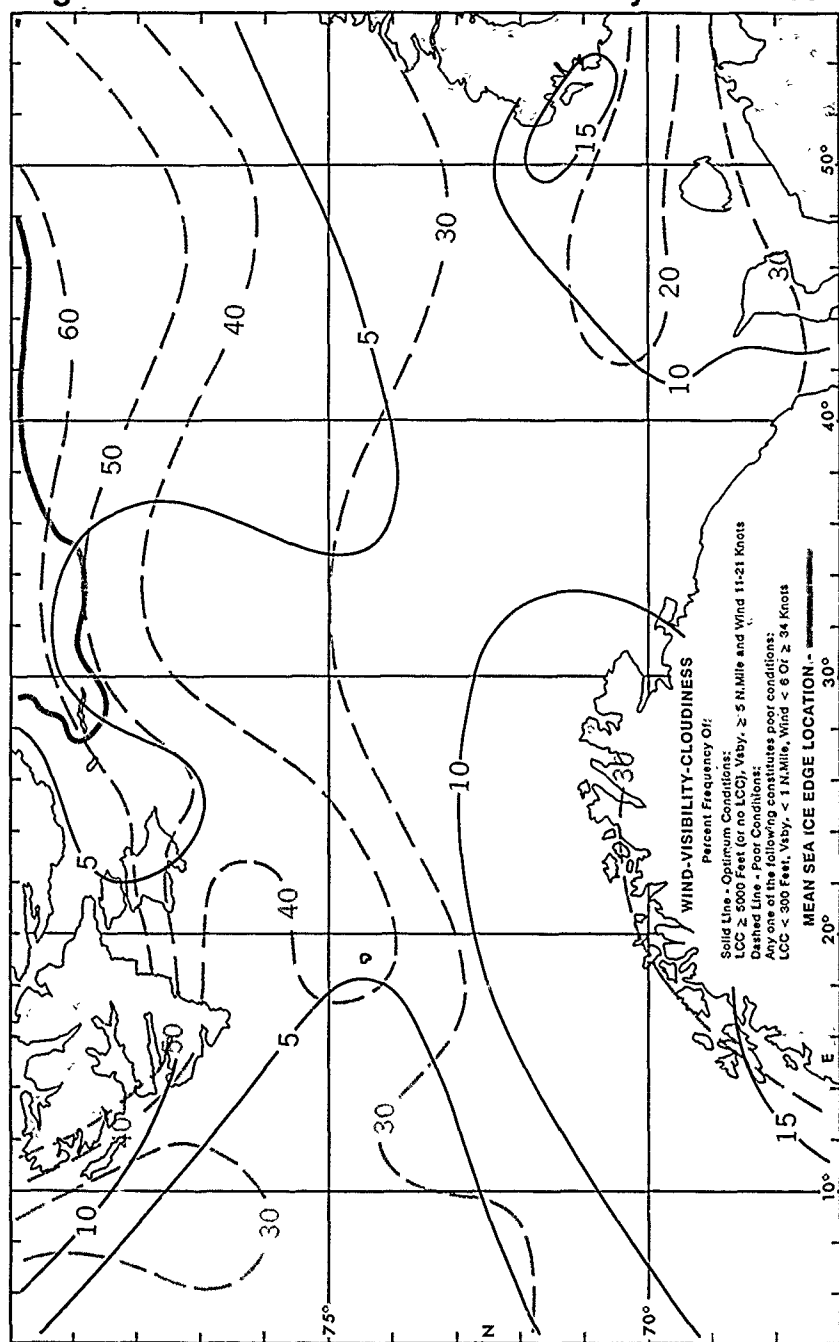
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

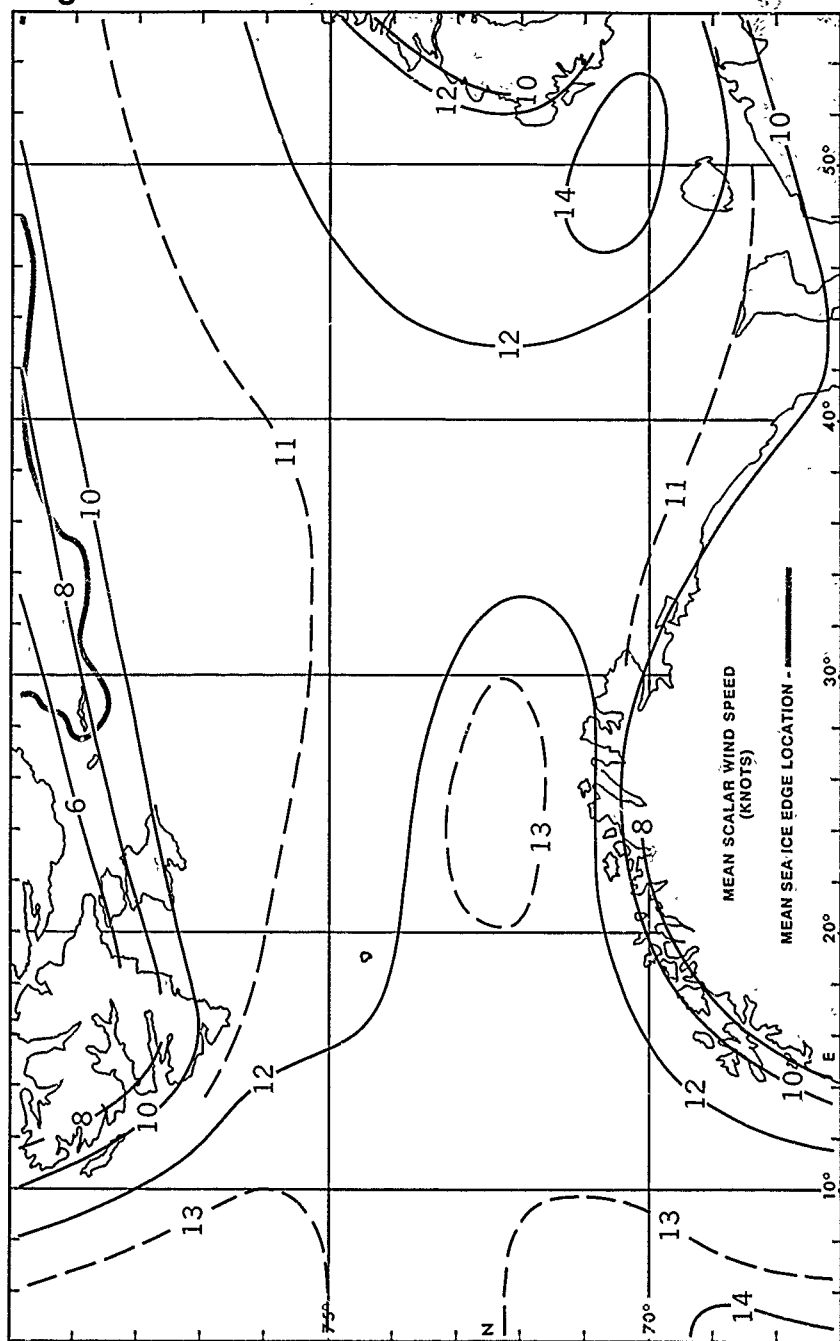
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

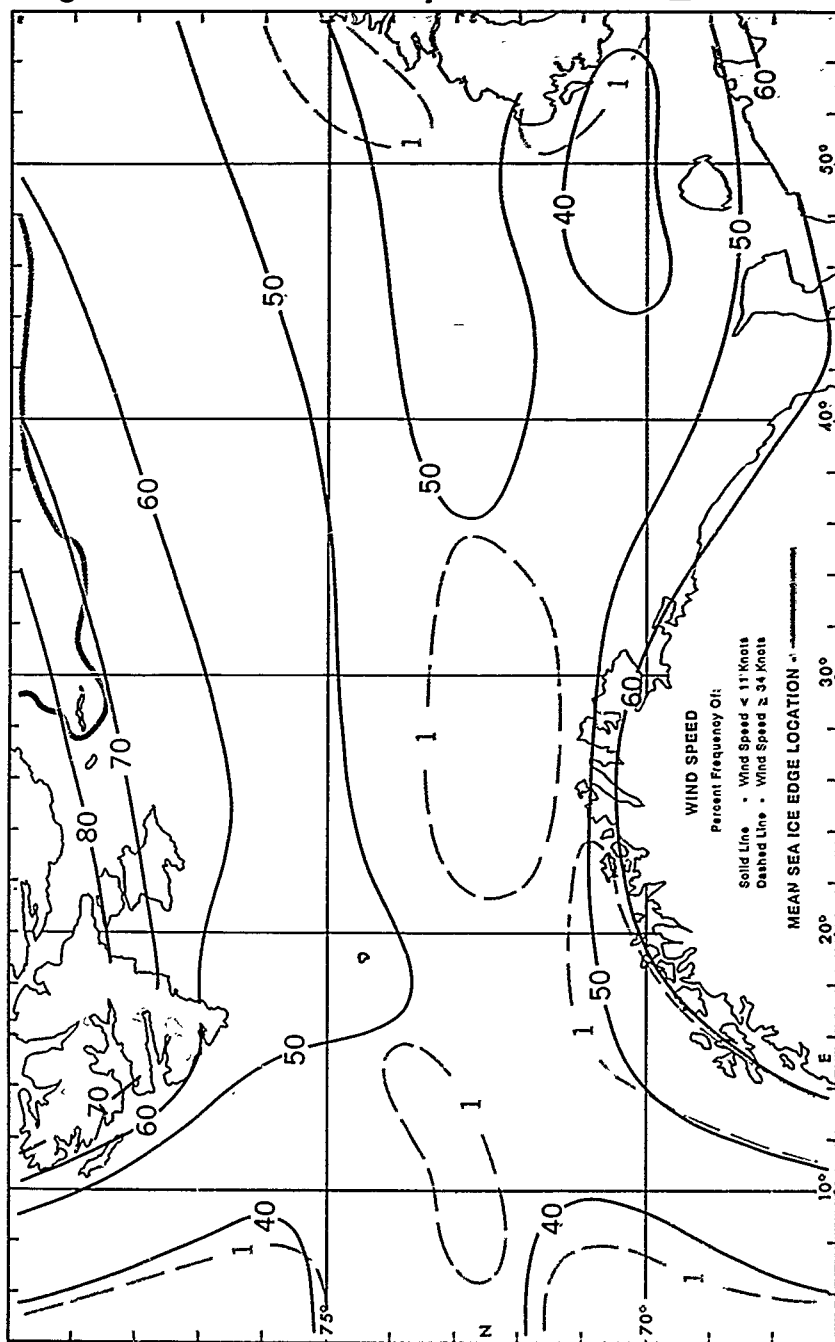
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

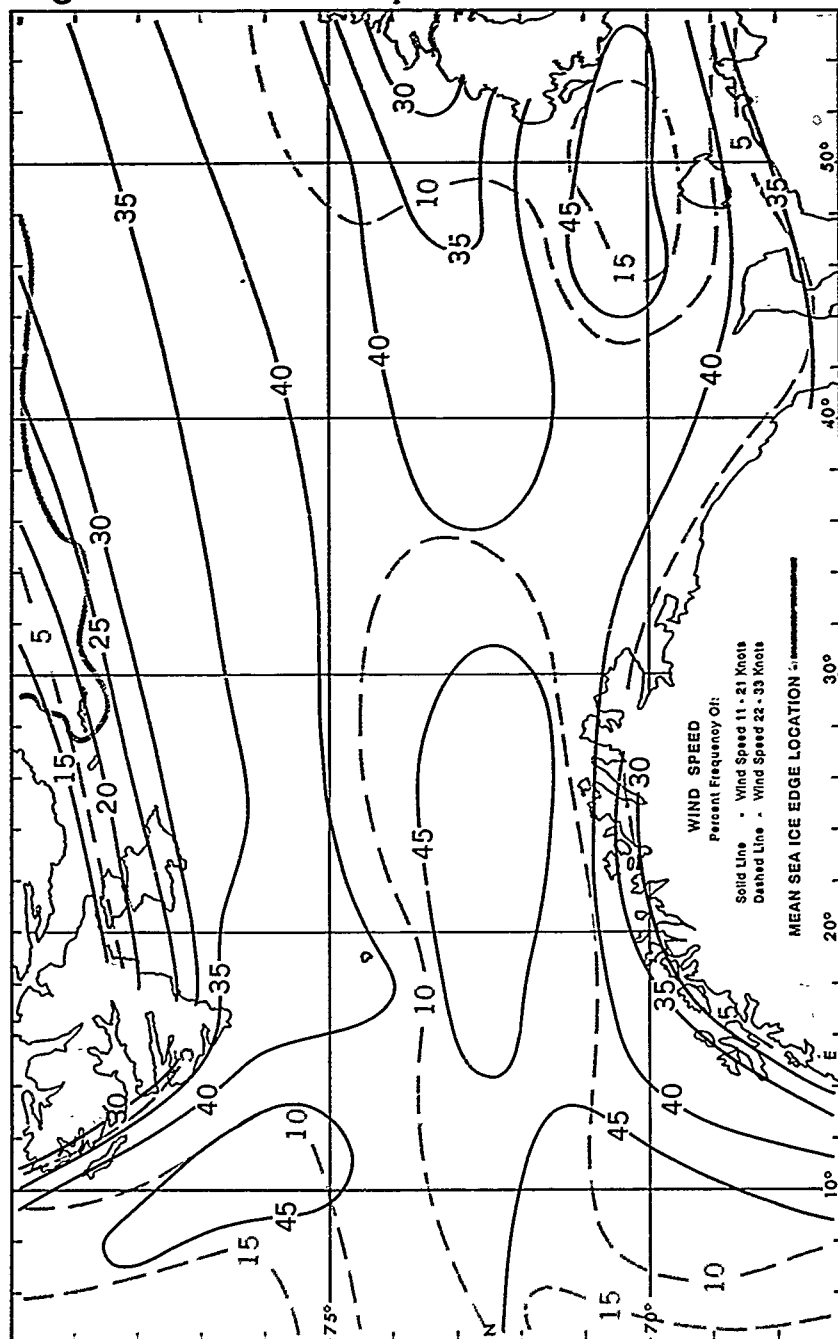
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

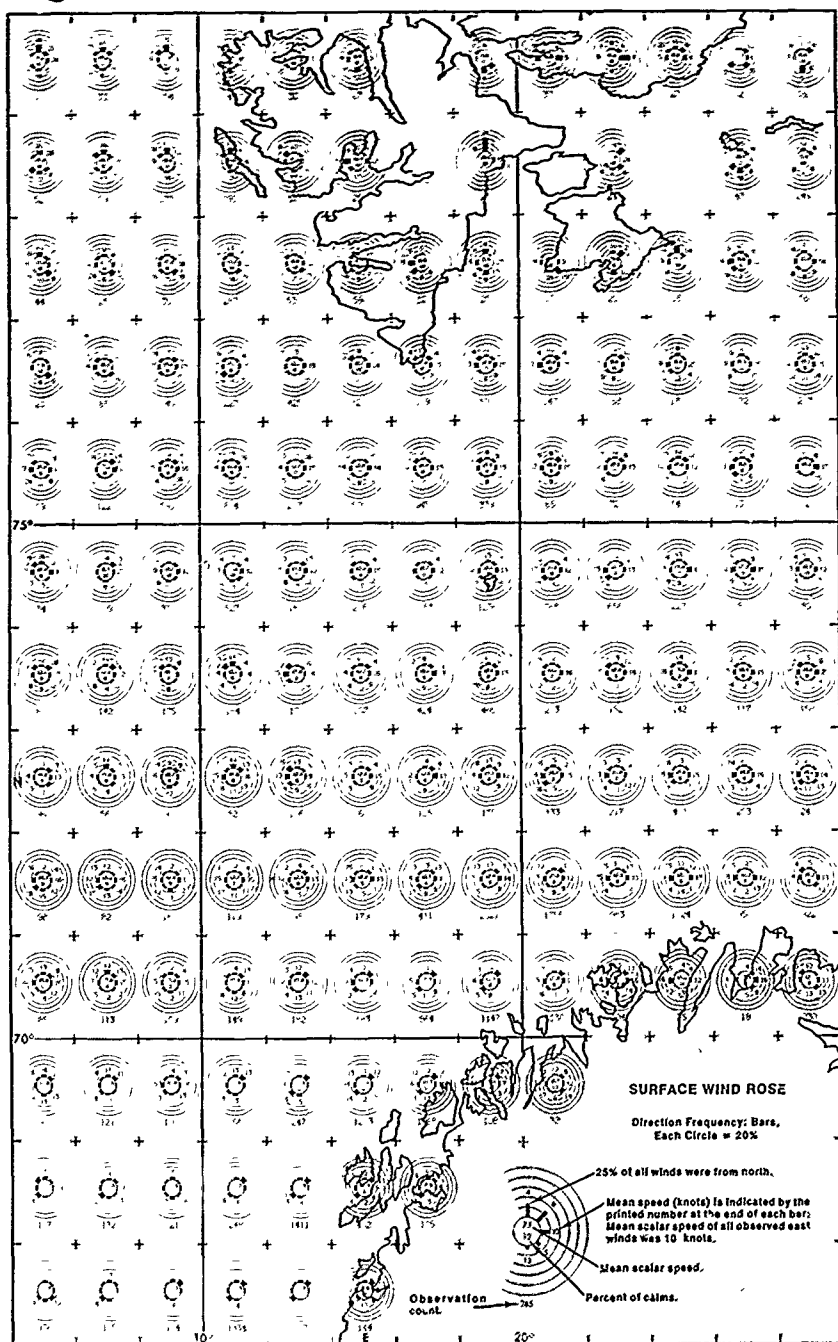
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

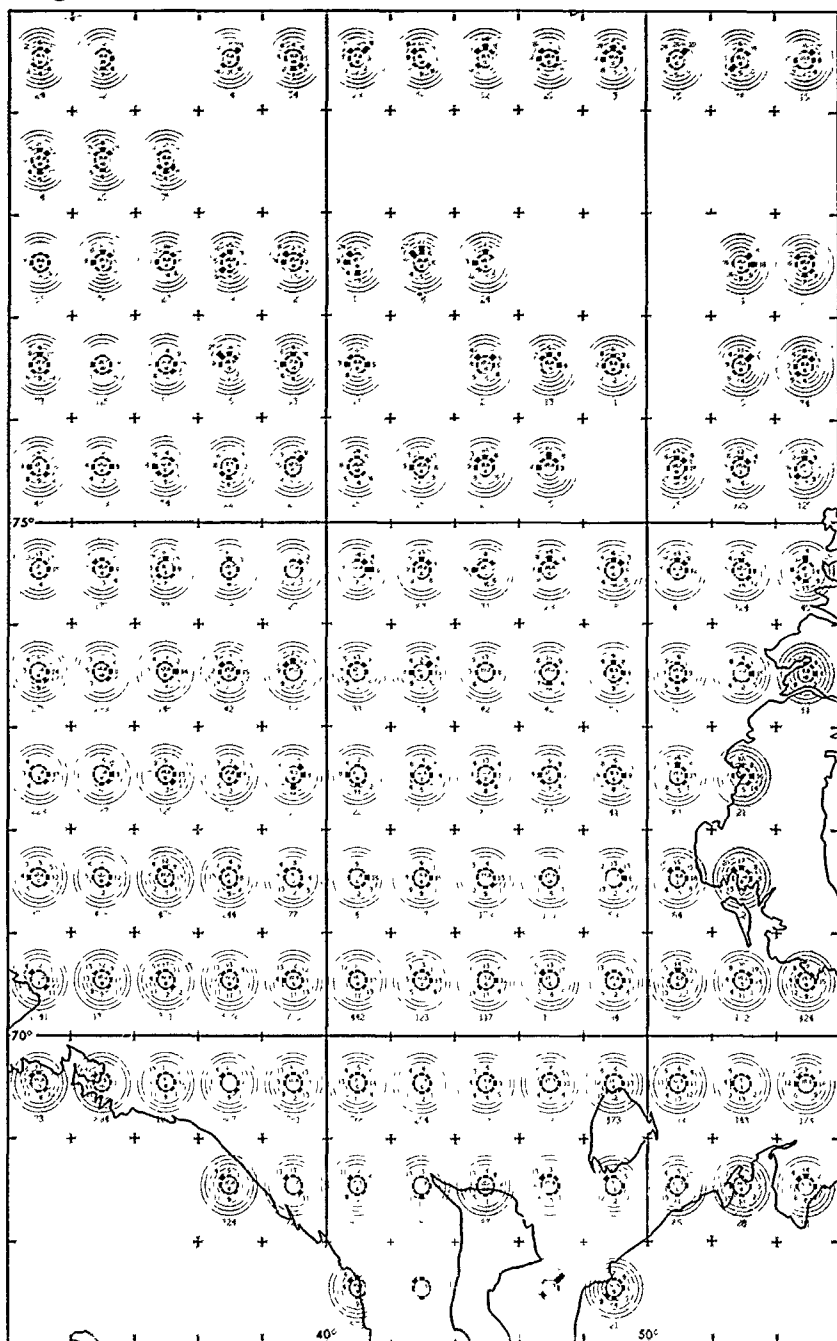
August

Surface Wind Roses



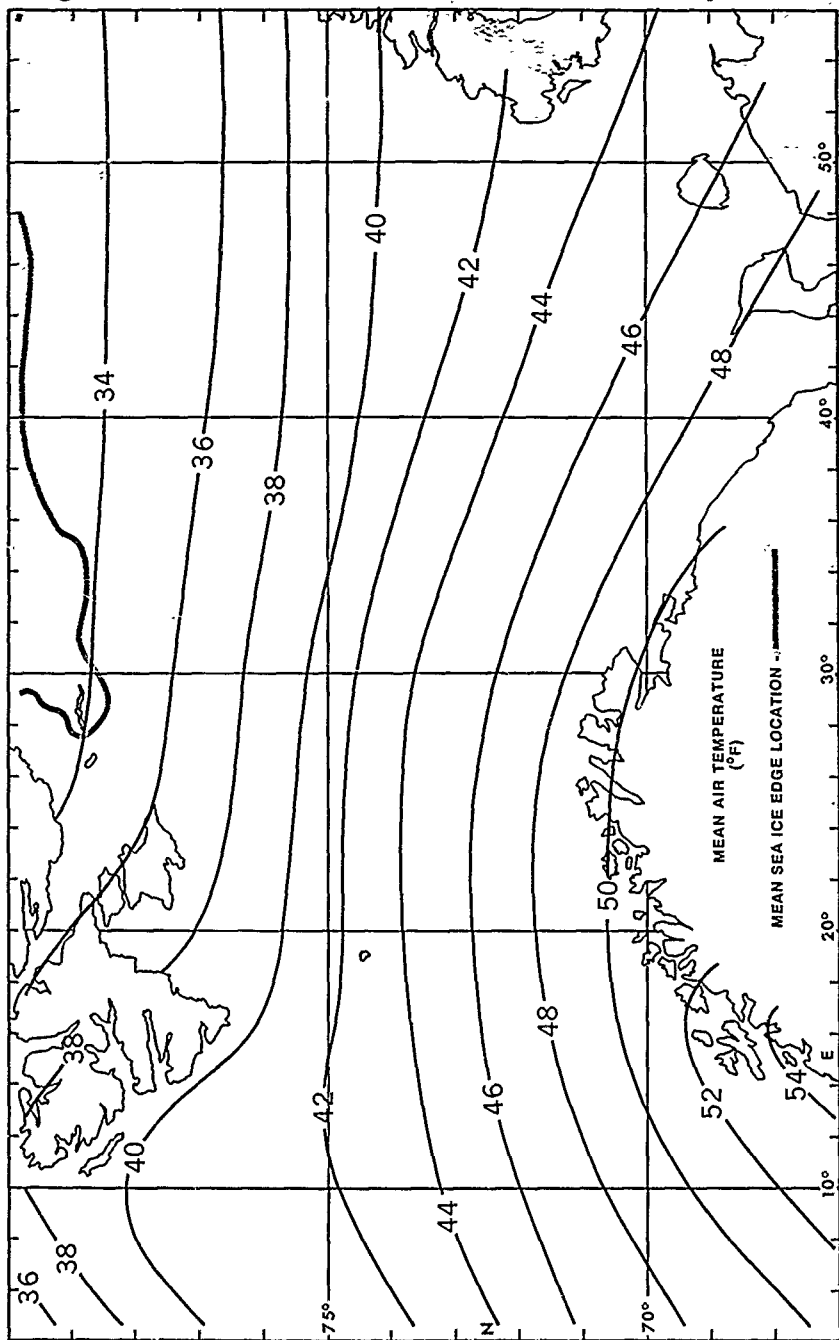
August

Surface Wind Roses



August

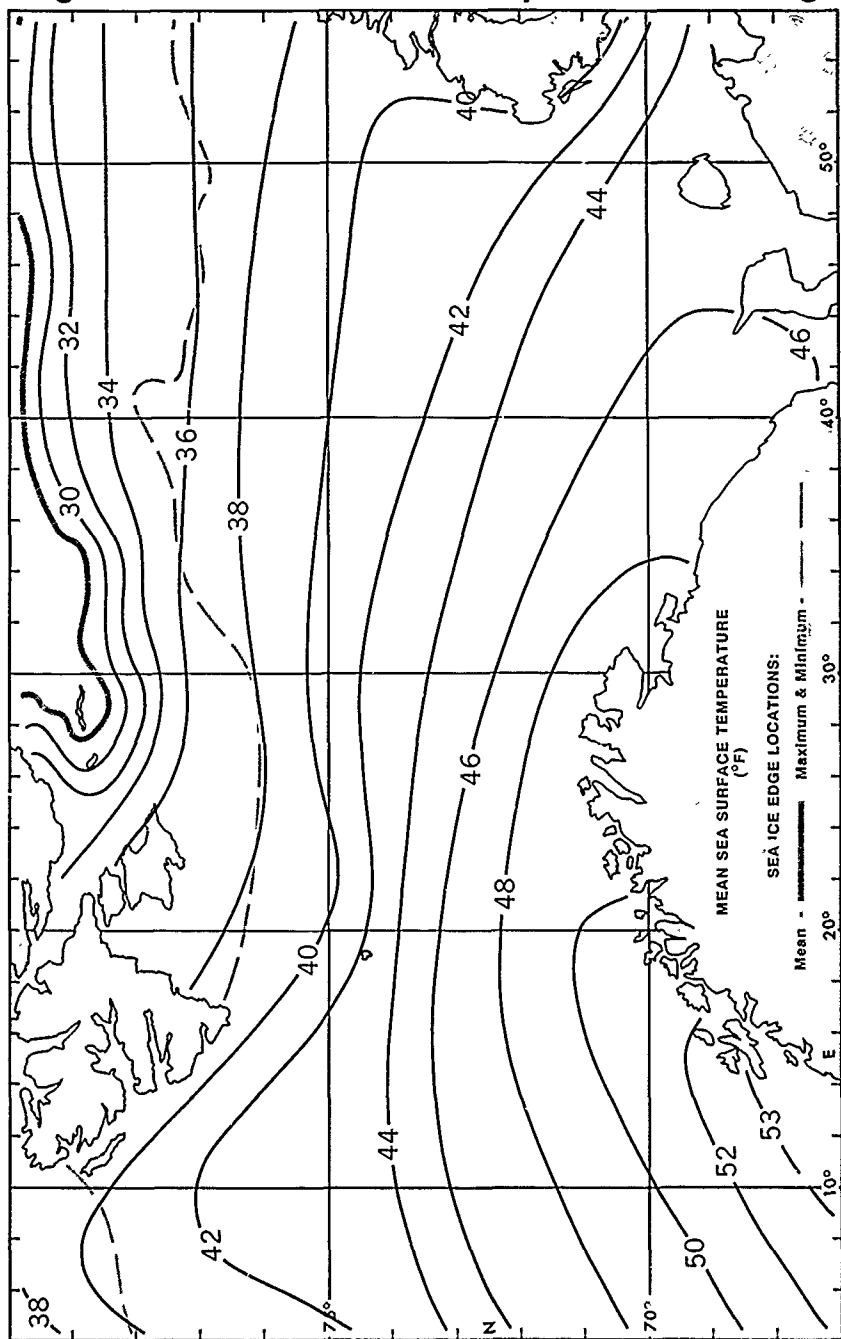
Mean Air Temperature



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

August

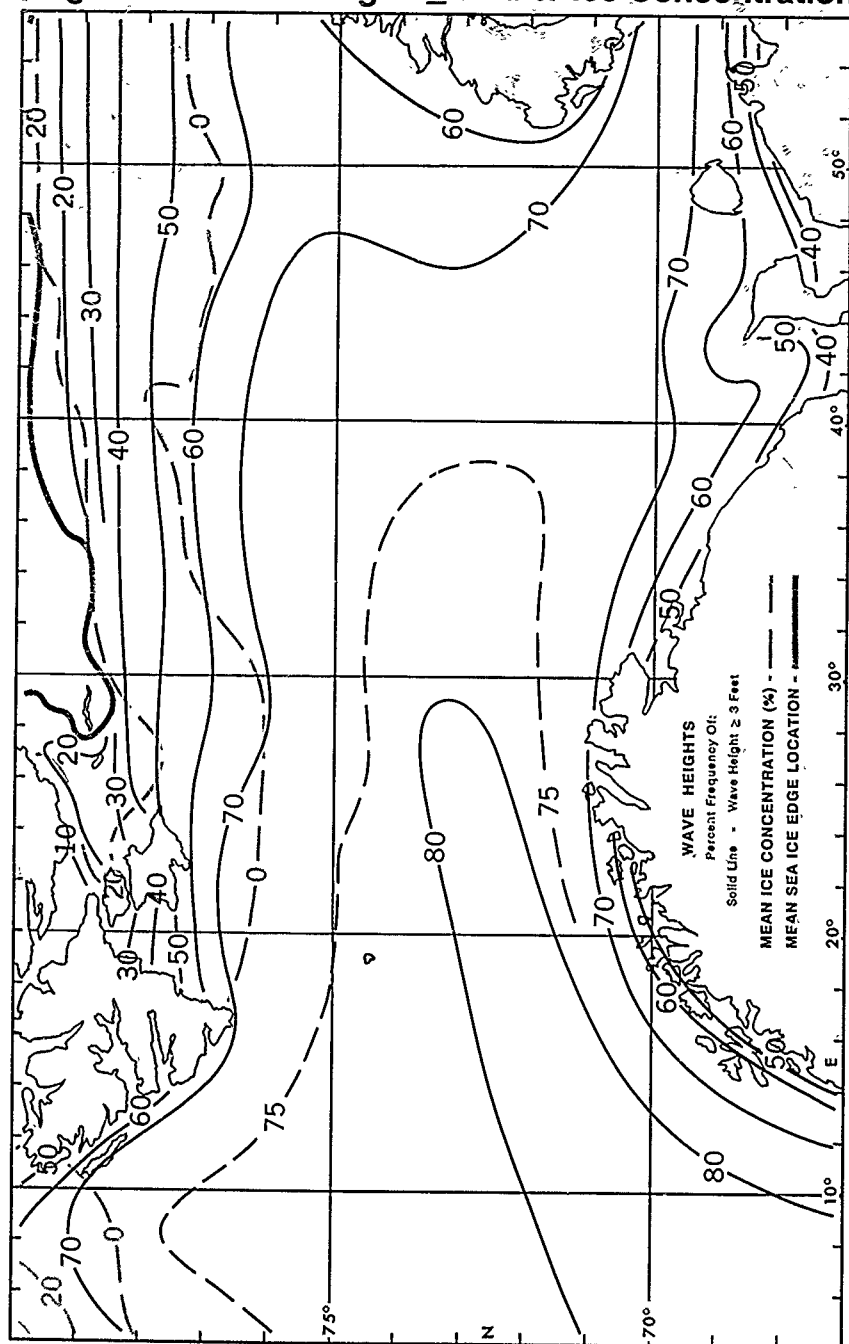
Mean Sea Temperature & Ice Edge



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

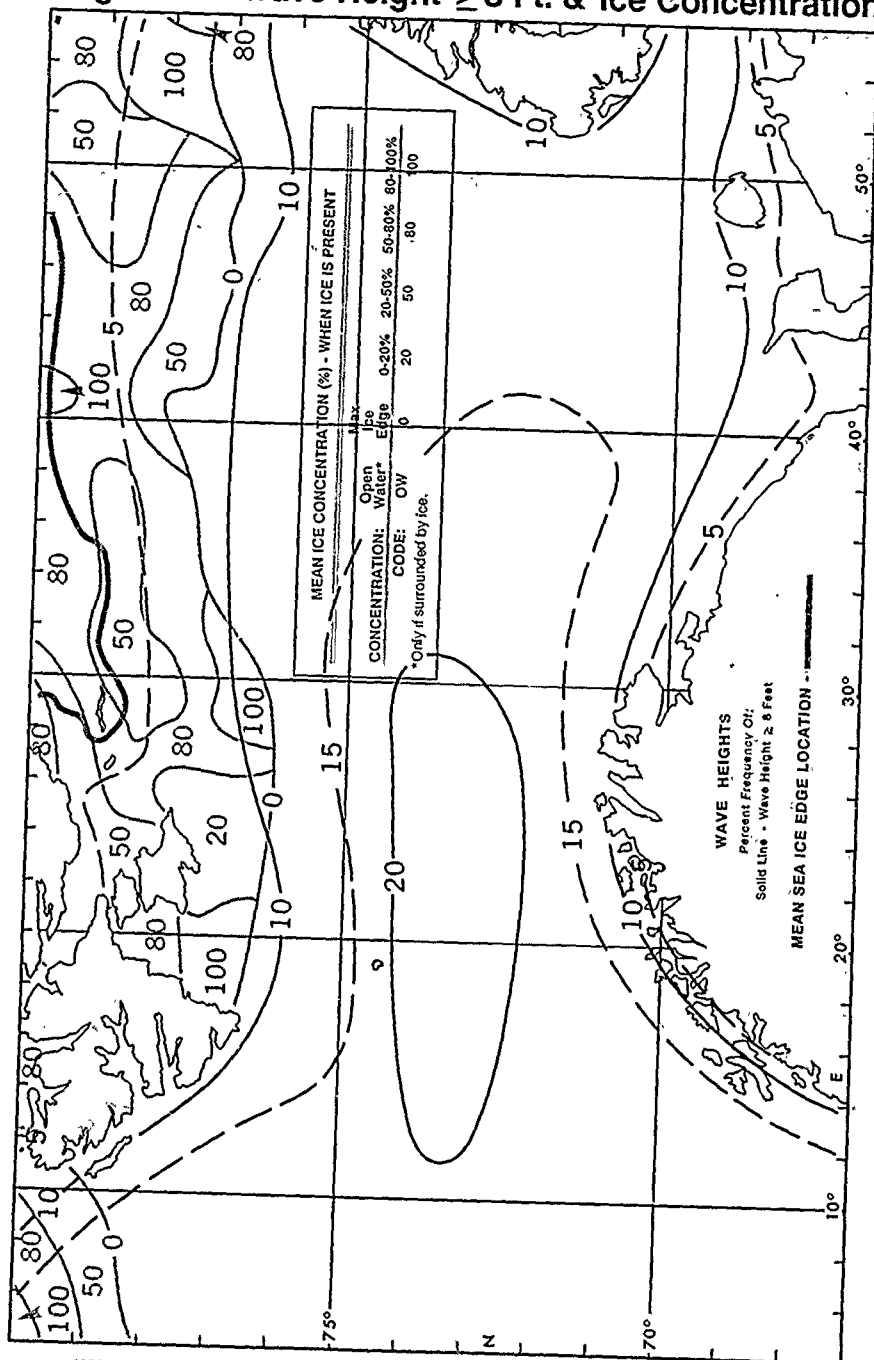
Wave Height ≥ 3 Ft. & Ice Concentration



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

August

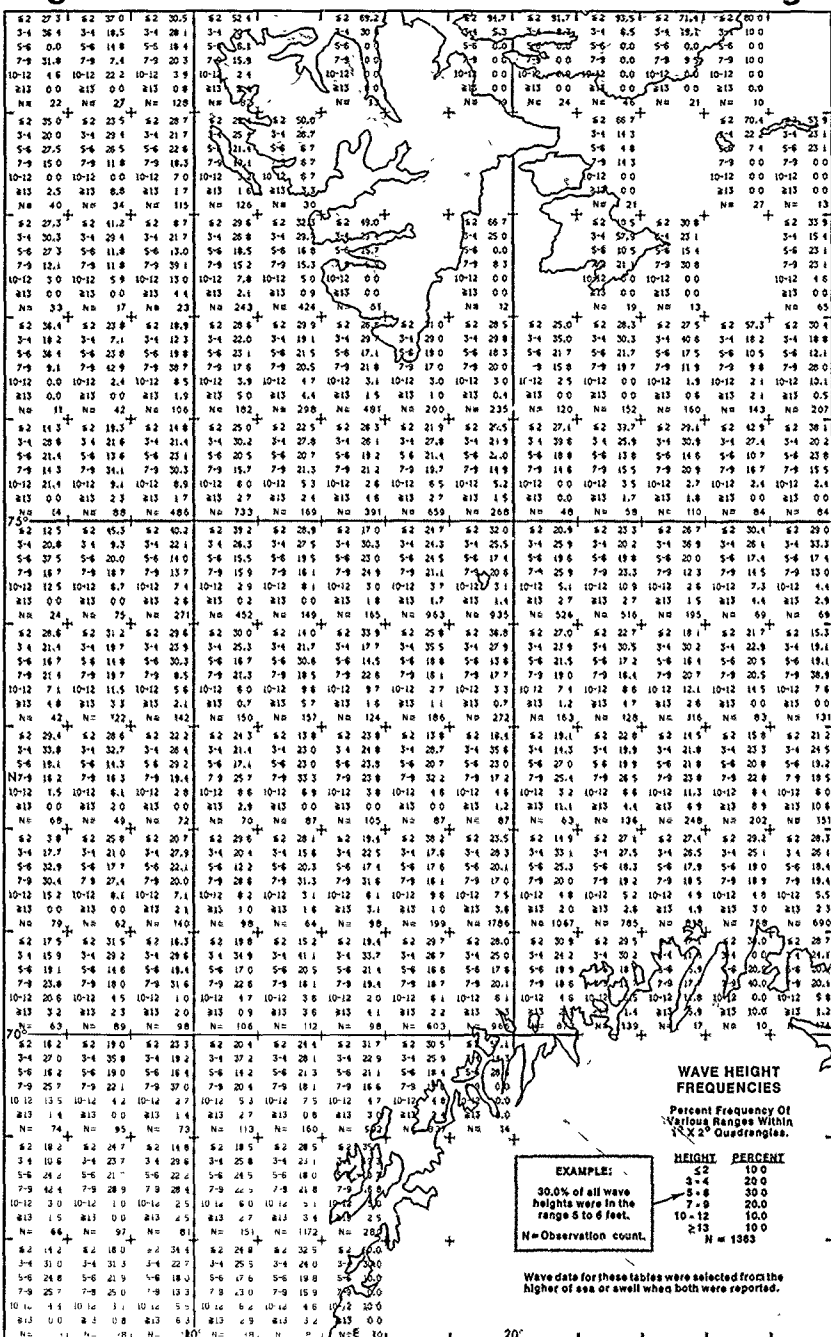
Wave Height ≥ 8 Ft. & Ice Concentration



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

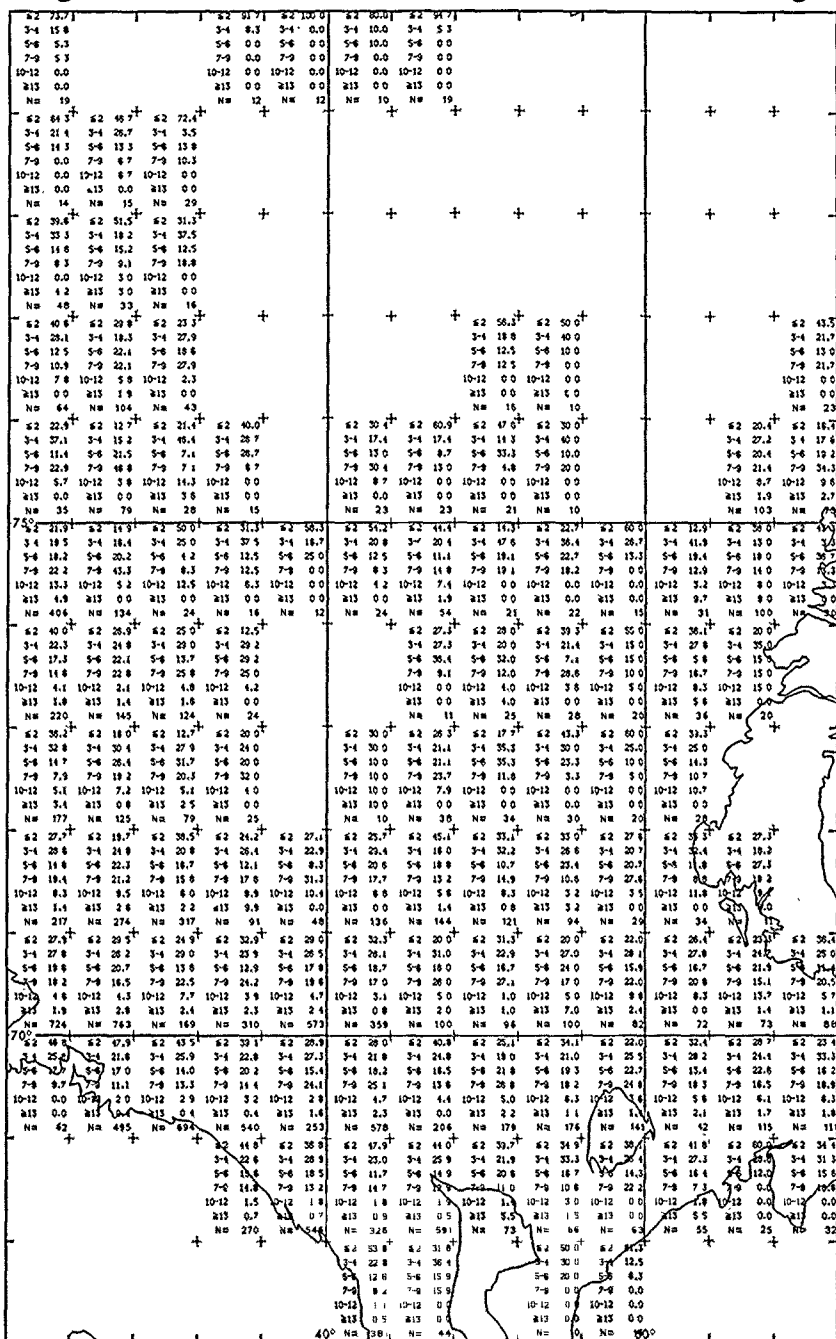
August

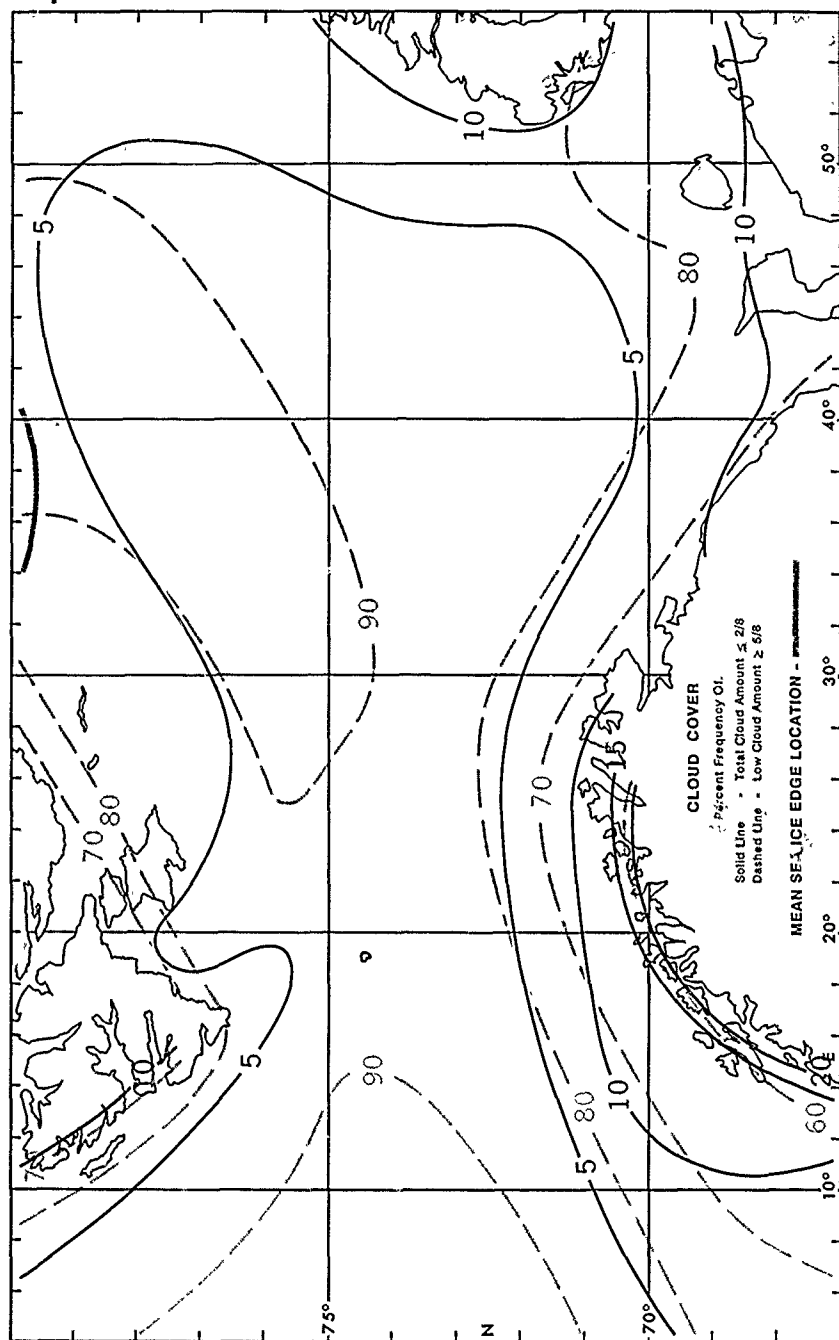
Wave Height



August

Wave Height

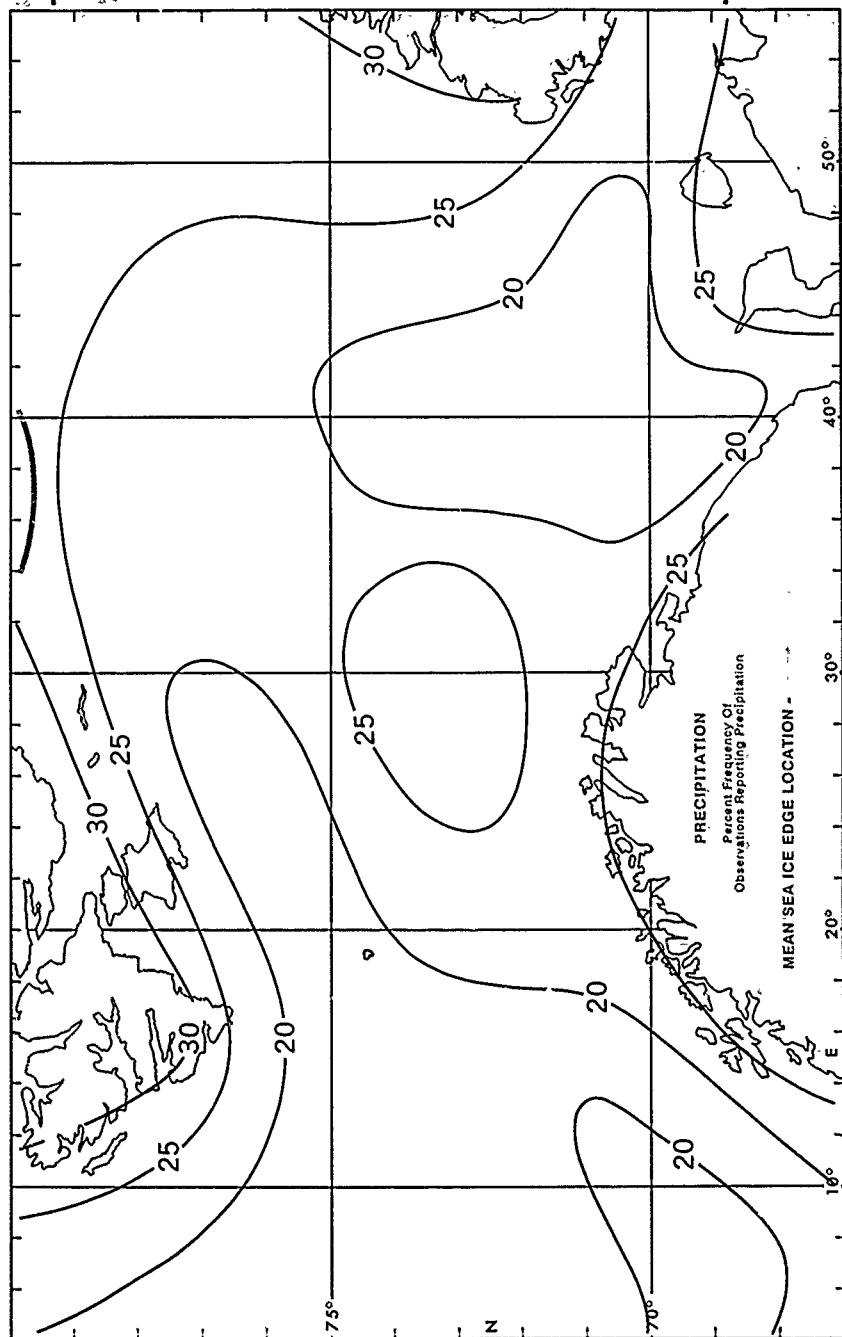




NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

September

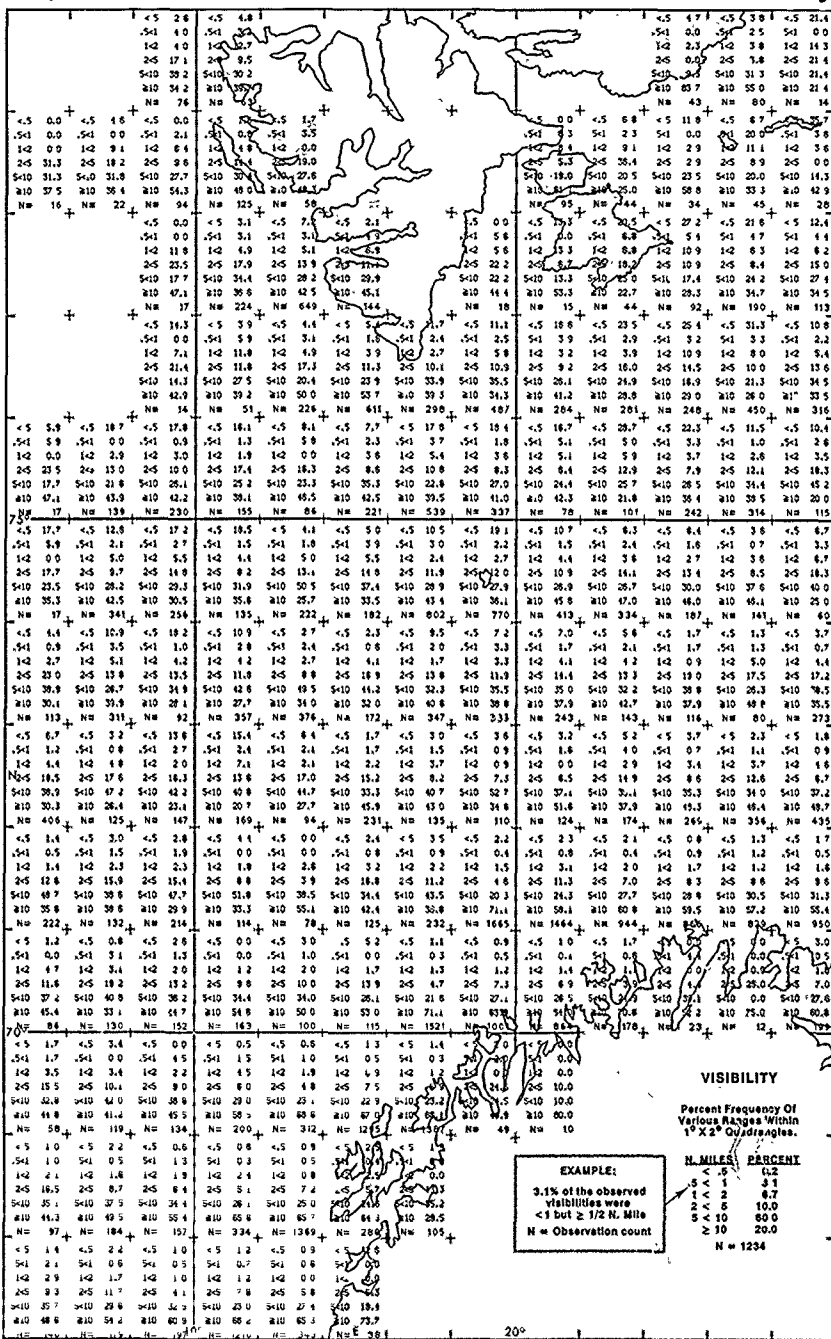
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

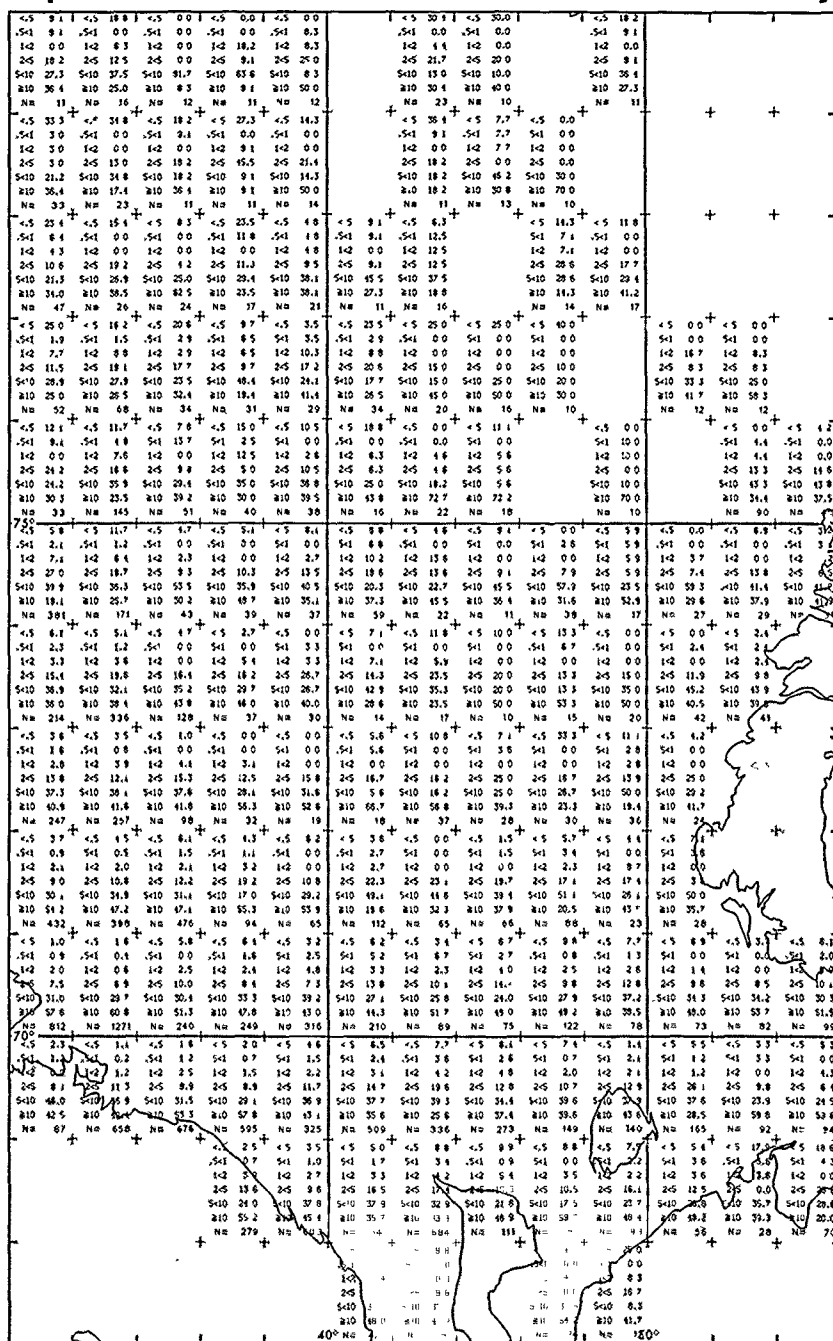
September

Visibility



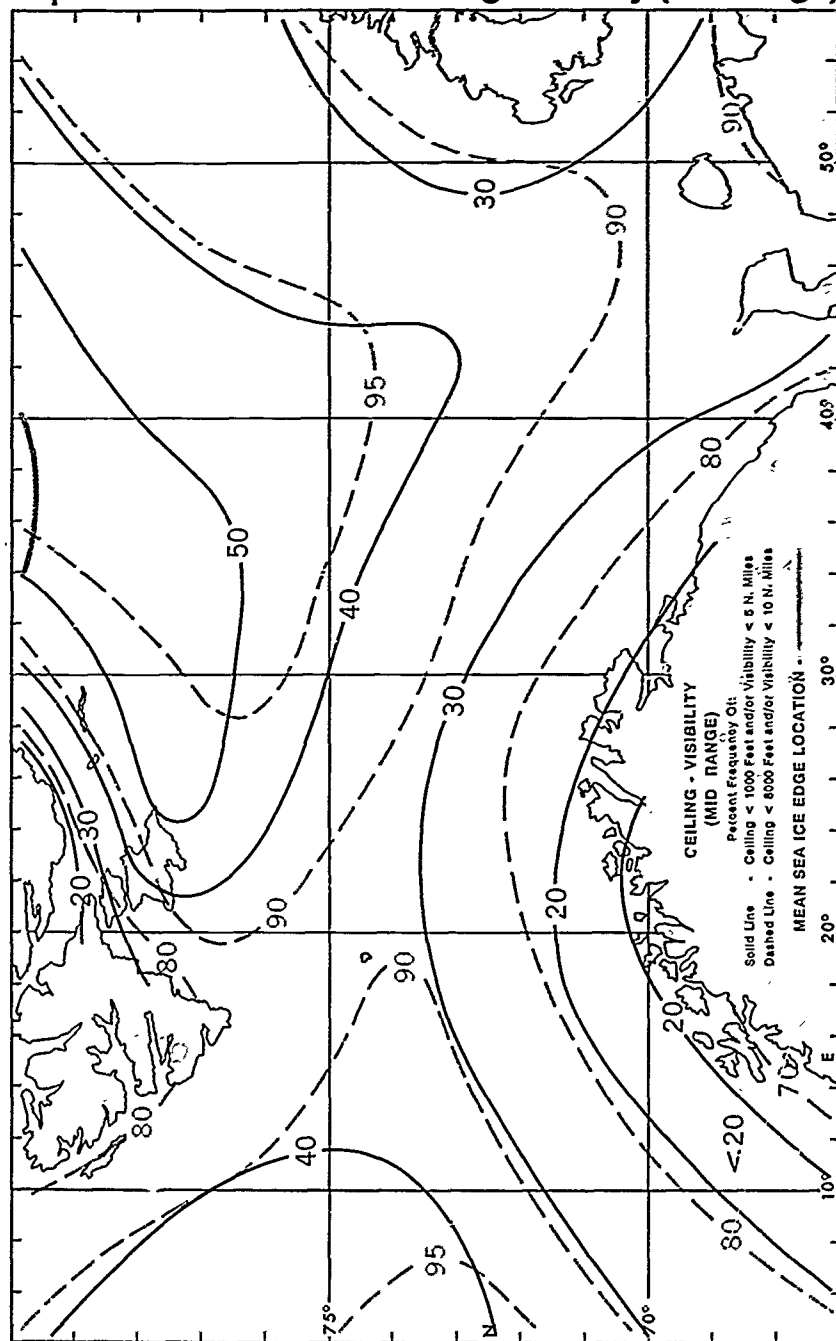
September

Visibility



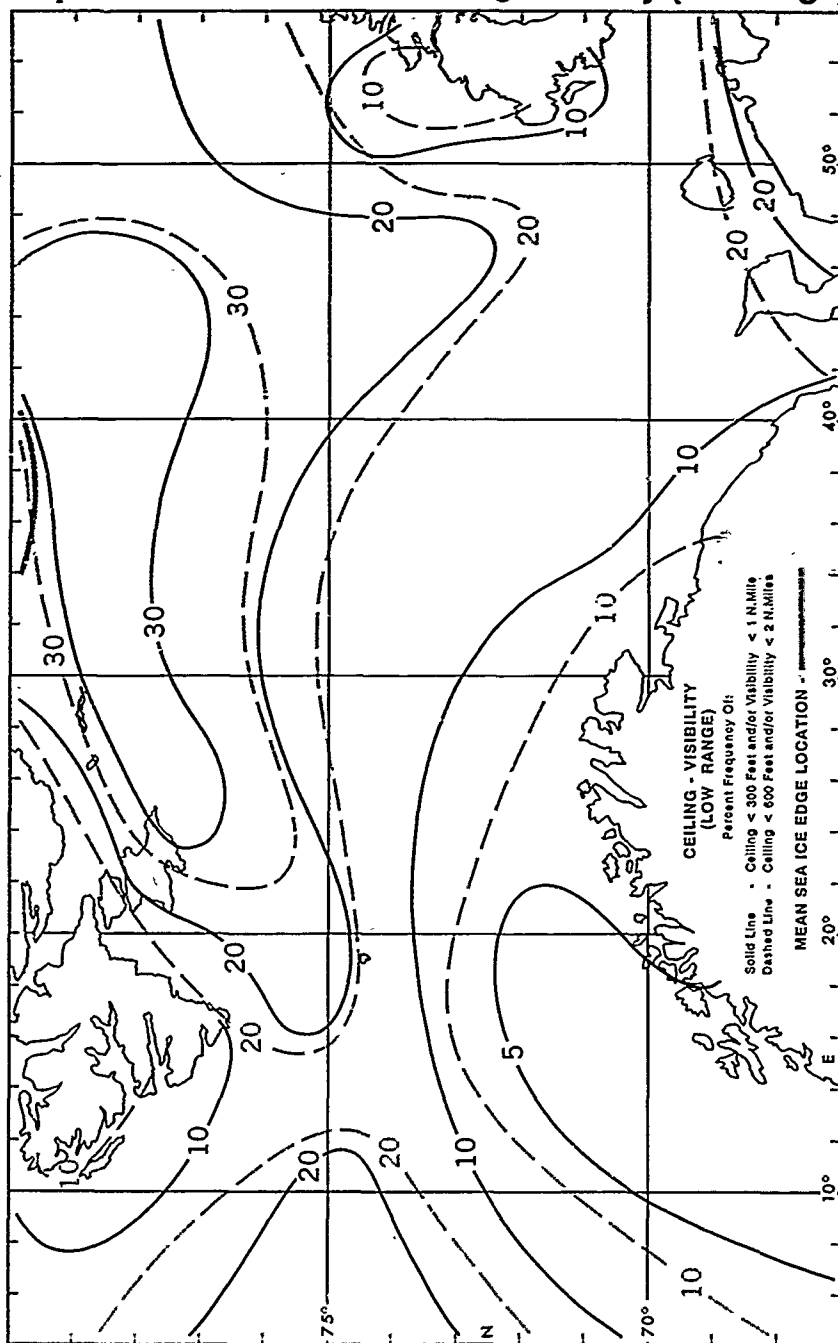
September

Ceiling-Visibility (mid range)



September

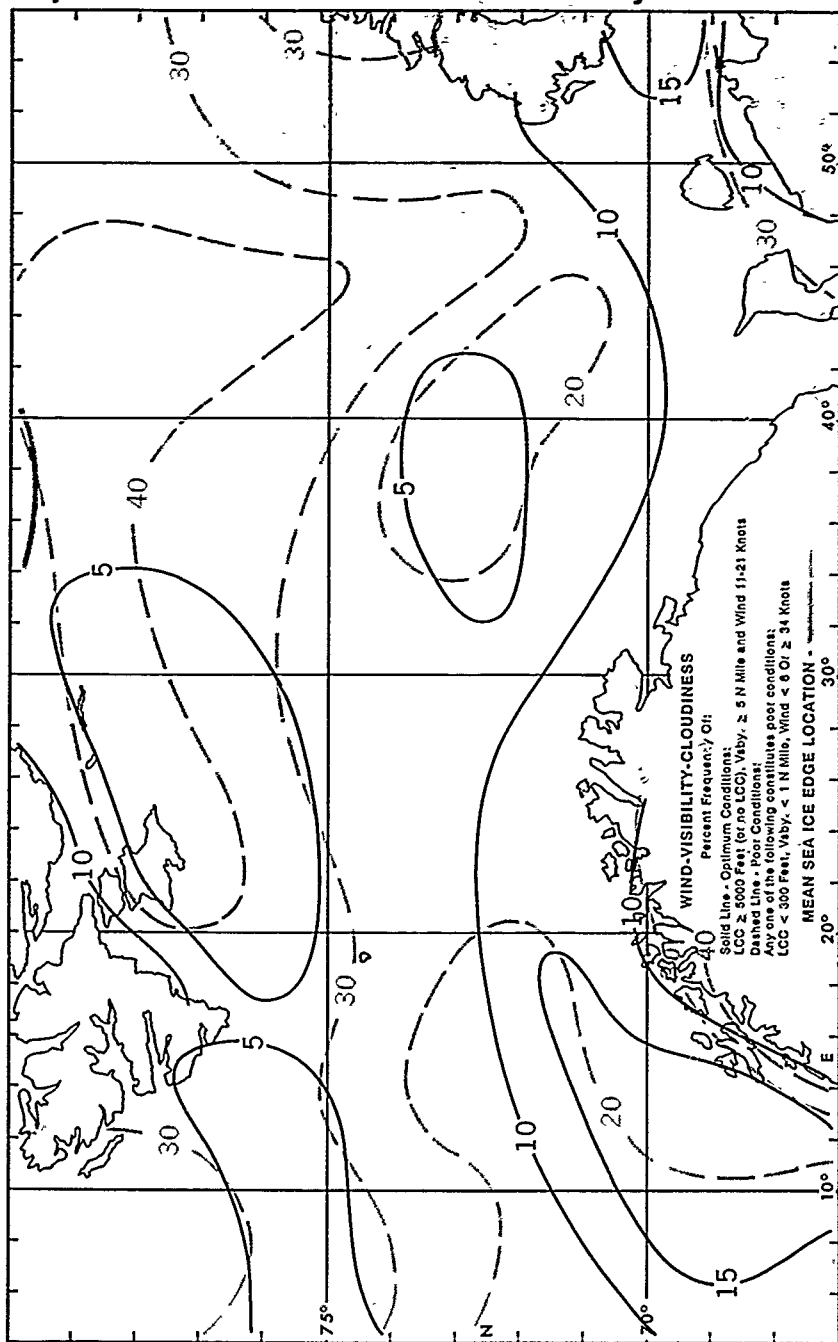
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

September

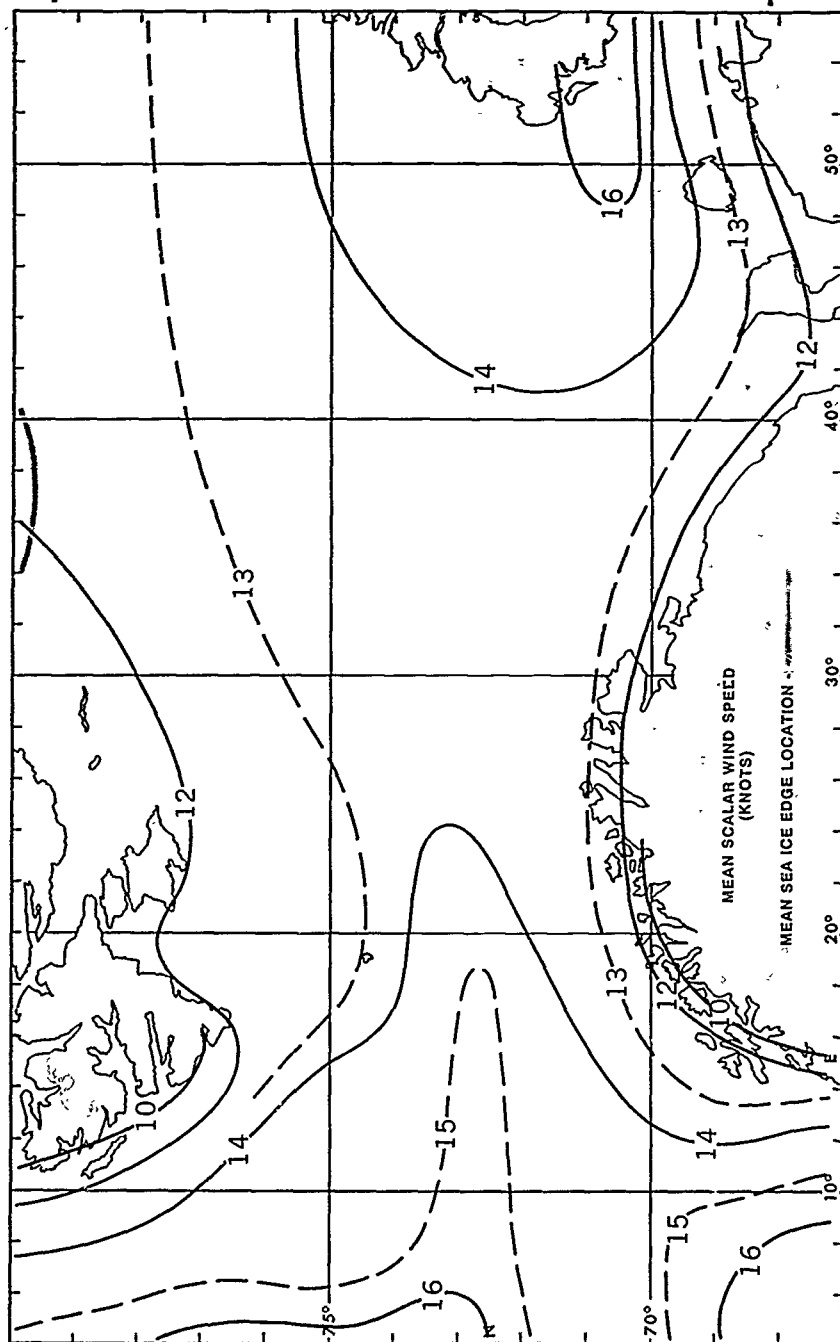
Wind-Visibility-Cloudiness



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

September

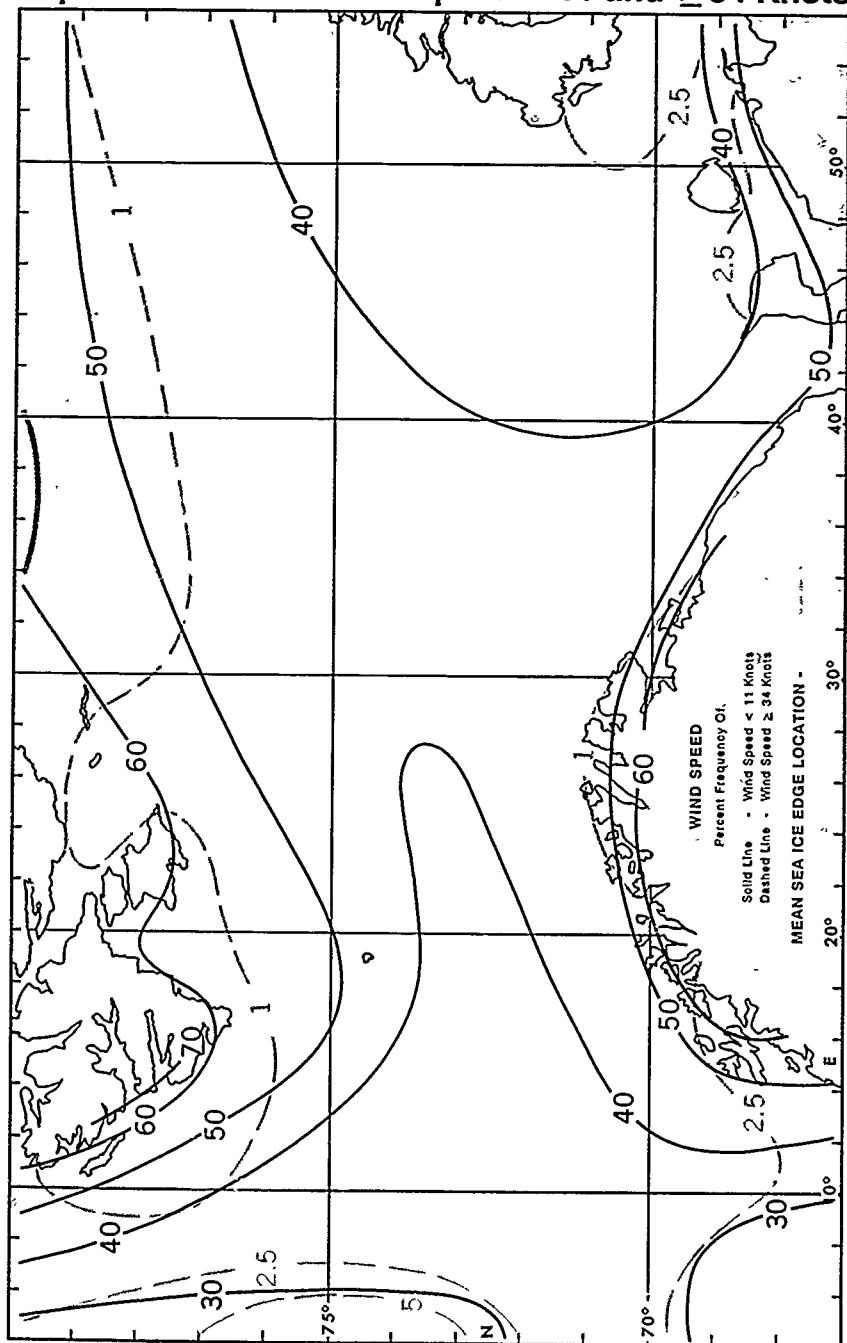
Mean Scalar Wind Speed



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

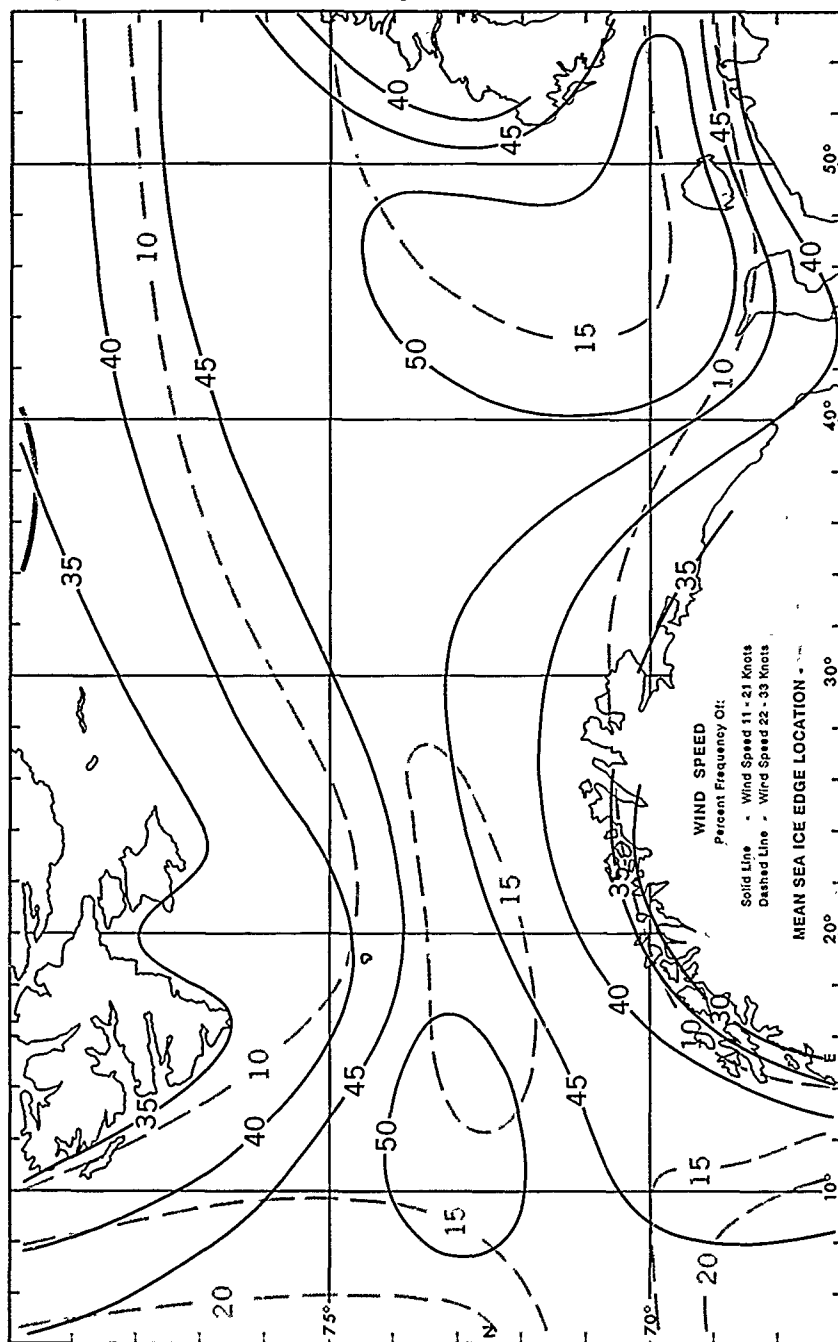
September

Wind Speed < 11 and ≥ 34 Knots

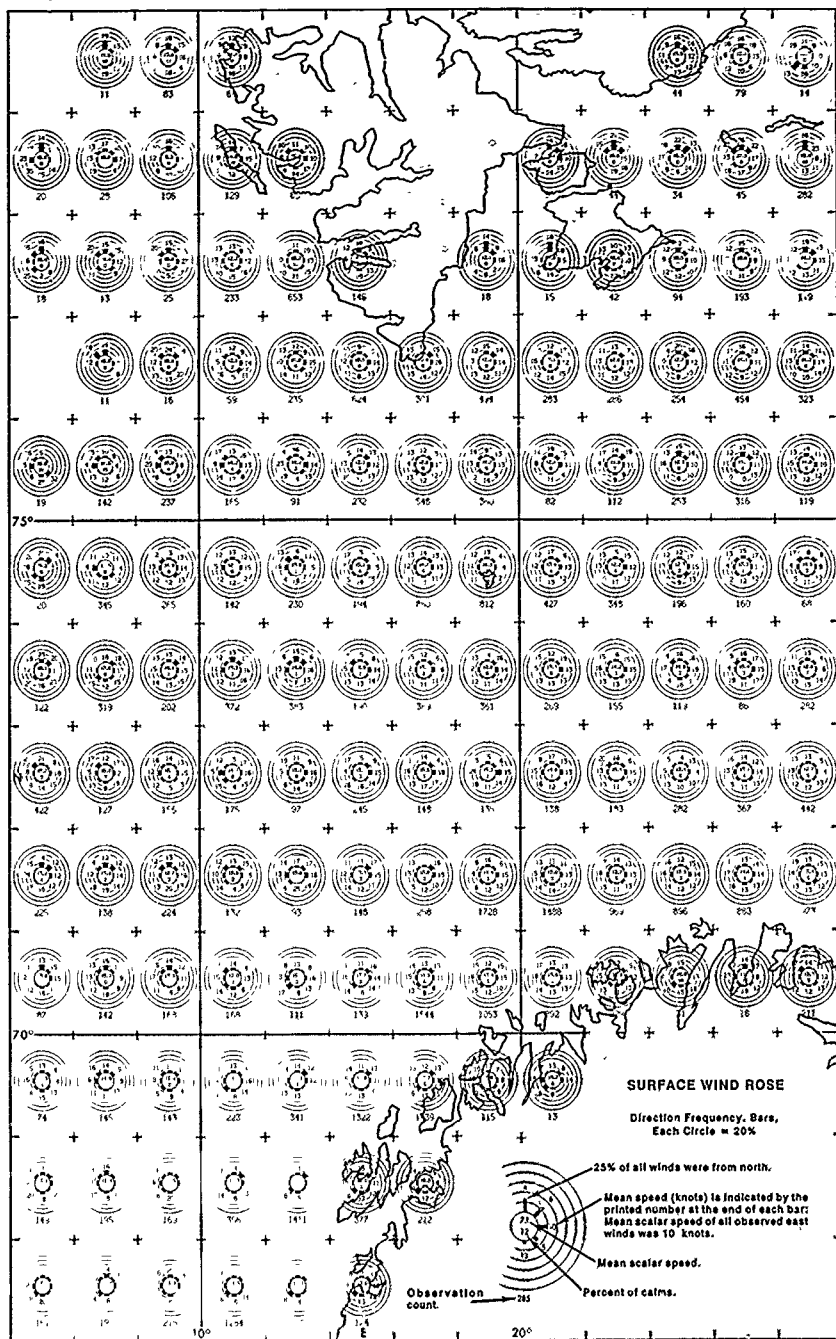


September

Wind Speed 11-21 and 22-33 Knots

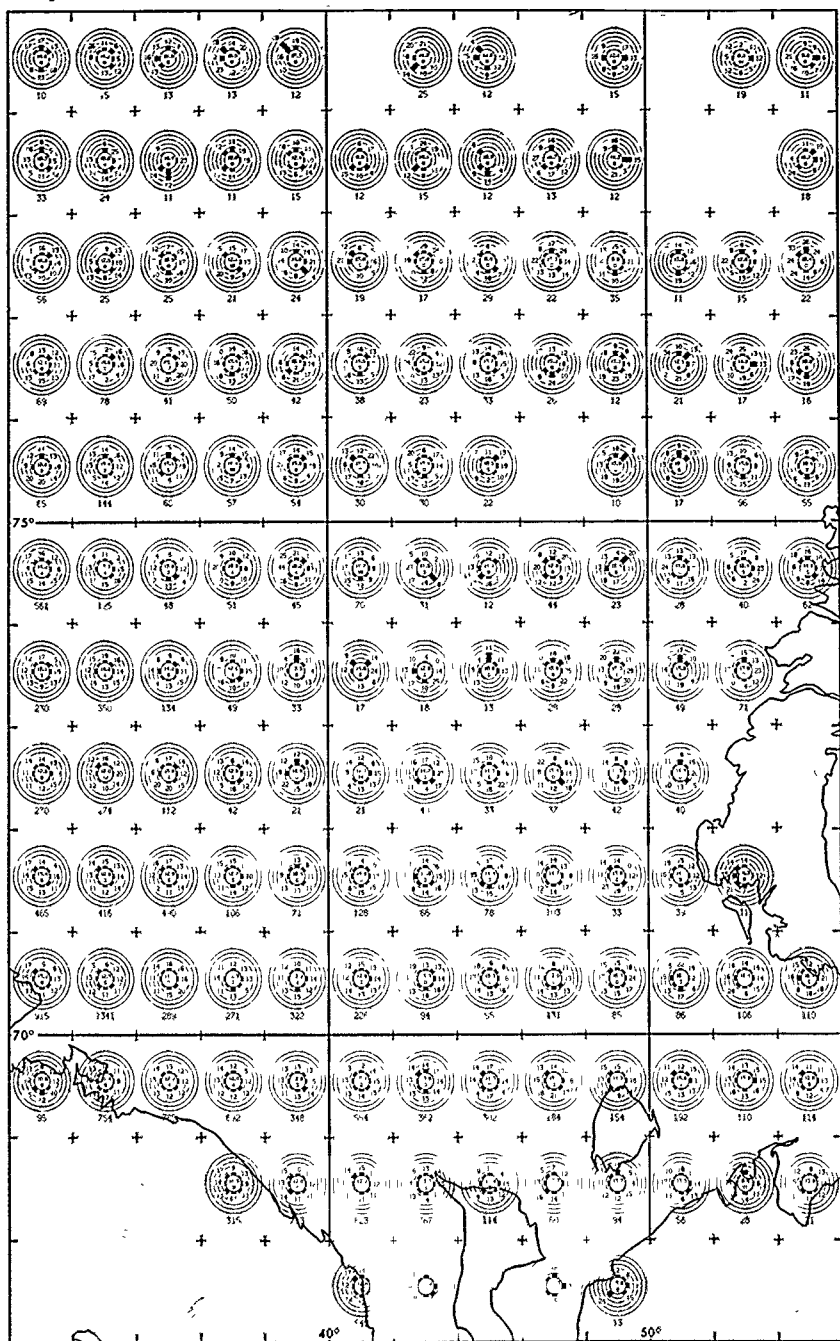


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



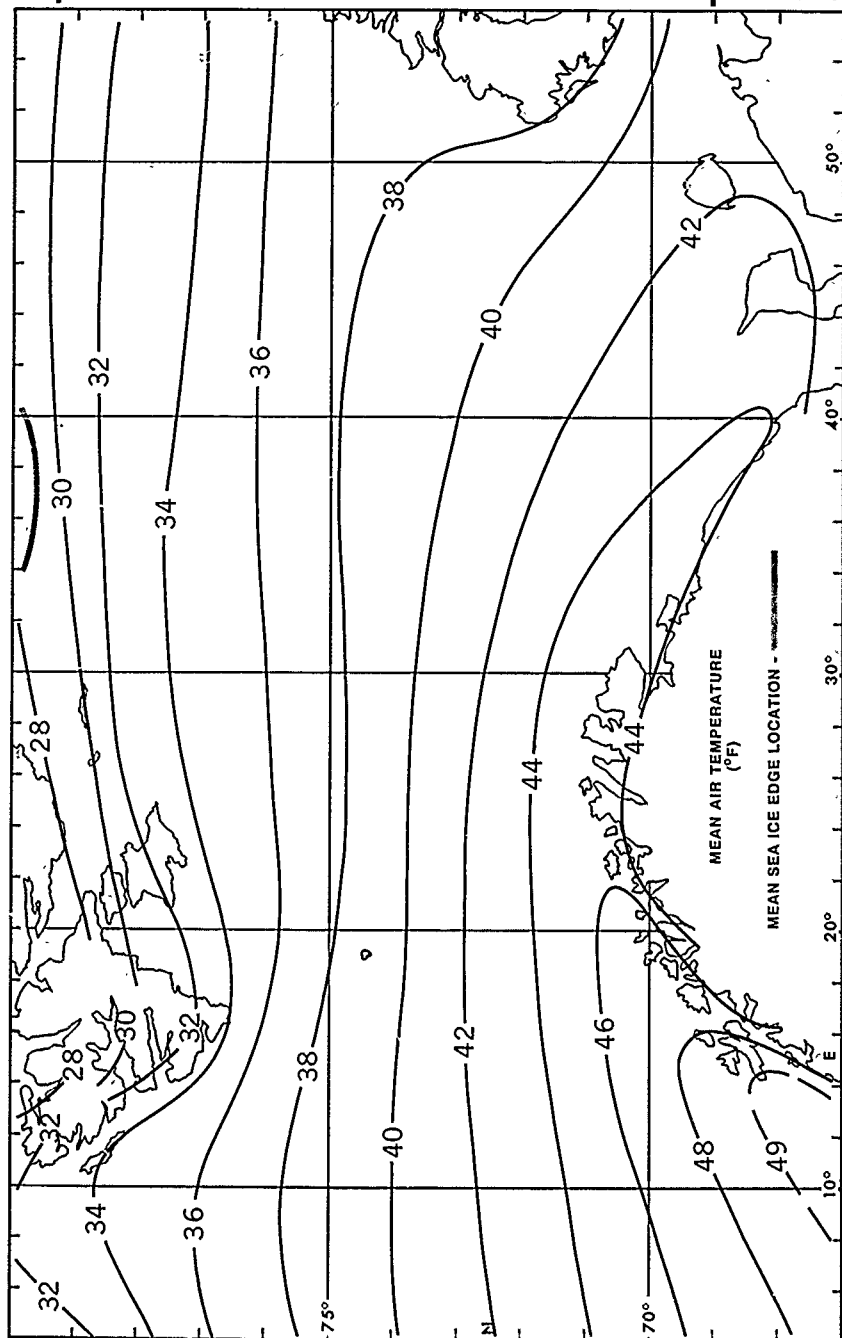
September

Surface Wind Roses



September

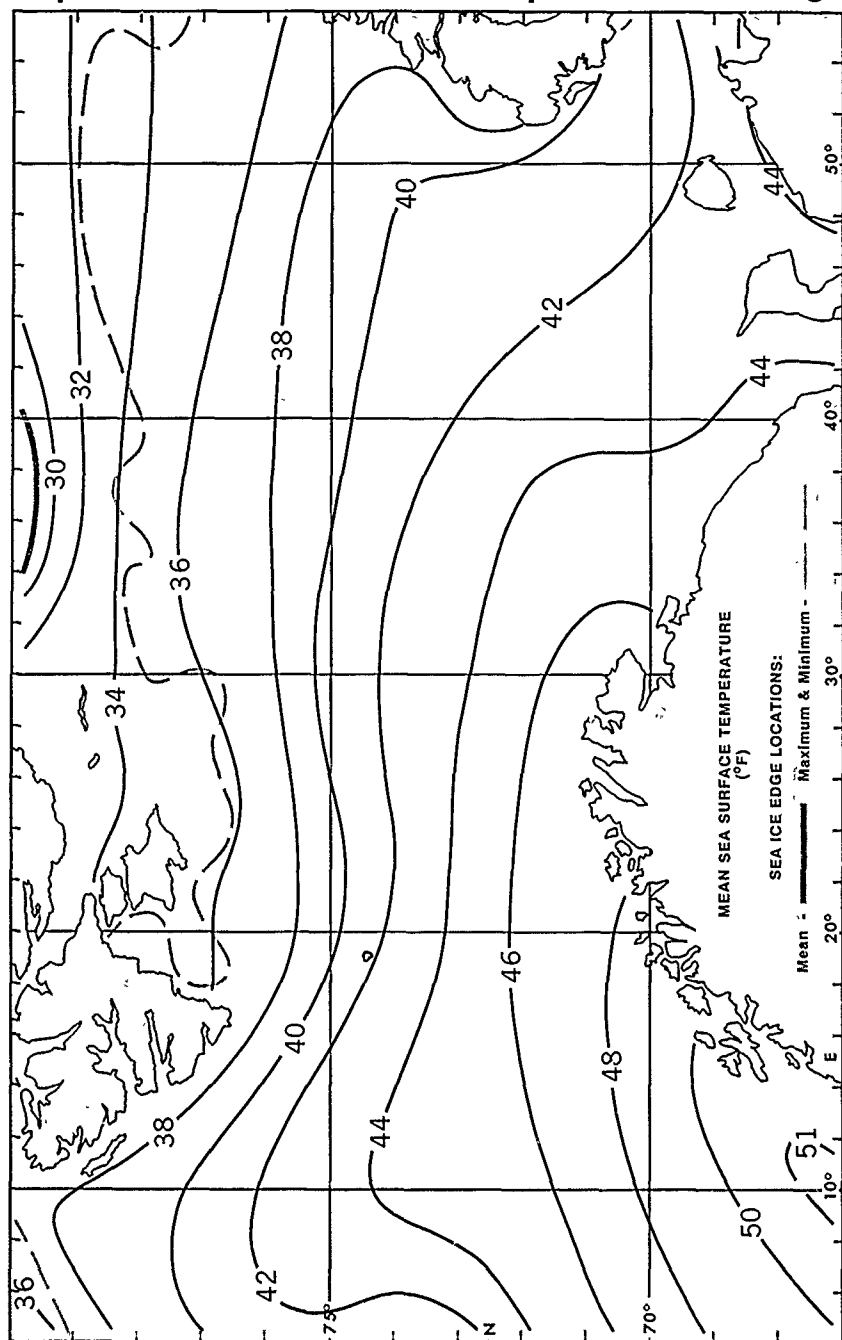
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

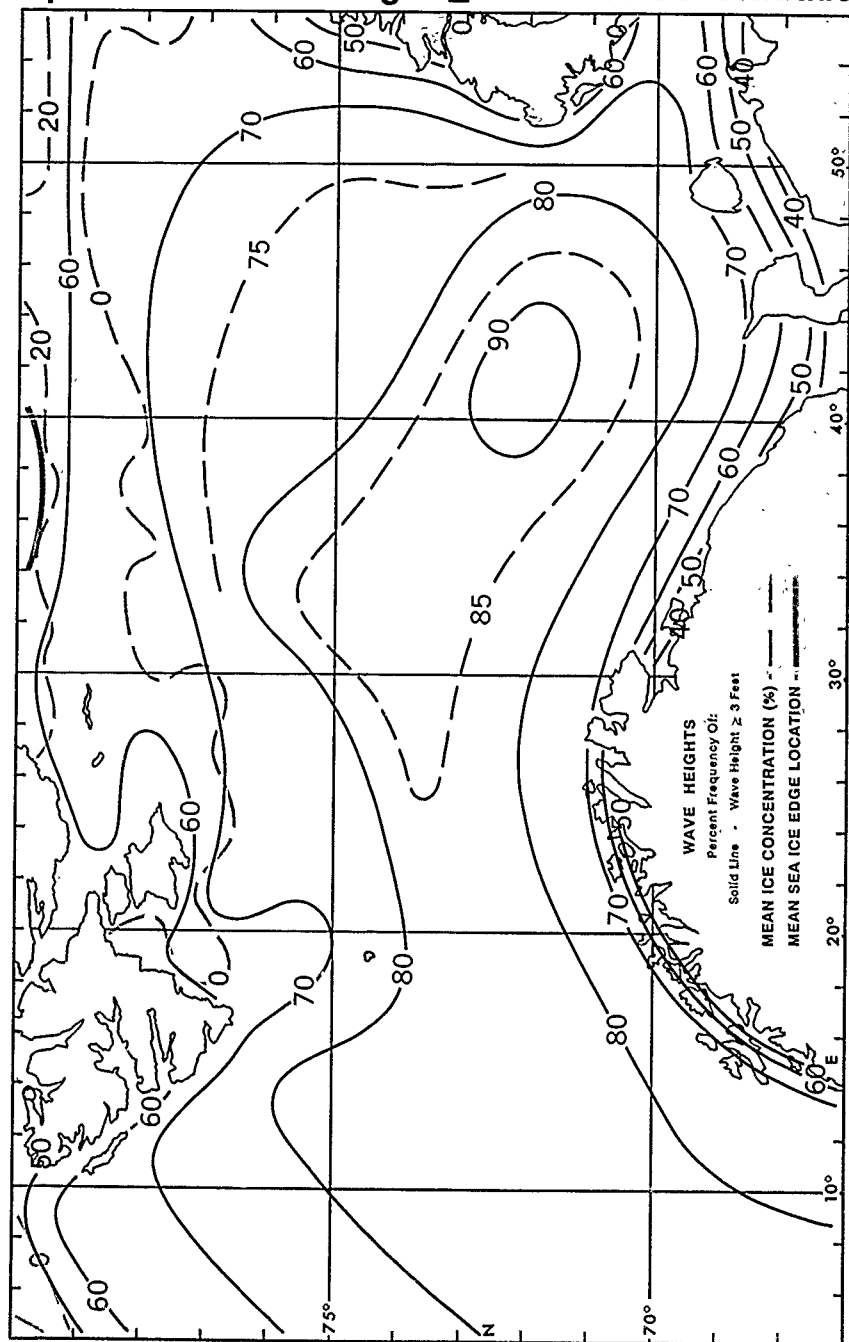
September

Mean Sea Temperature & Ice Edge



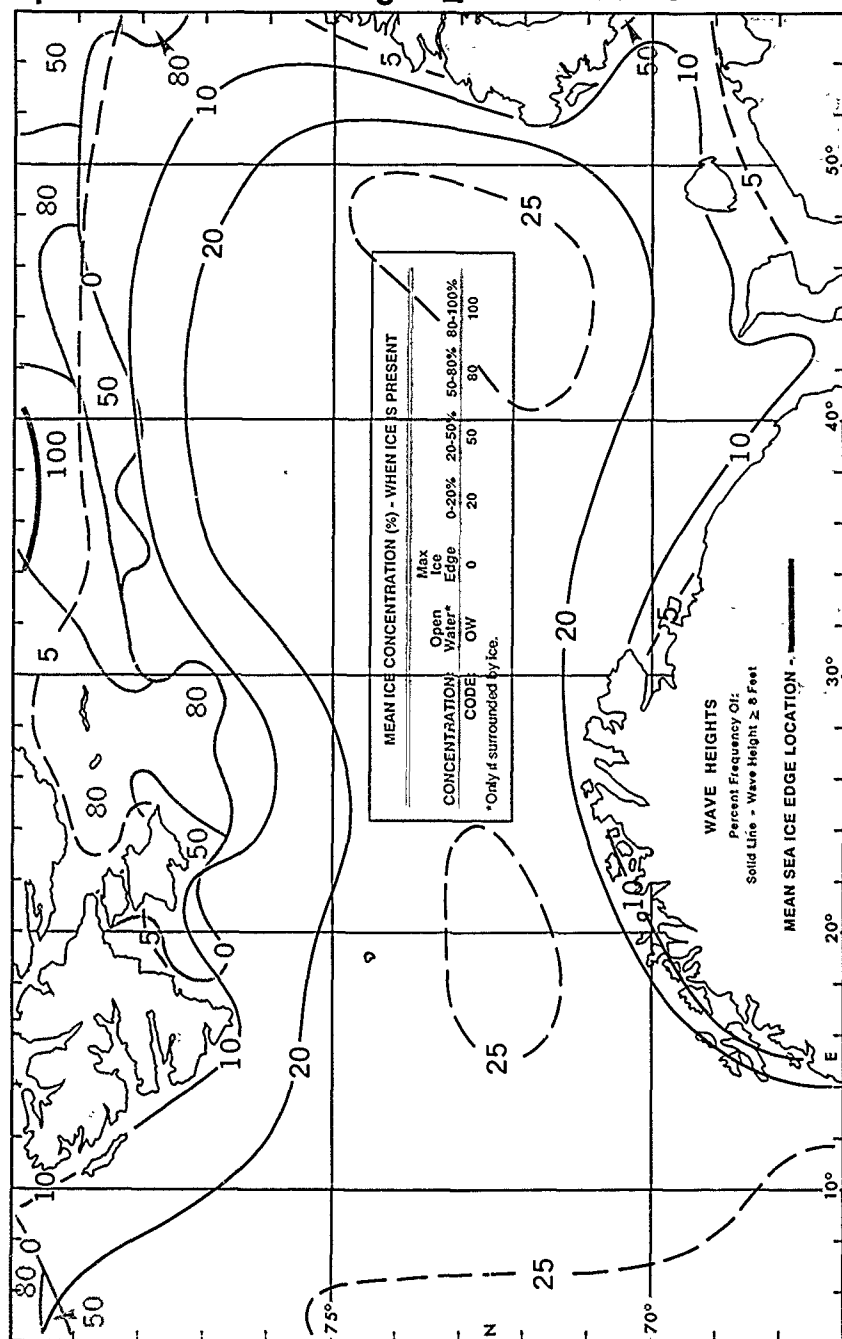
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

September Wave Height ≥ 3 Ft. & Ice Concentration

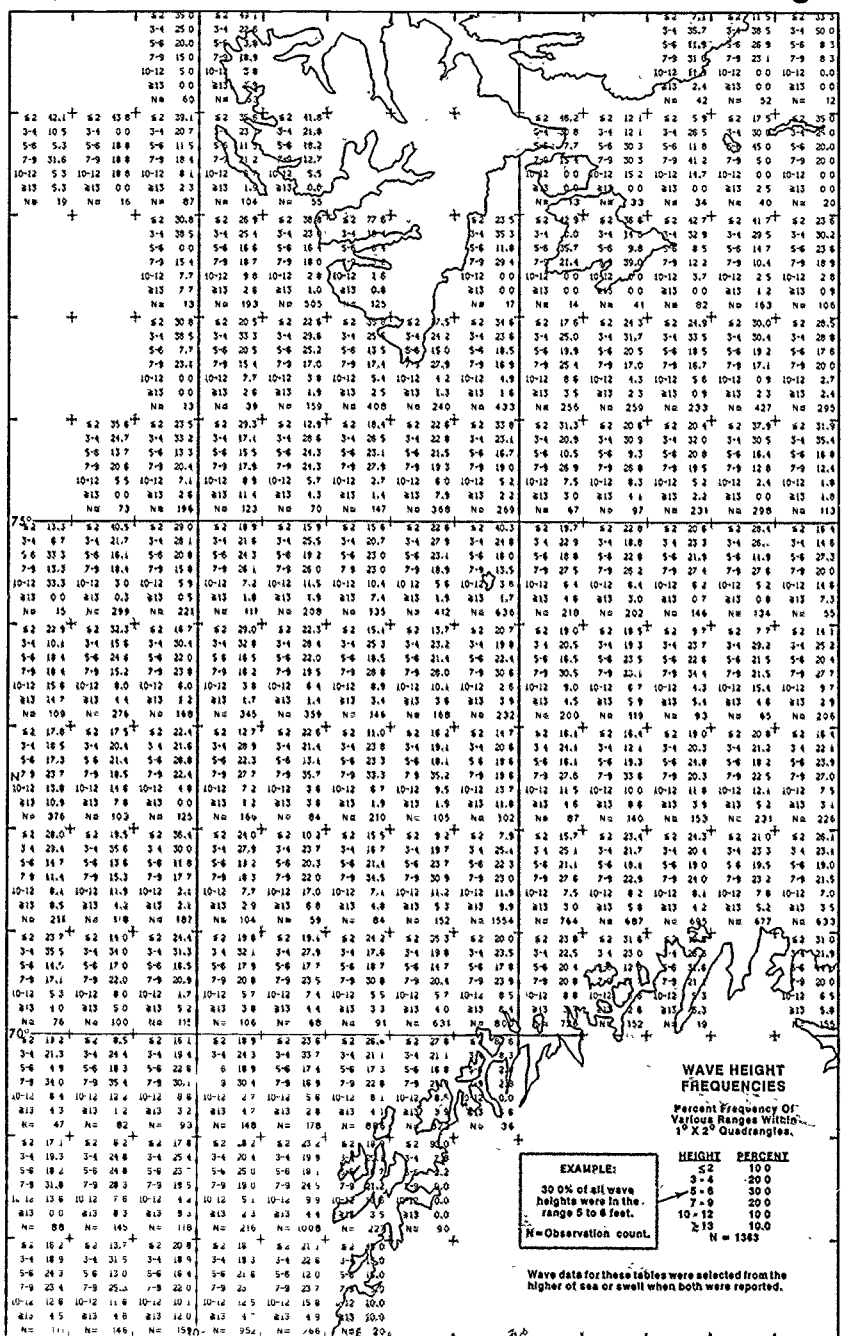


NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

September Wave Height ≥ 8 Ft. & Ice Concentration

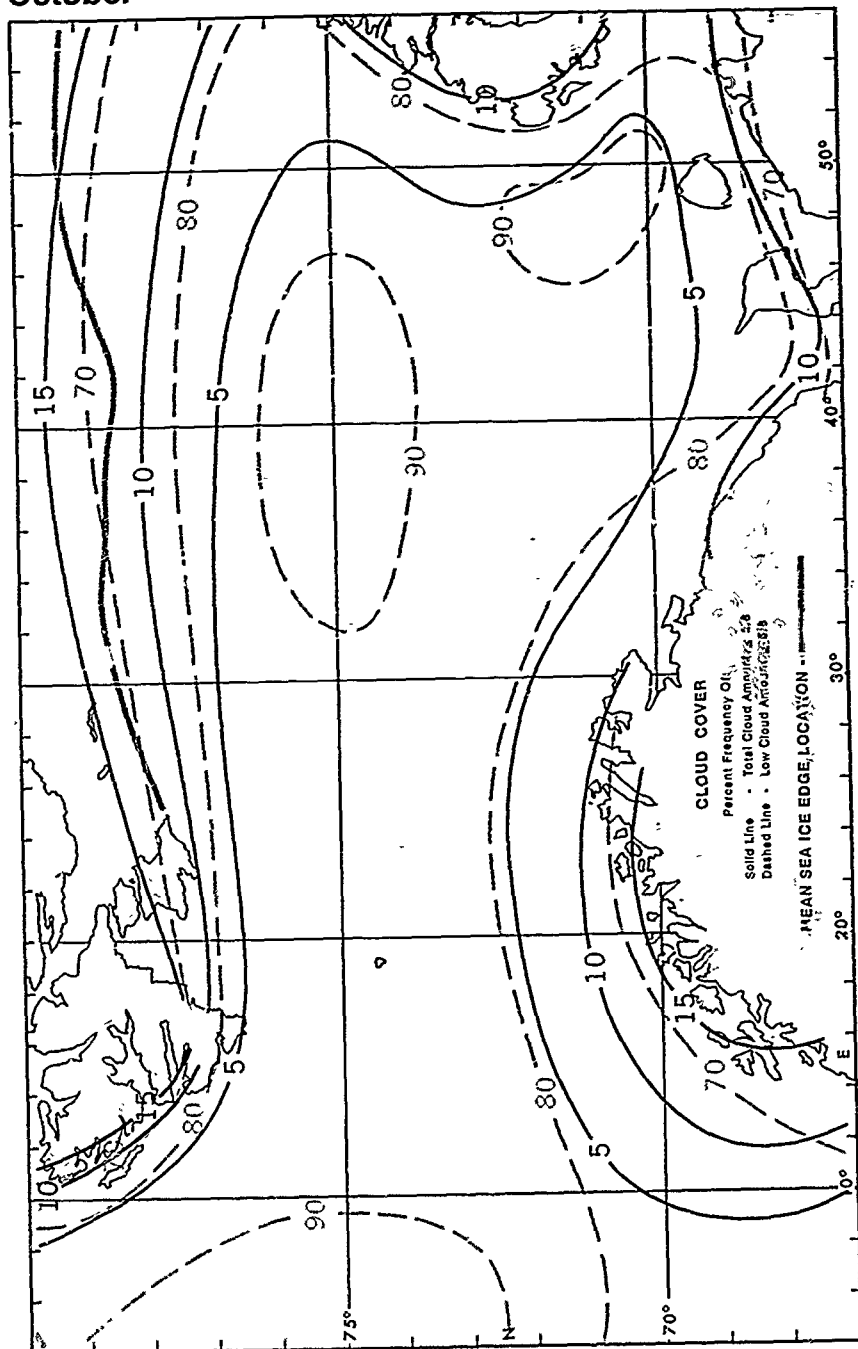


NOTE - Analysis beyond the mean ice edge is highly subjective due to low observation counts



October

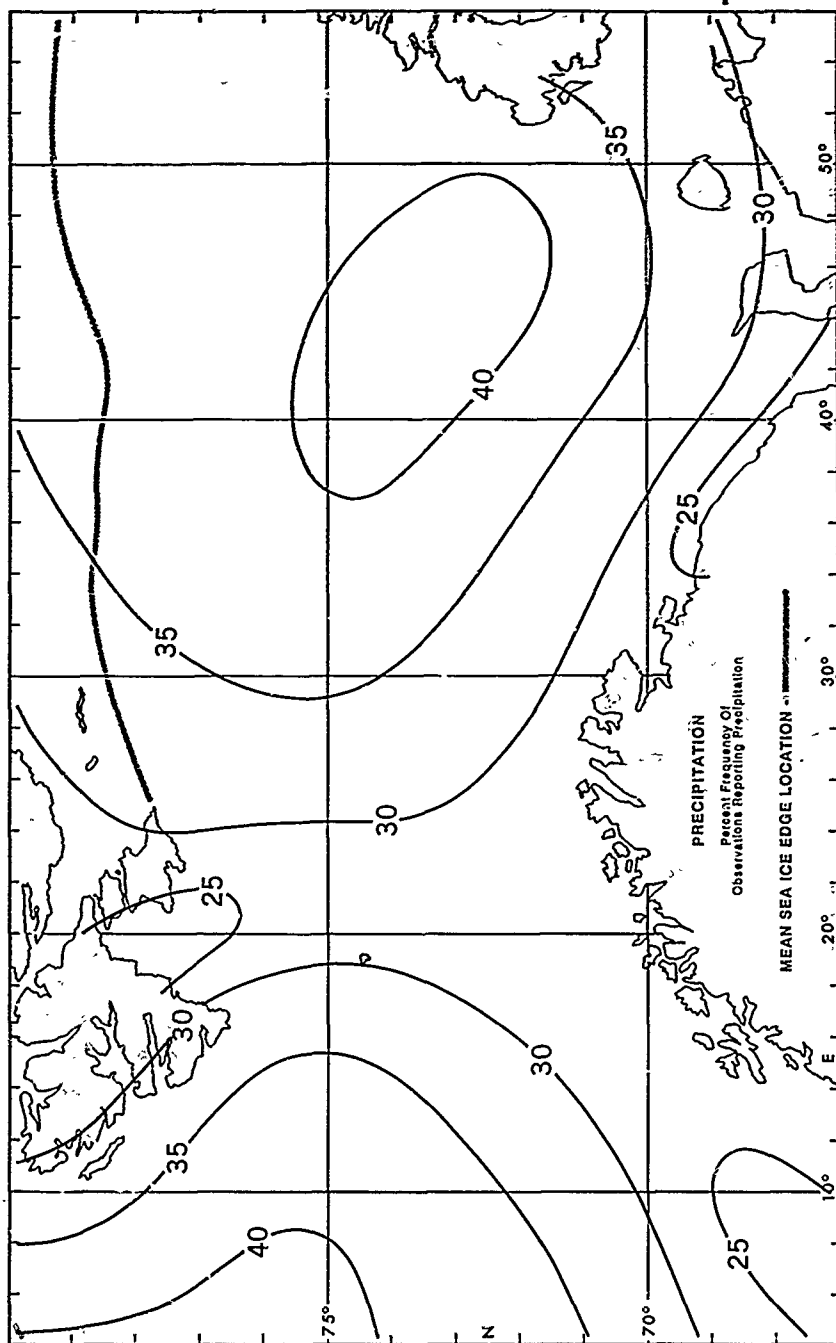
Clouds



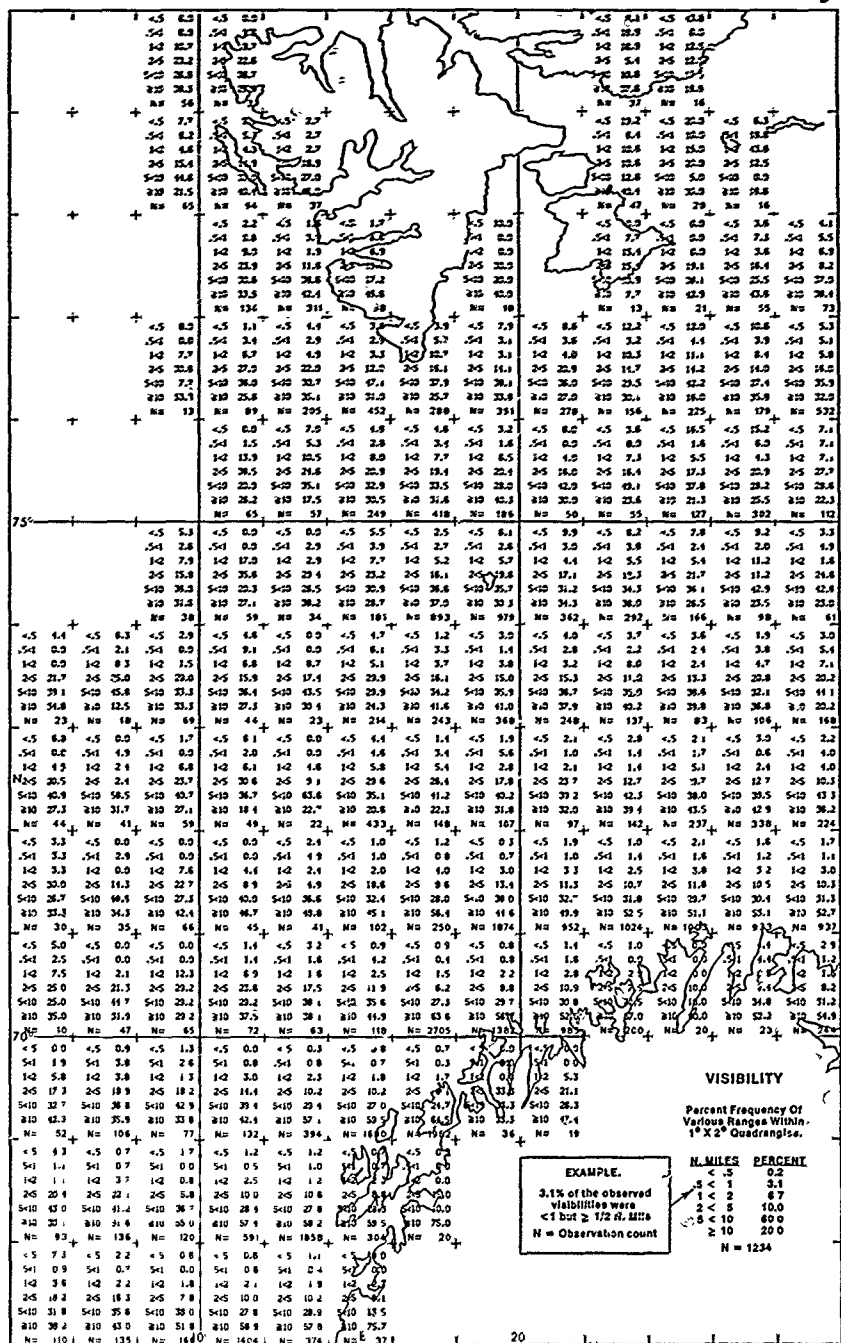
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

October

Precipitation

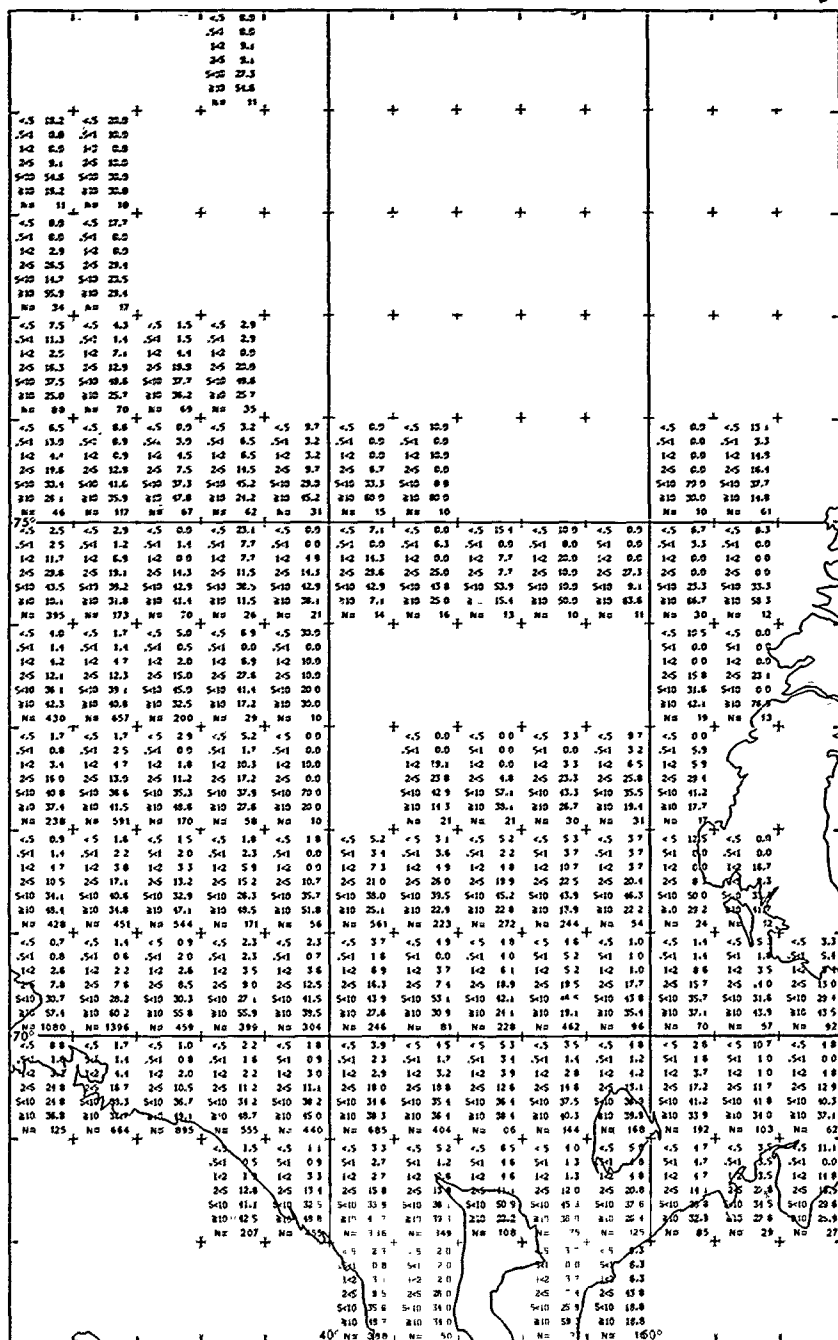


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.



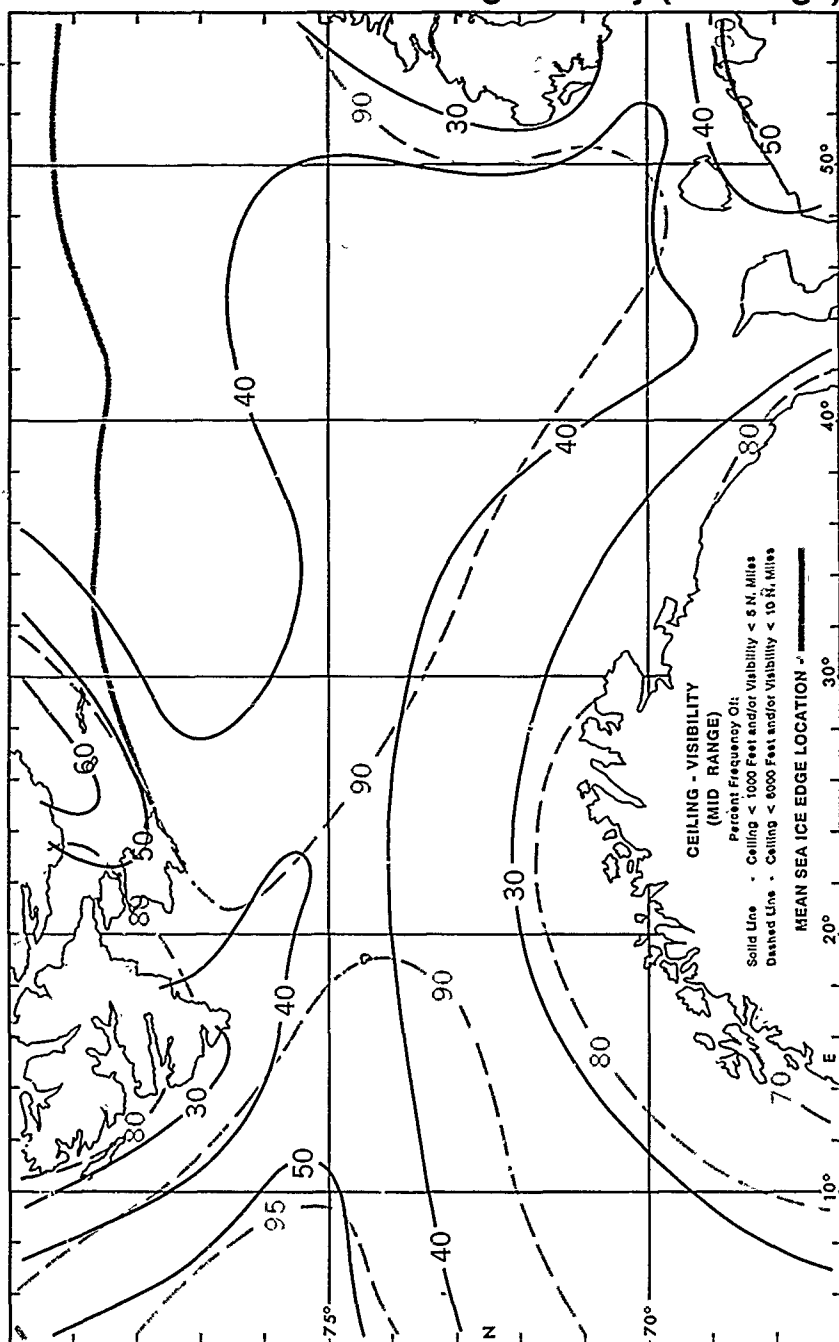
October

Visibility



October

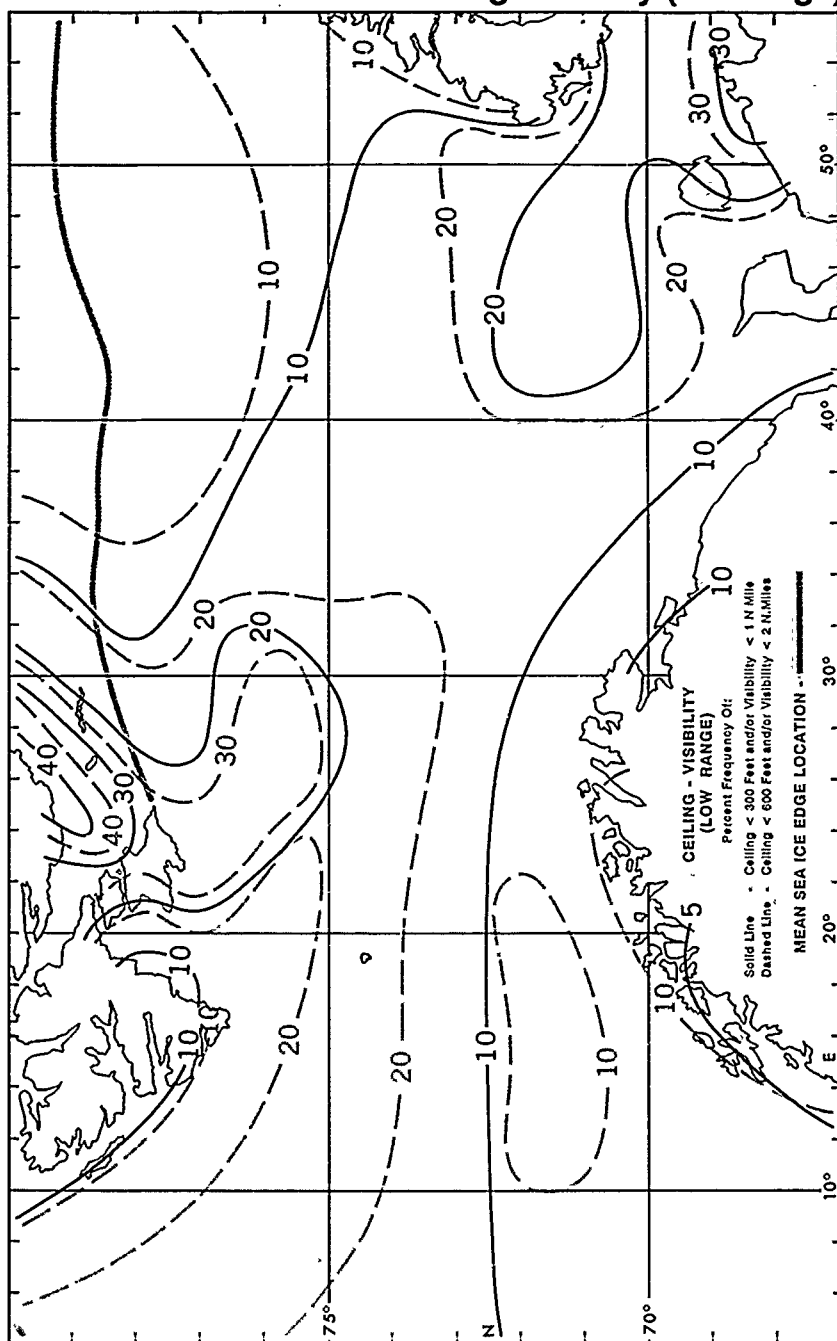
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

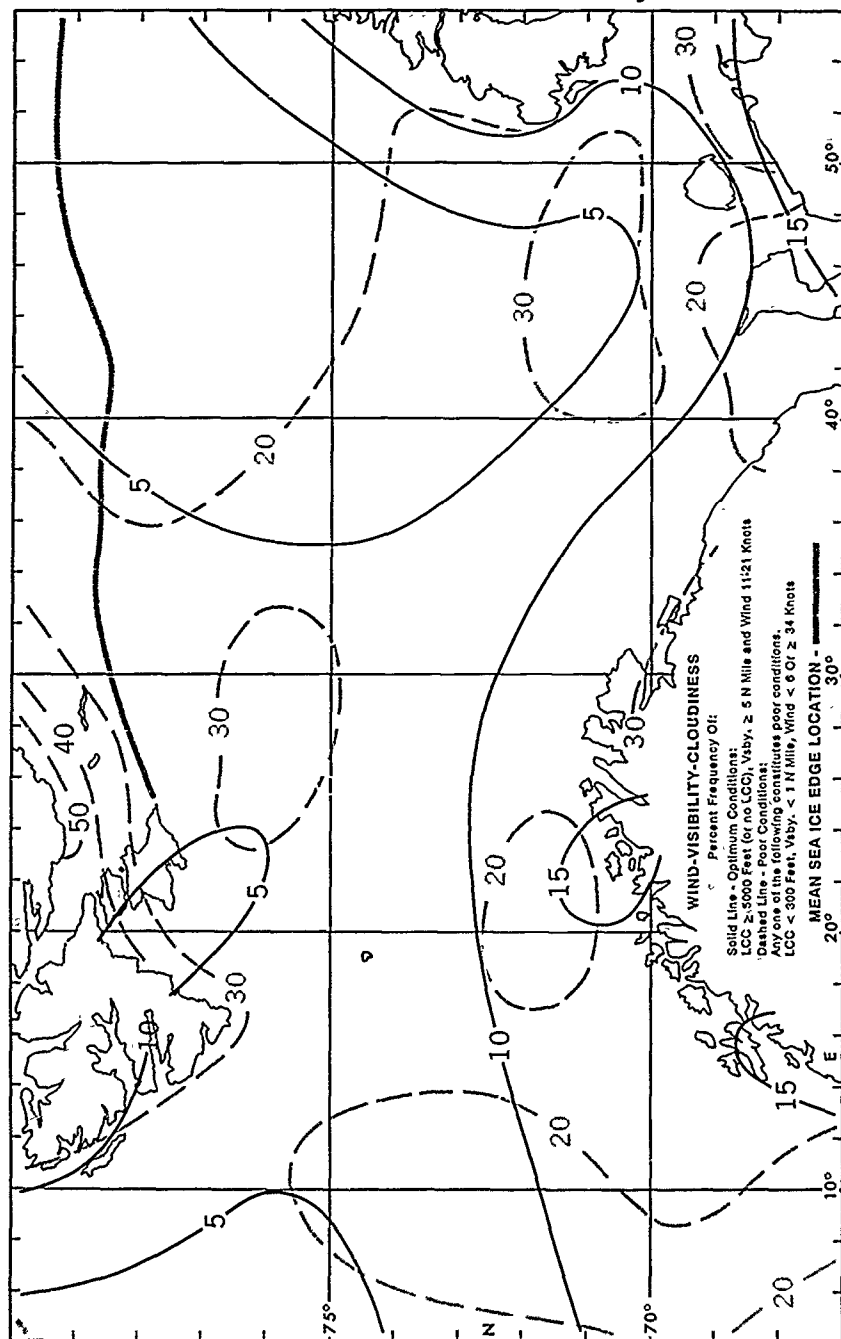
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

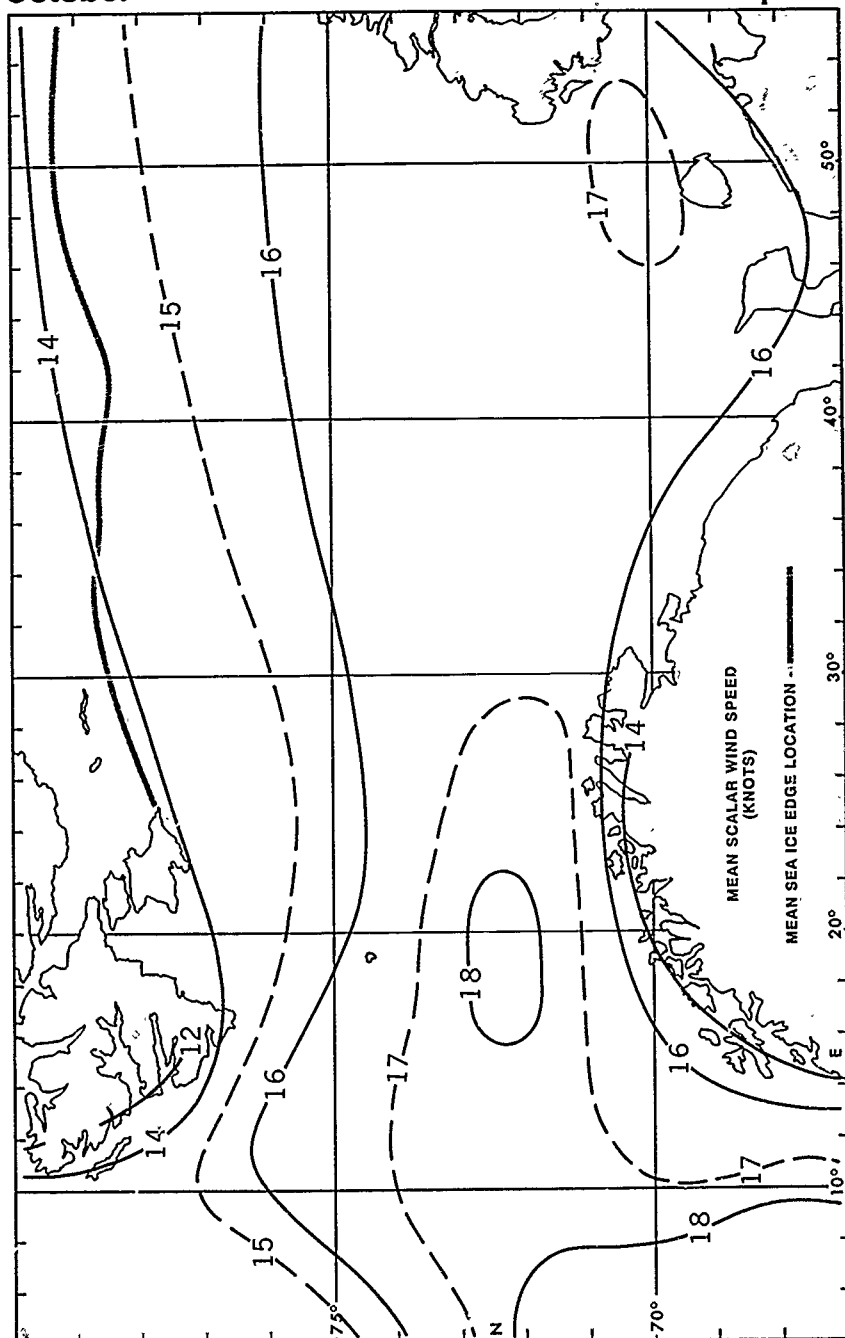
Wind-Visibility-Cloudiness



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

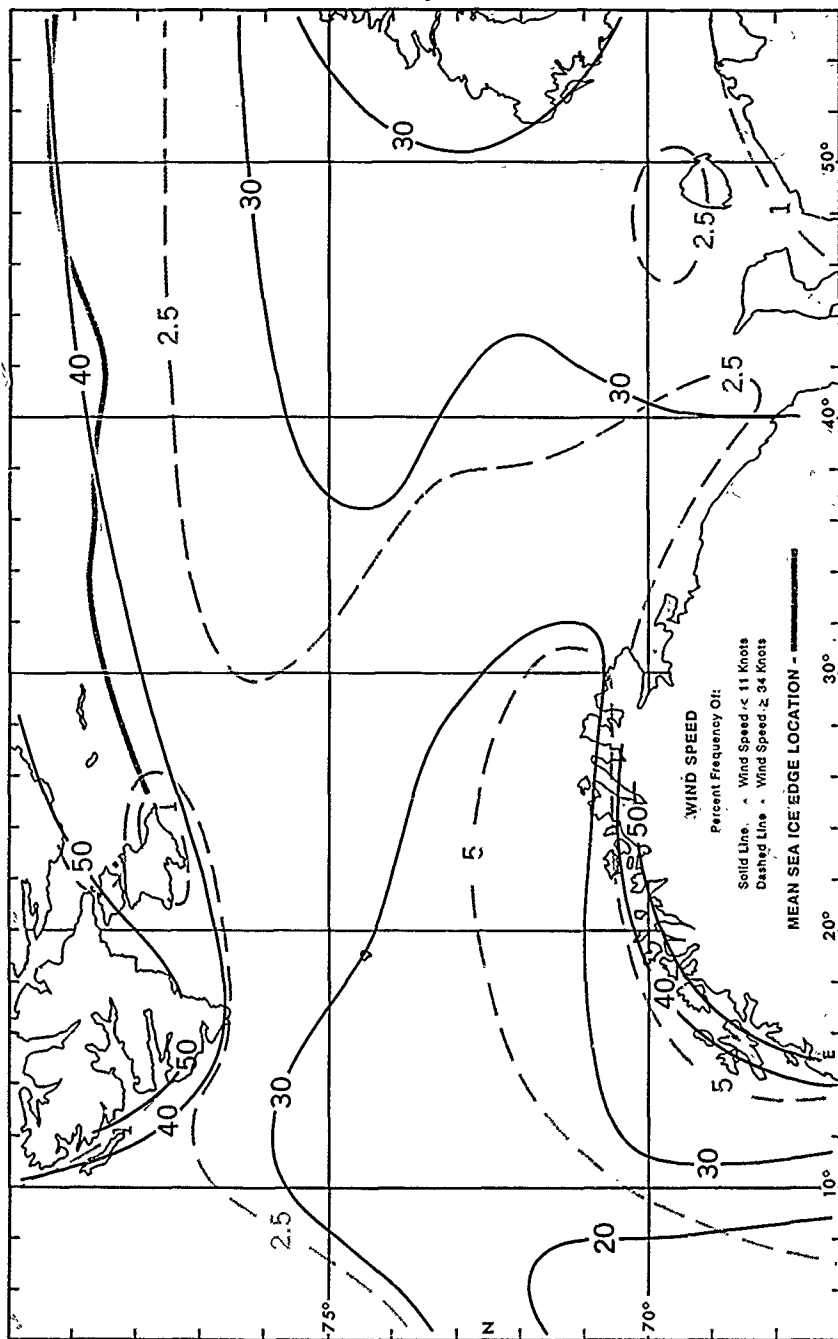
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

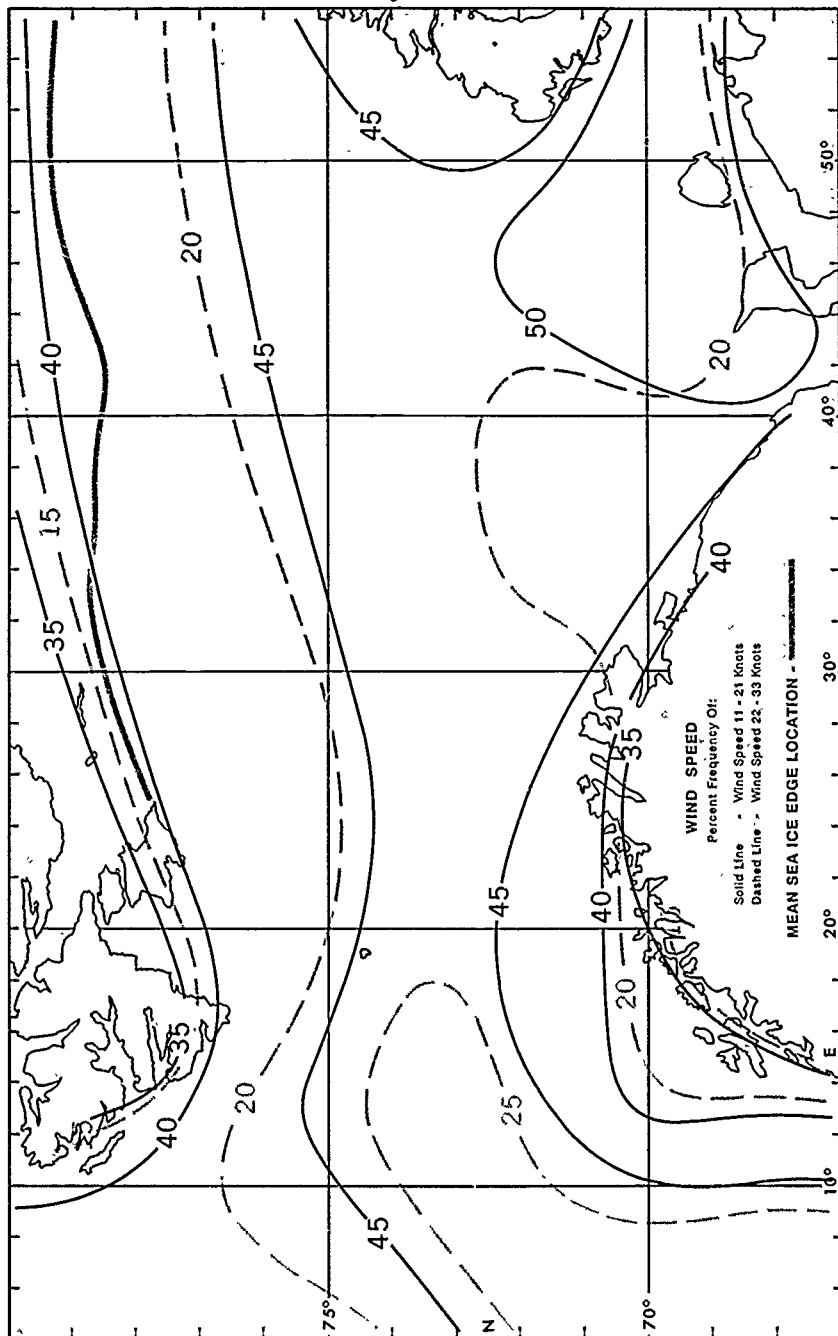
Wind Speed < 11 and ≥ 34 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts

October

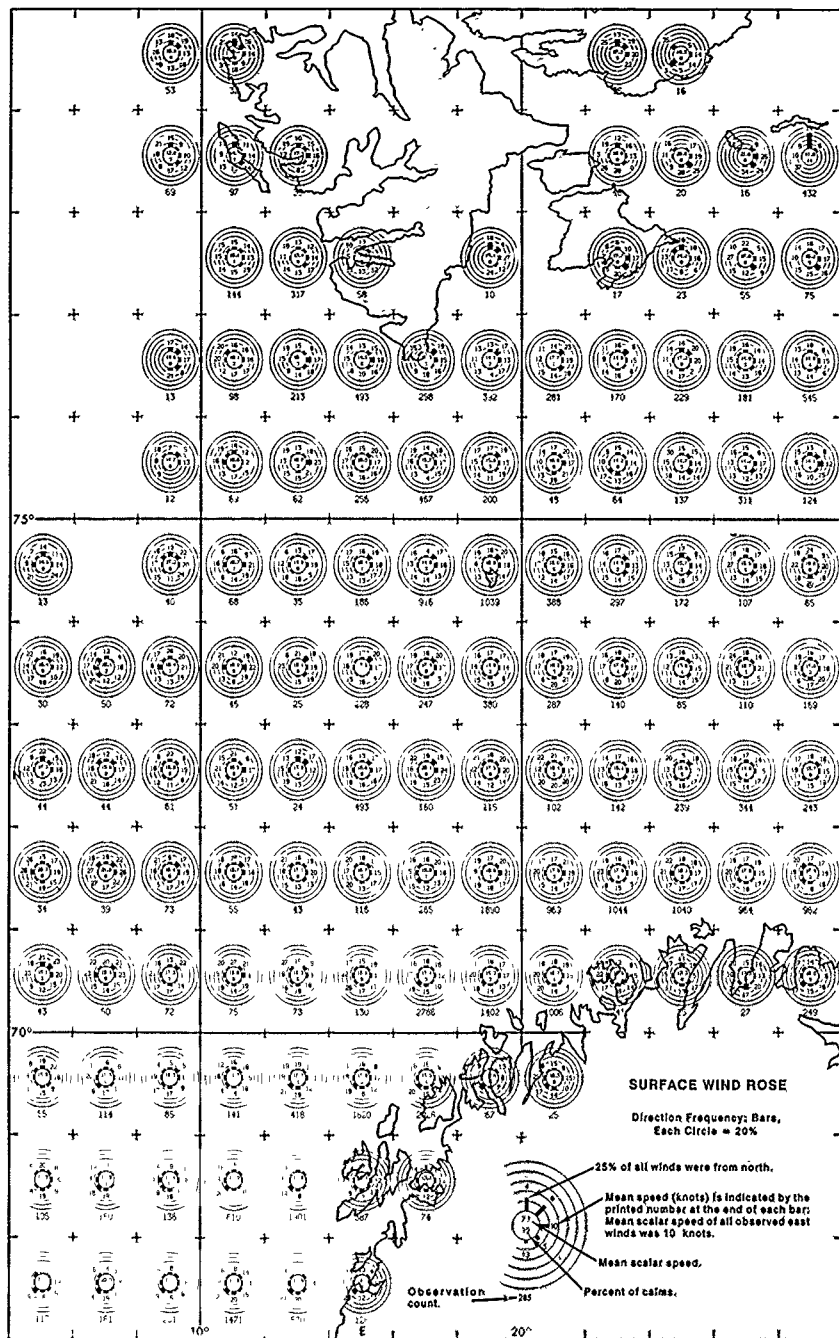
Wind Speed 11-21 and 22-33 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

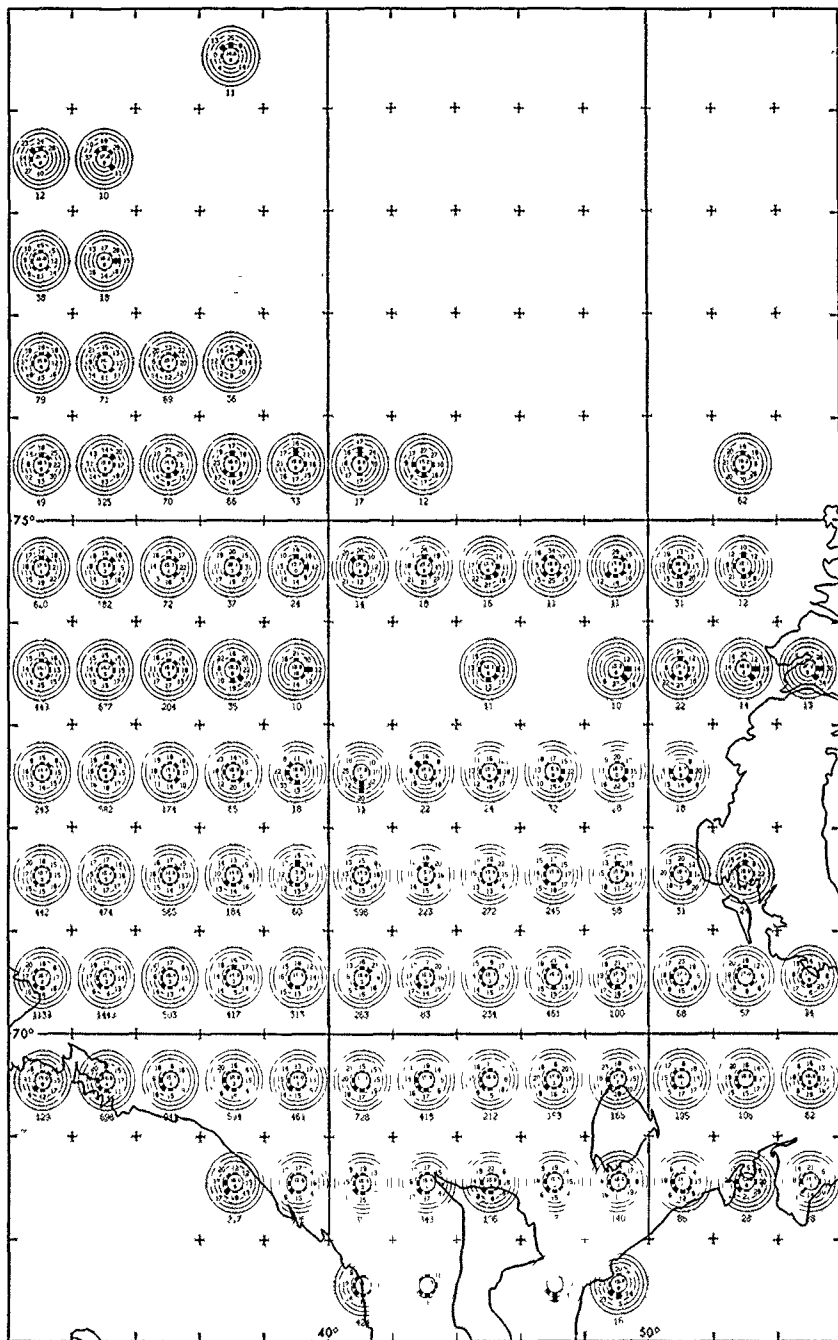
October

Surface Wind Roses



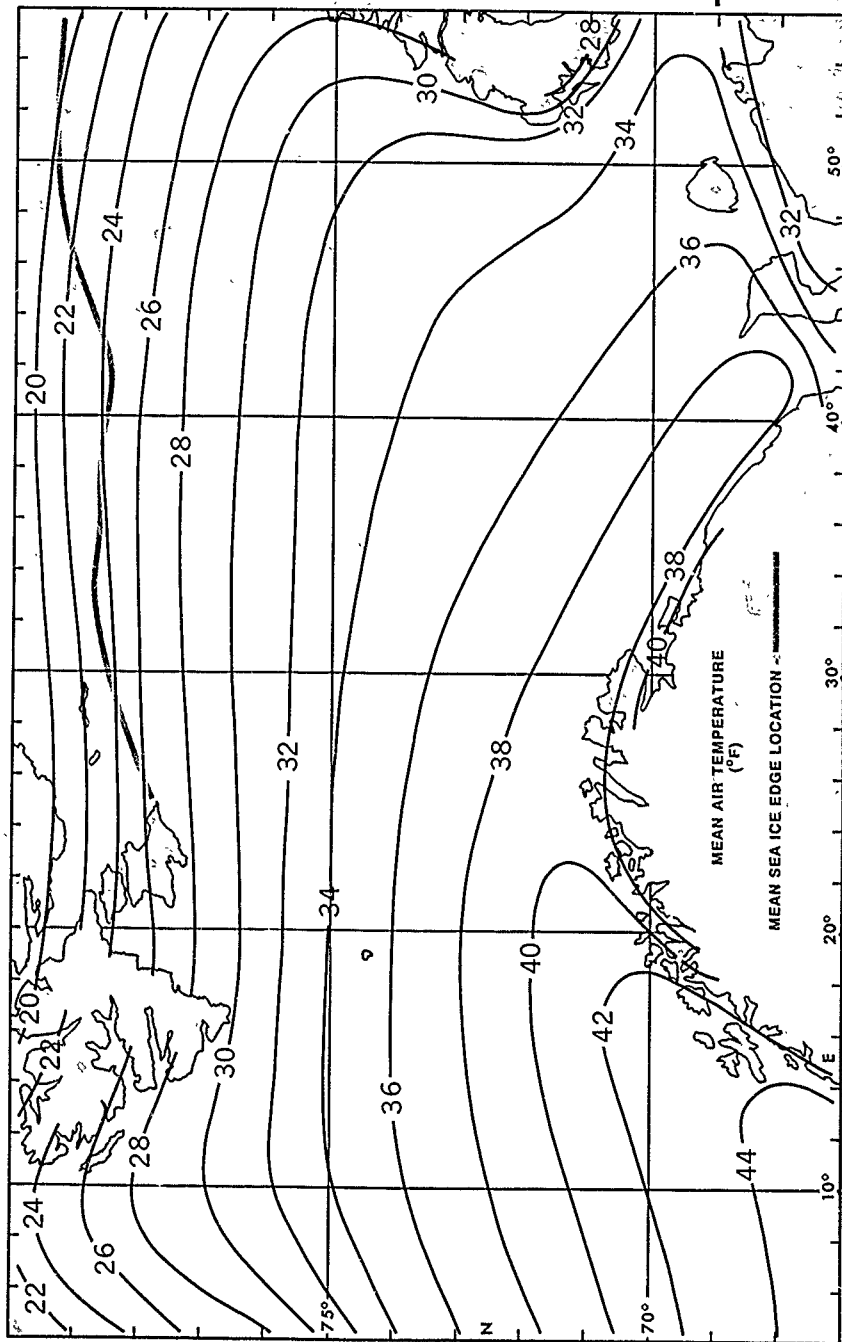
October

Surface Wind Roses



October

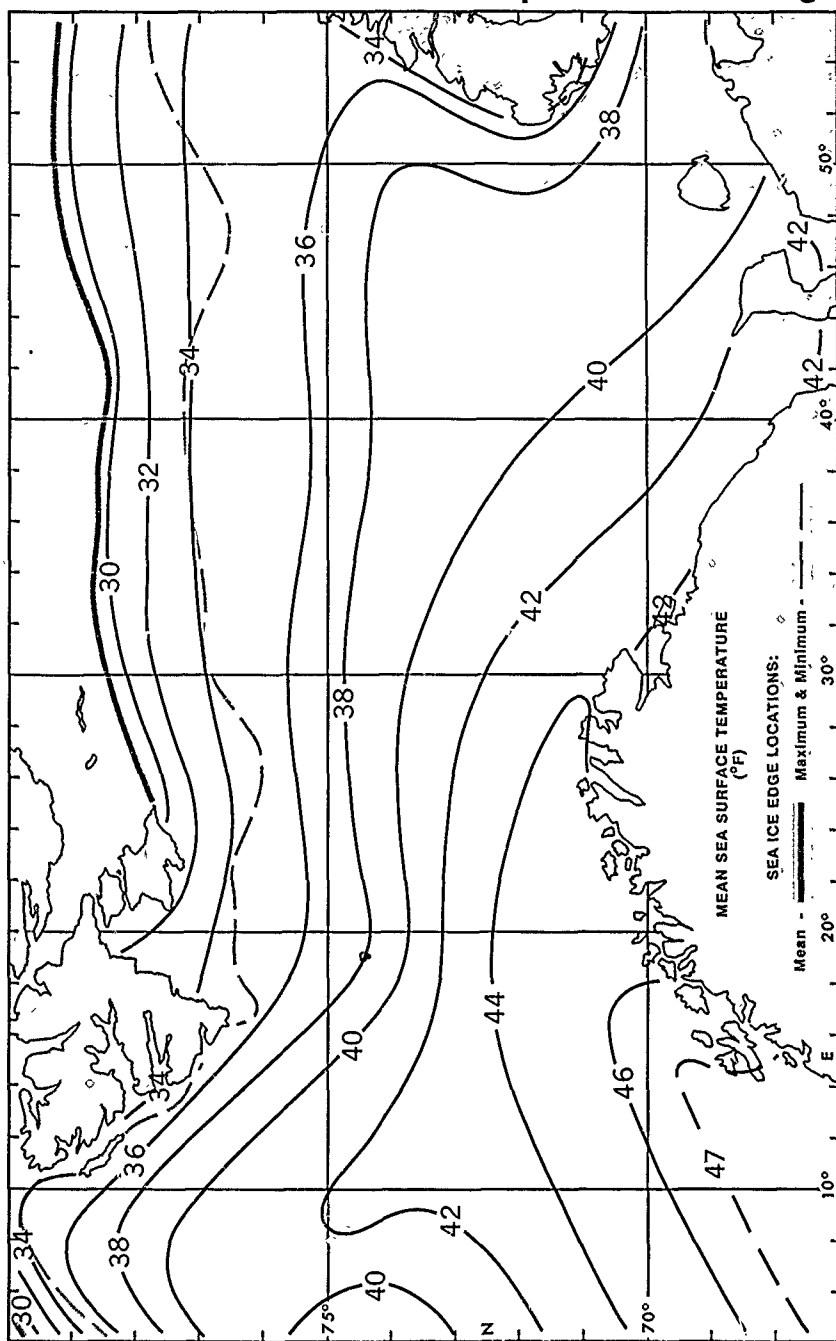
Mean Air Temperature



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

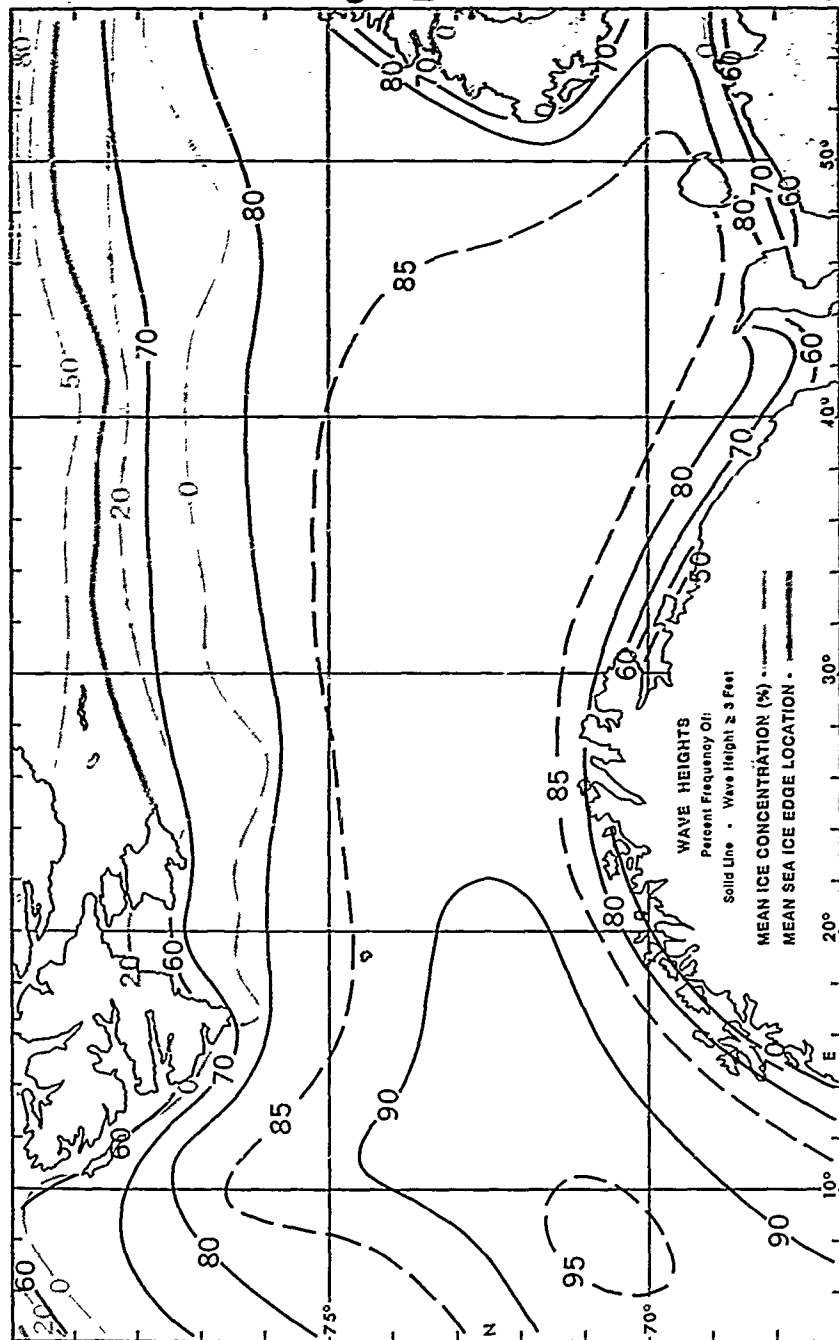
October

Mean Sea Temperature & Ice Edge



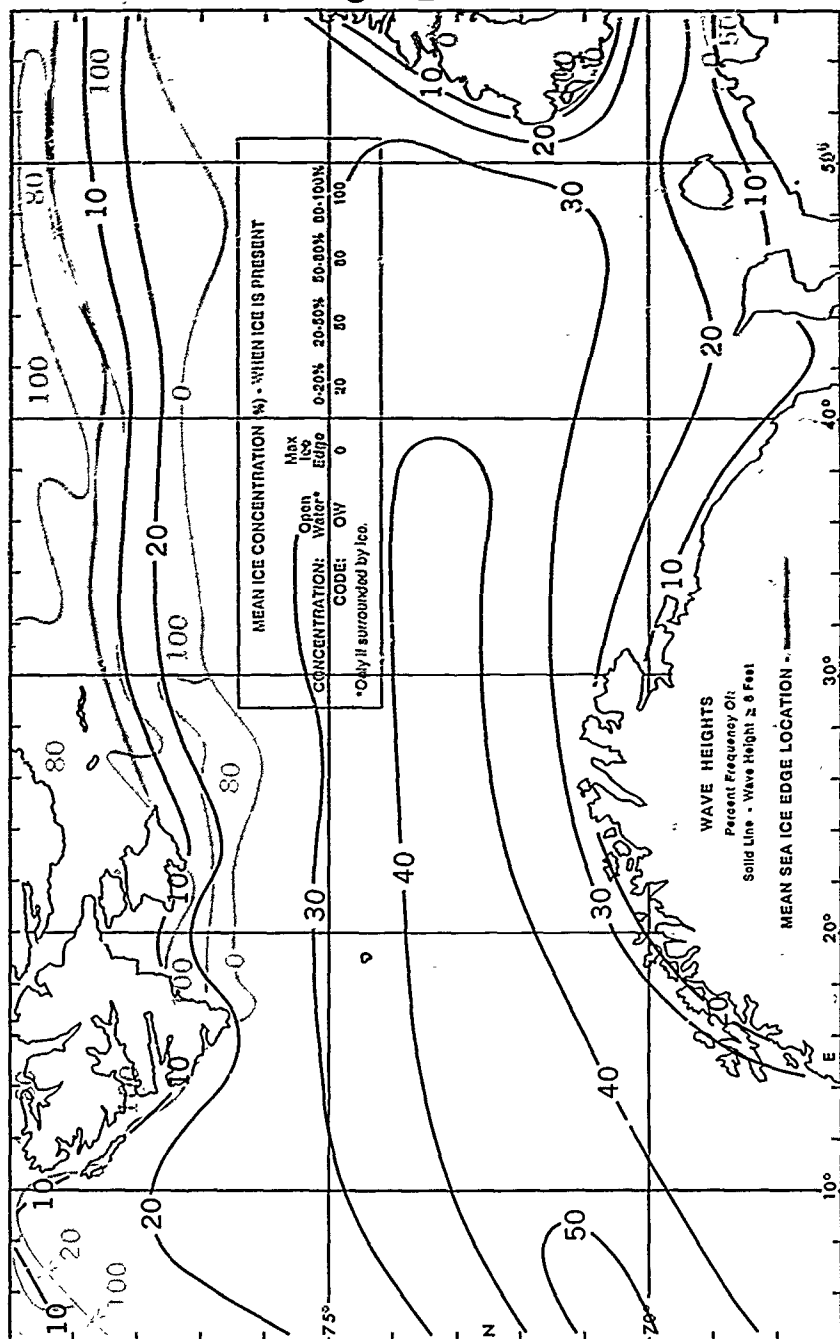
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts

October Wave Height ≥ 3 Ft. & Ice Concentration

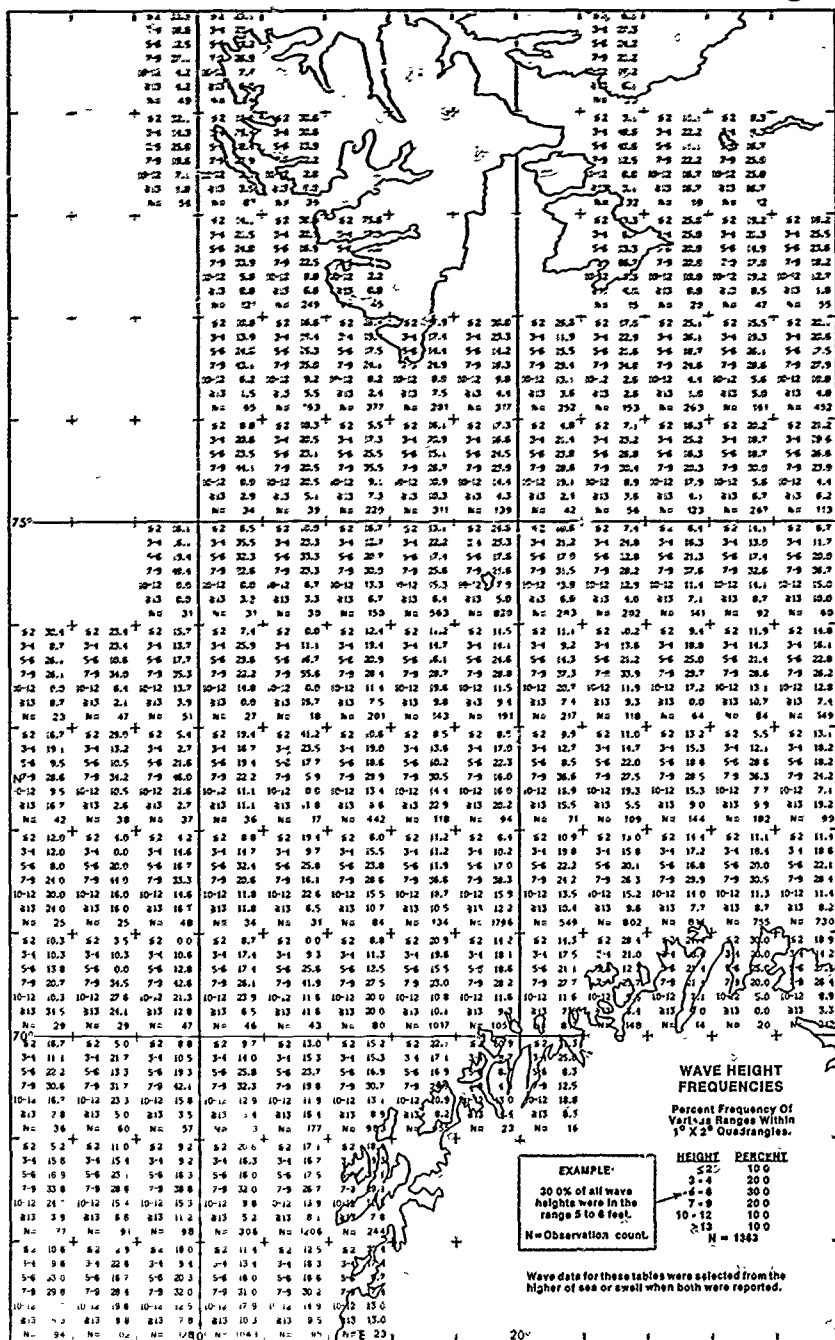


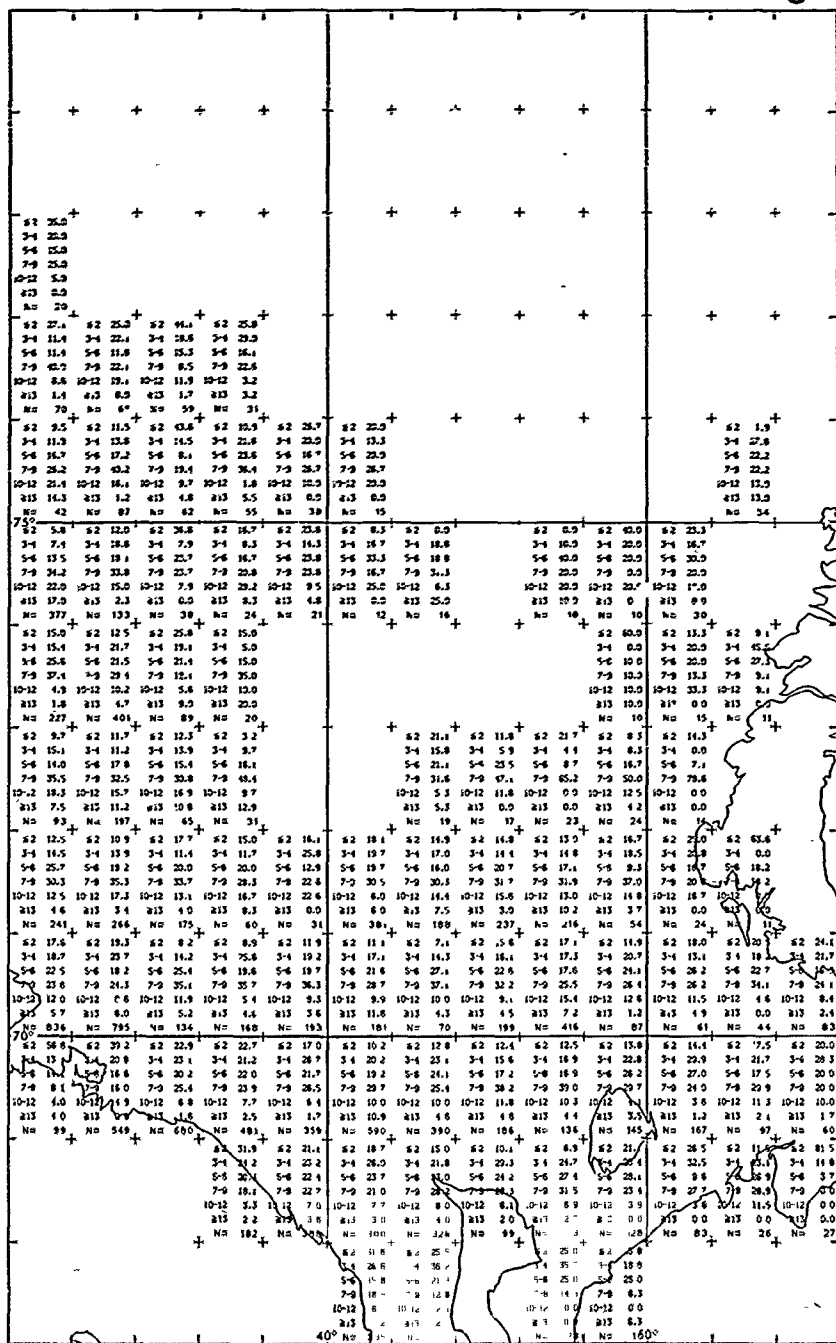
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

October Wave Height ≥ 8 Ft. & Ice Concentration



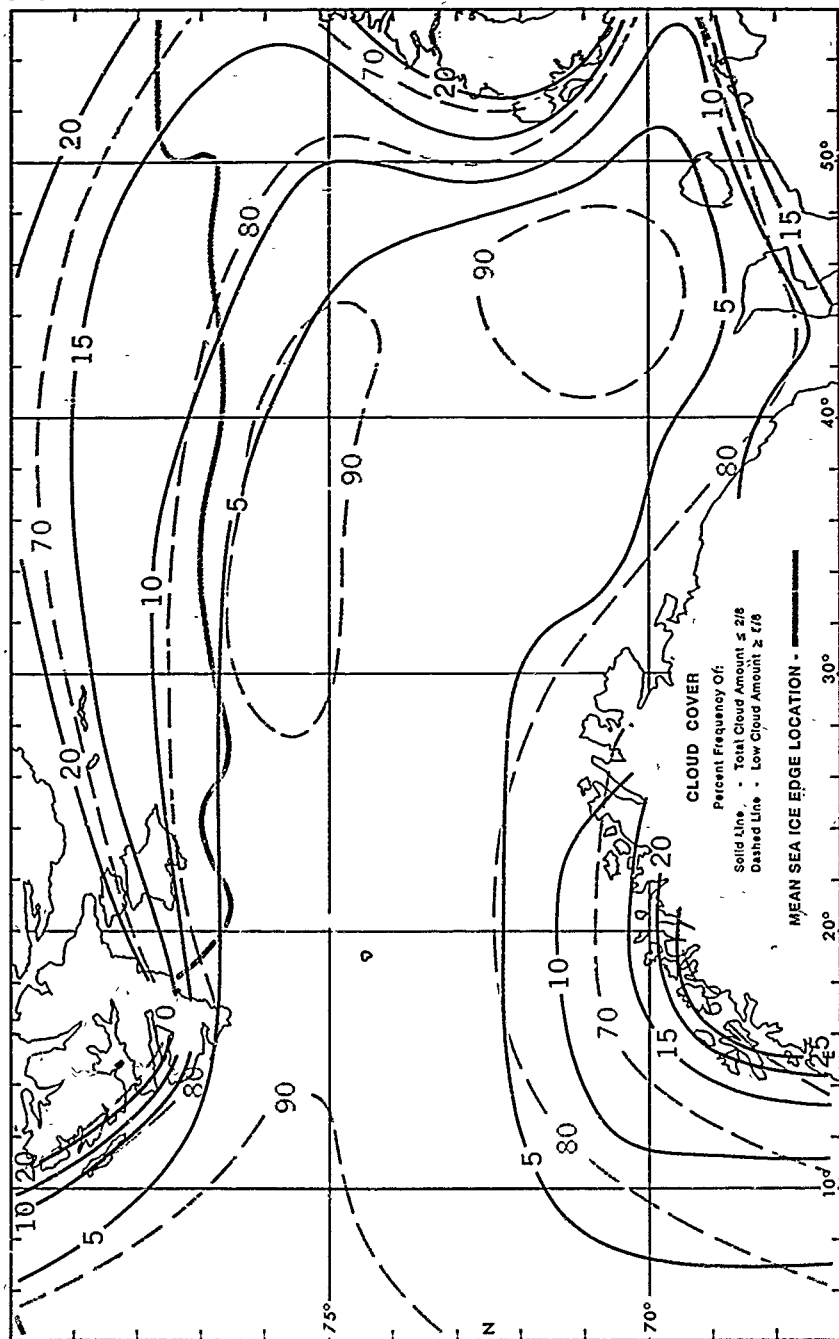
NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts





November

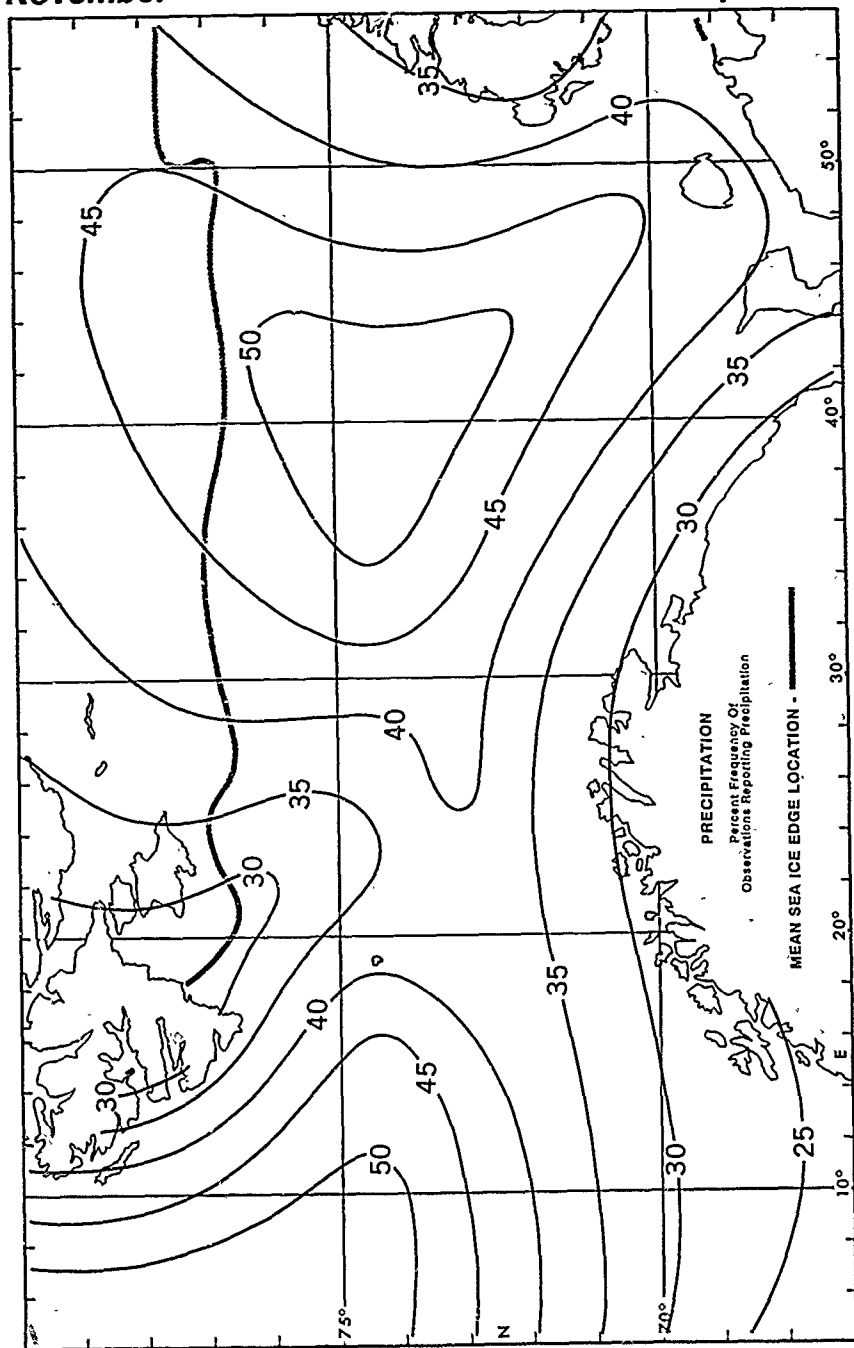
Clouds



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

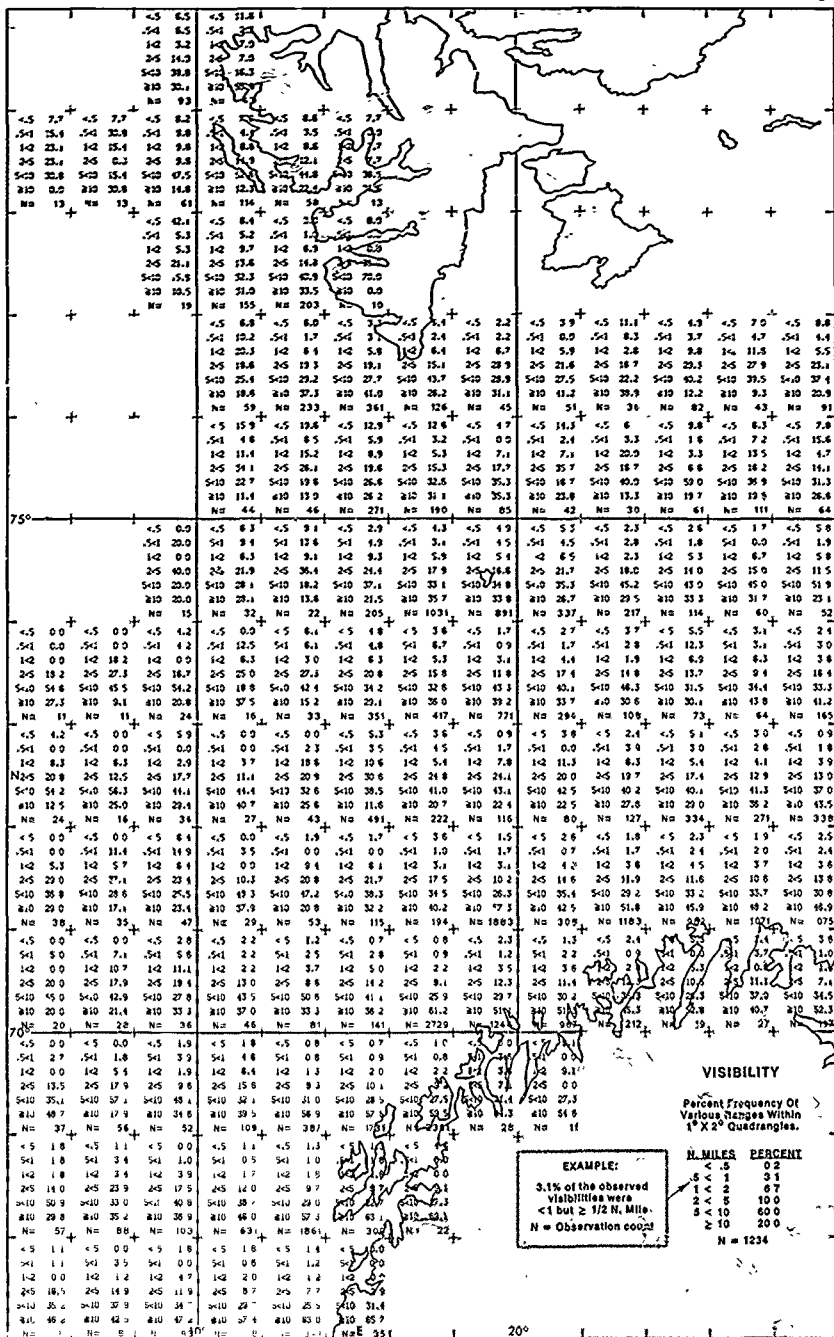
Precipitation



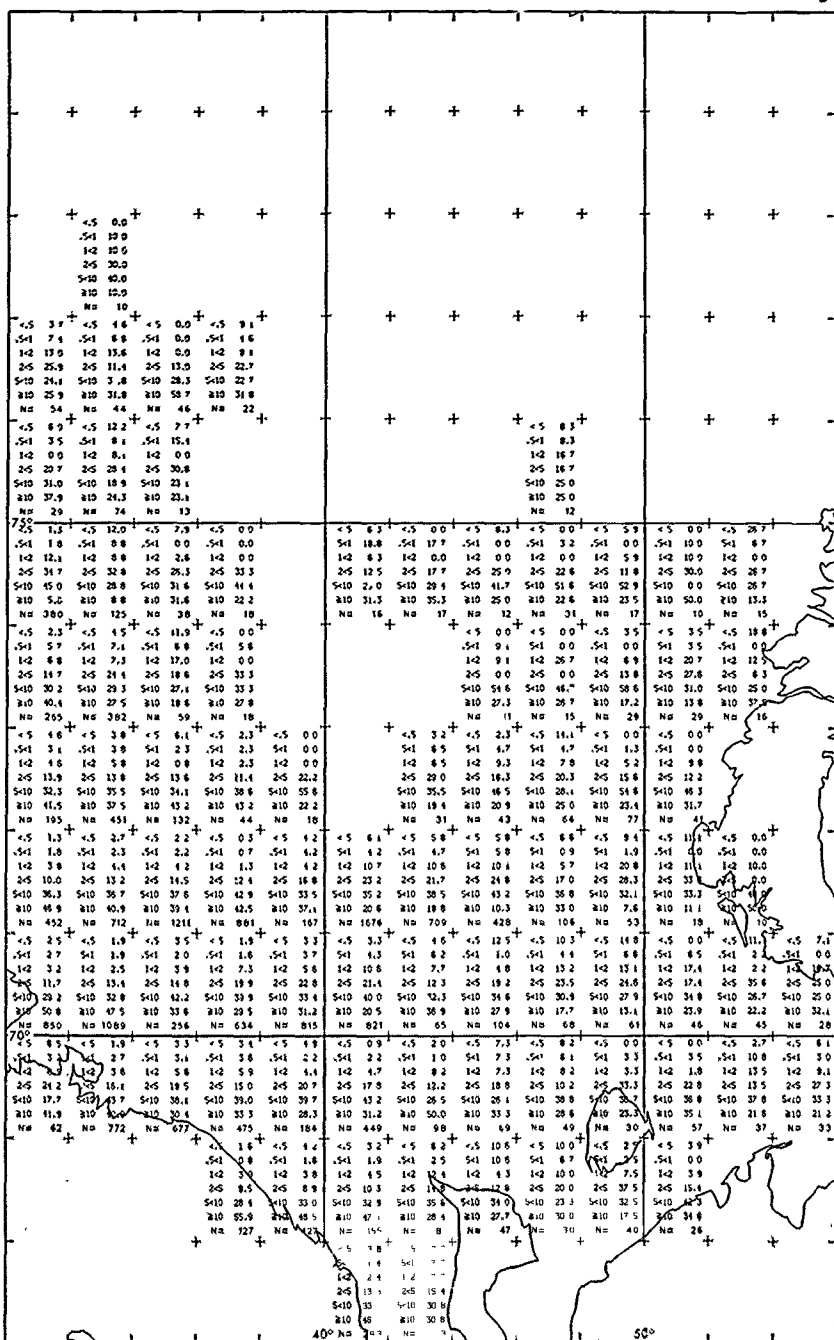
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

Visibility

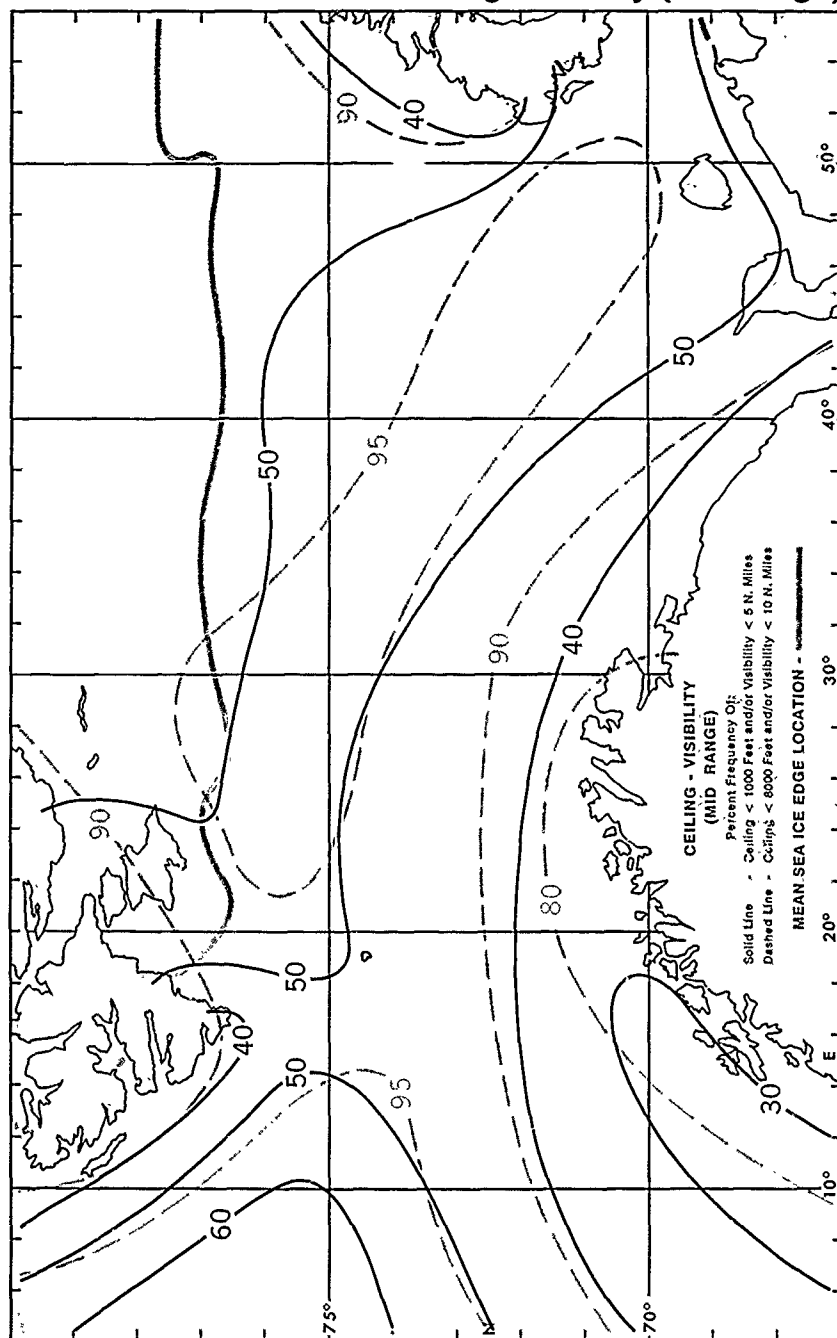


Visibility



November

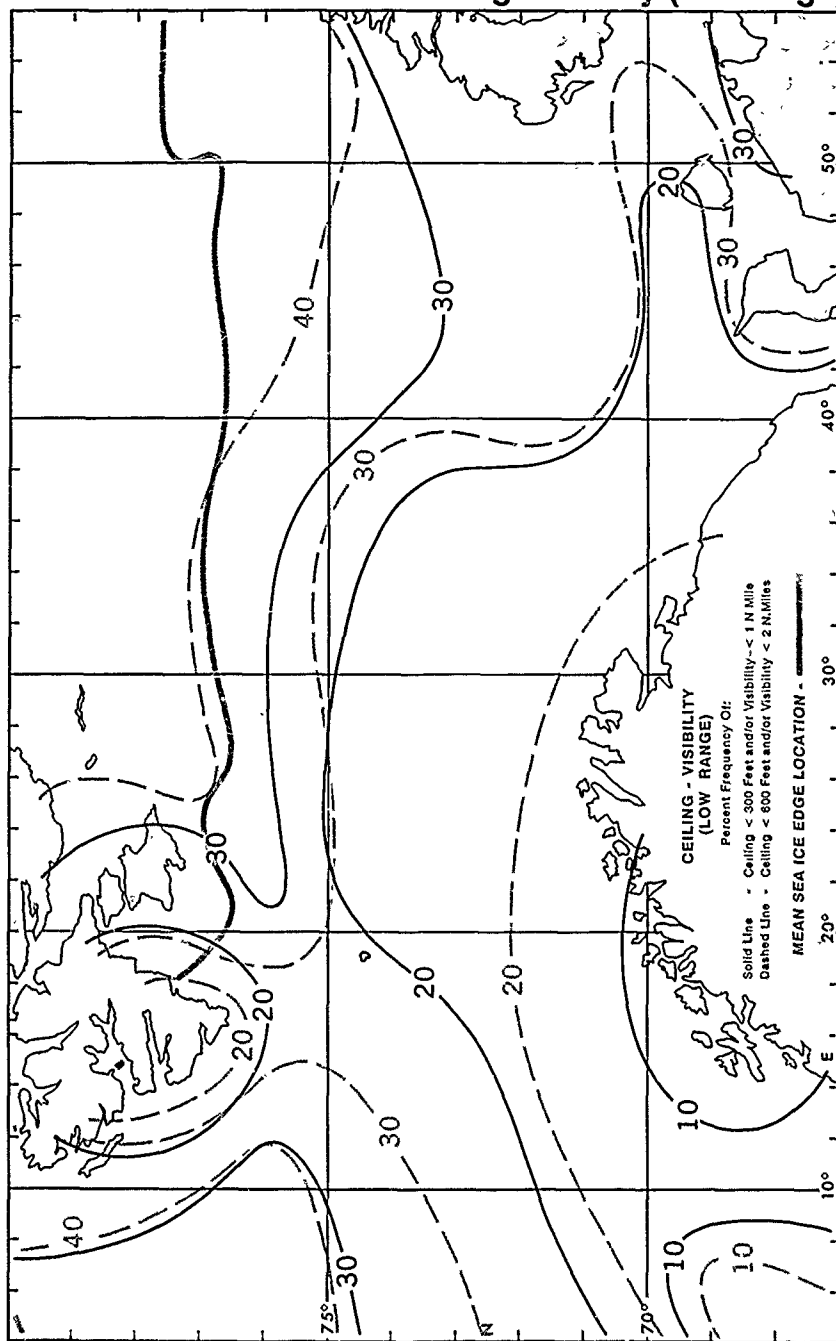
Ceiling-Visibility (mid range)



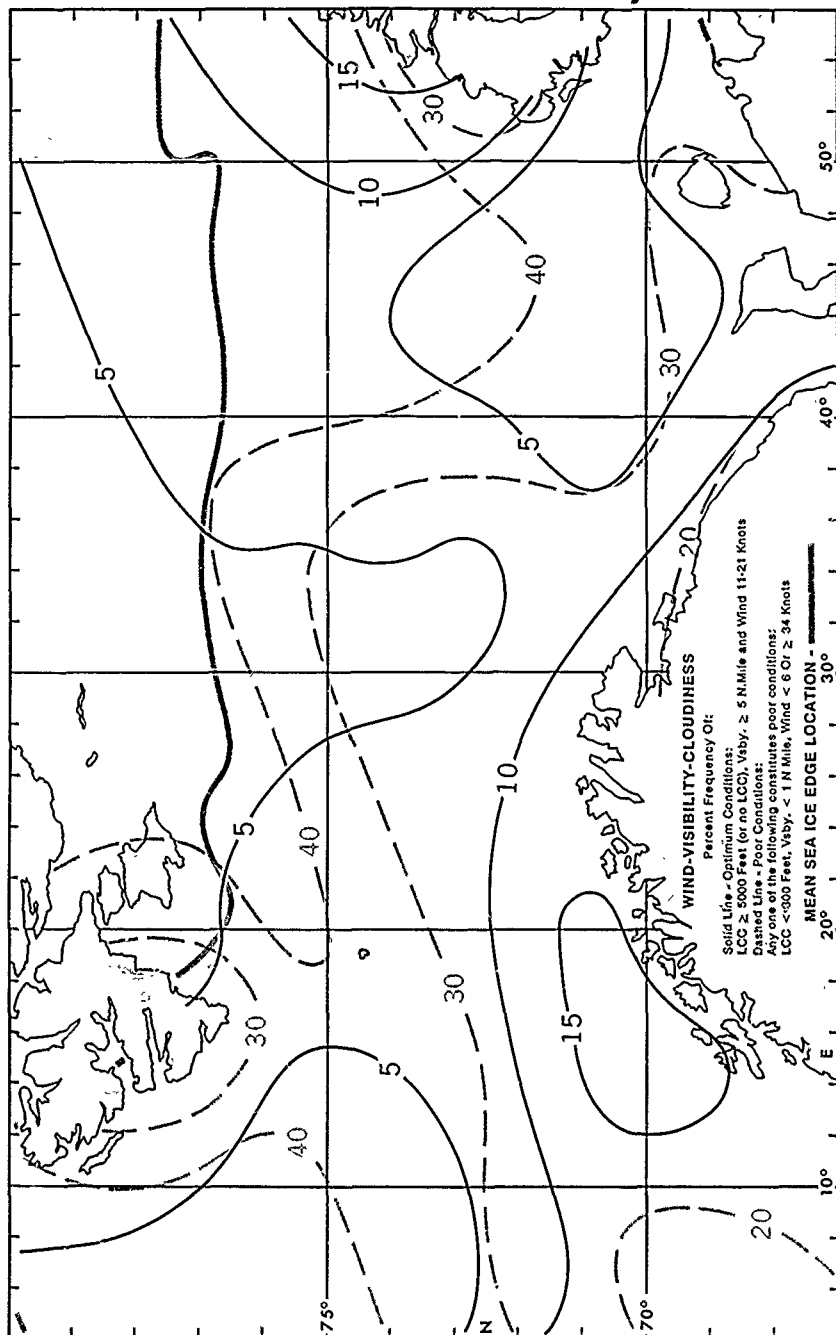
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

Ceiling-Visibility (low range)



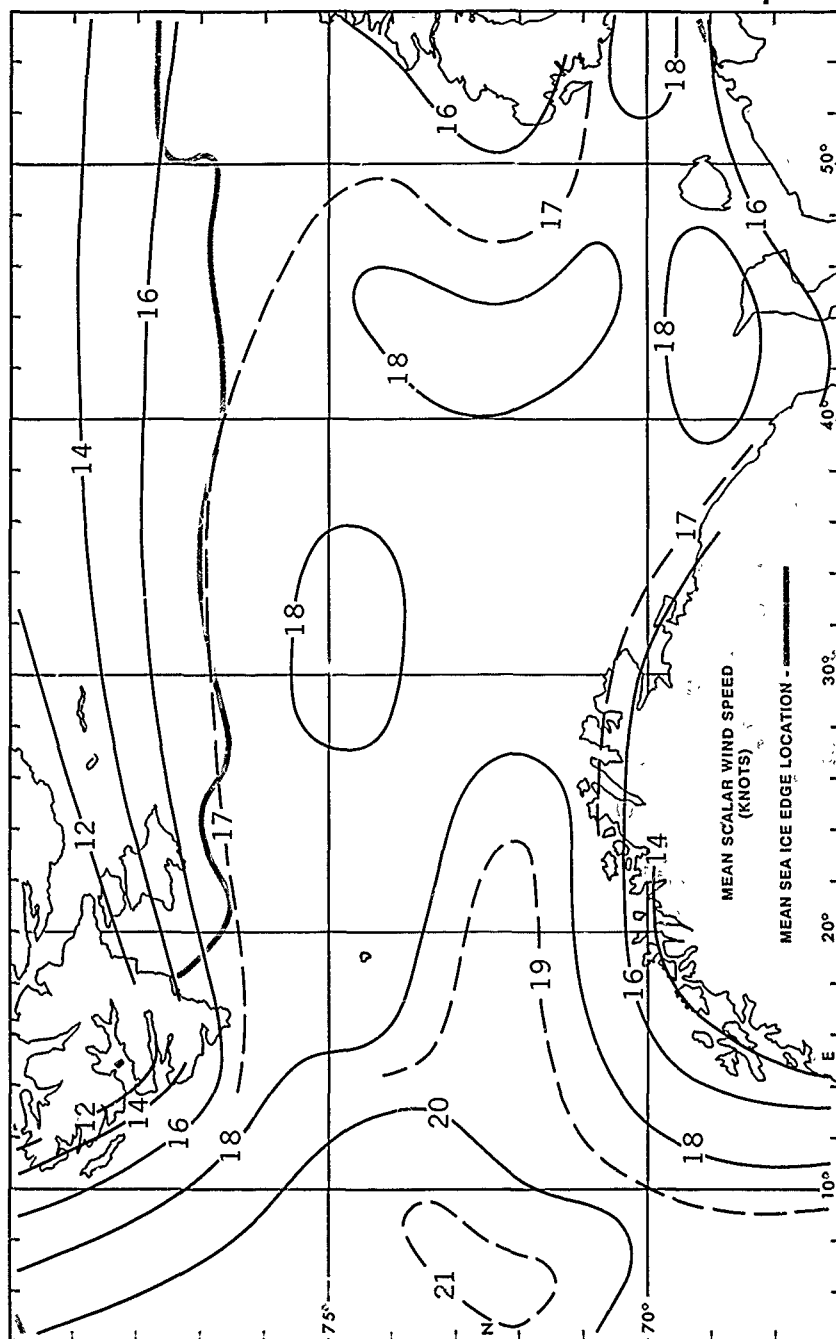
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

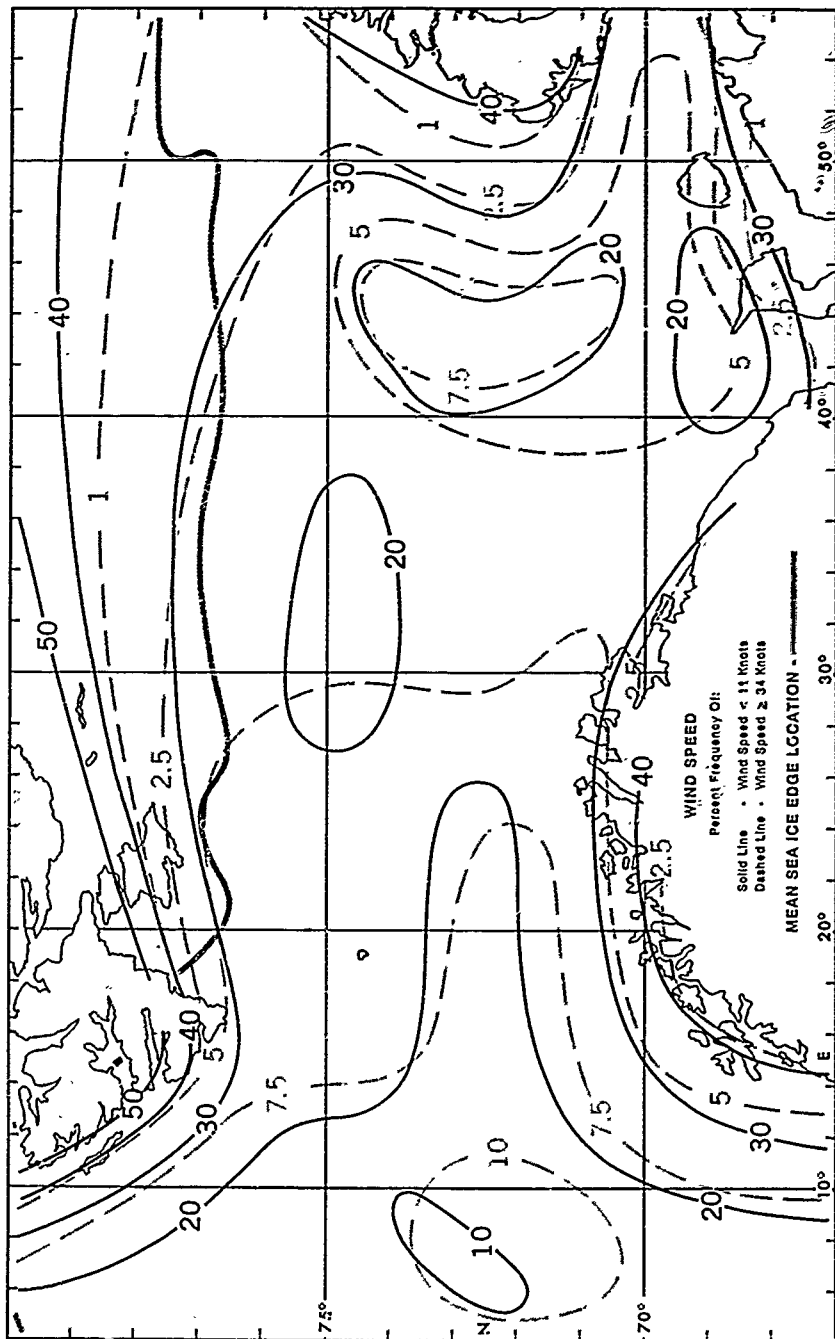
November

Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

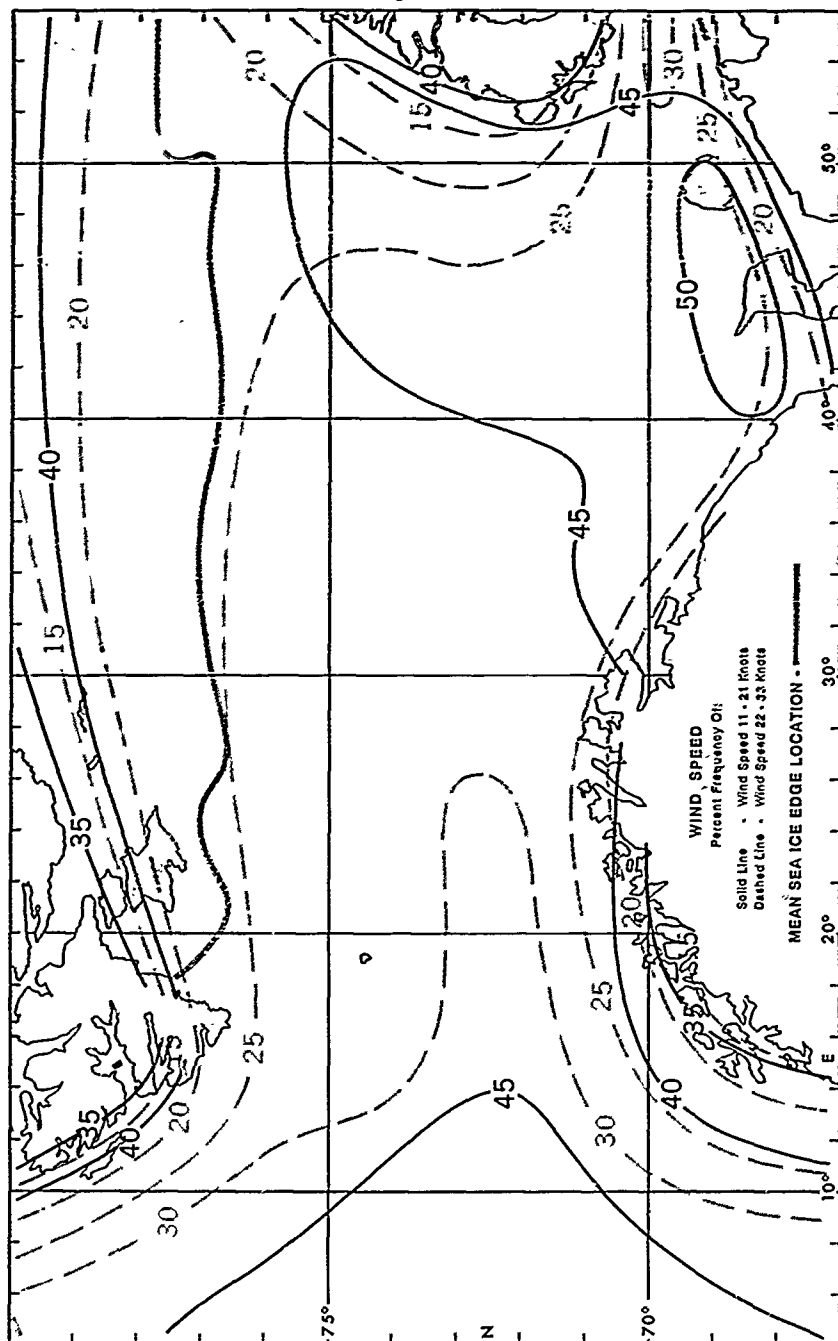
November

Wind Speed < 11 and ≥ 34 Knots

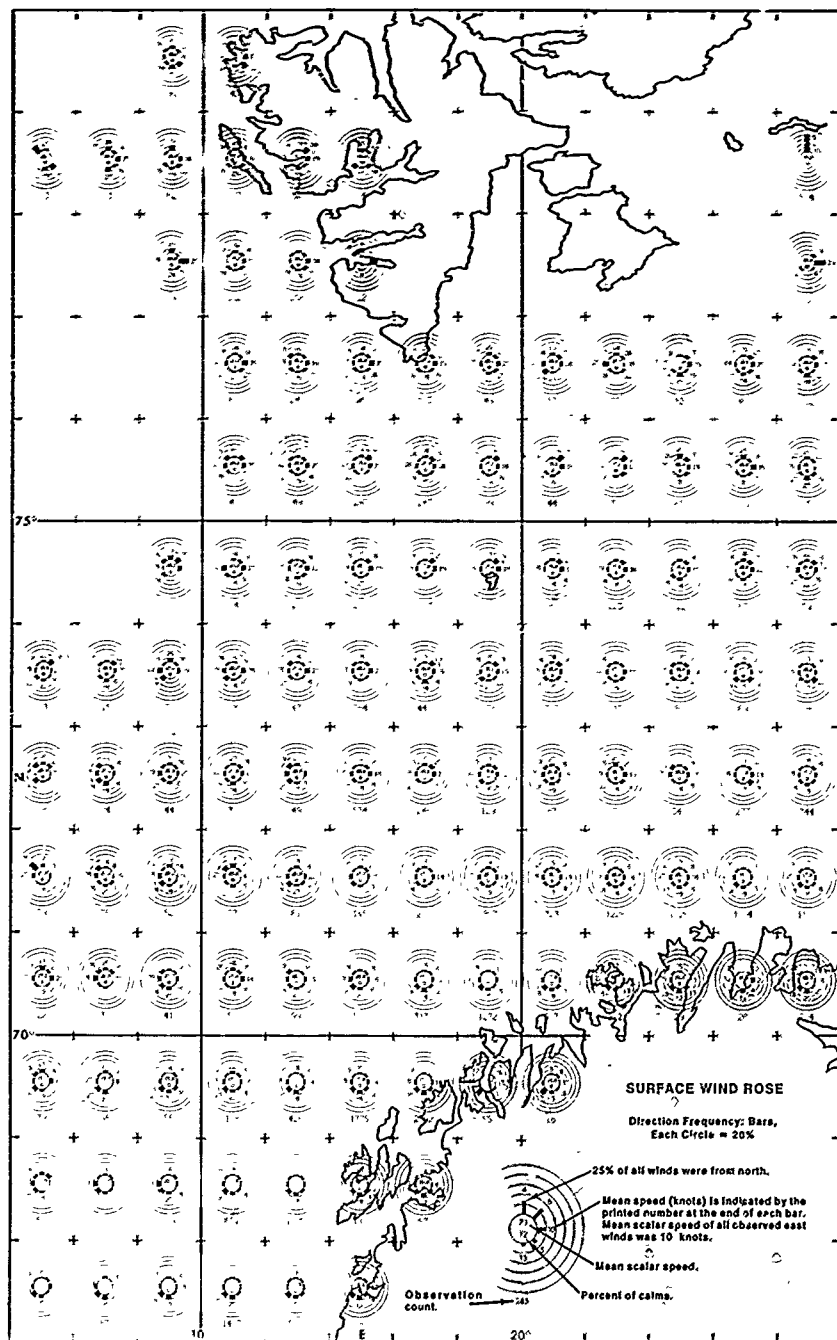
NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November

Wind Speed 11-21 and 22-33 Knots

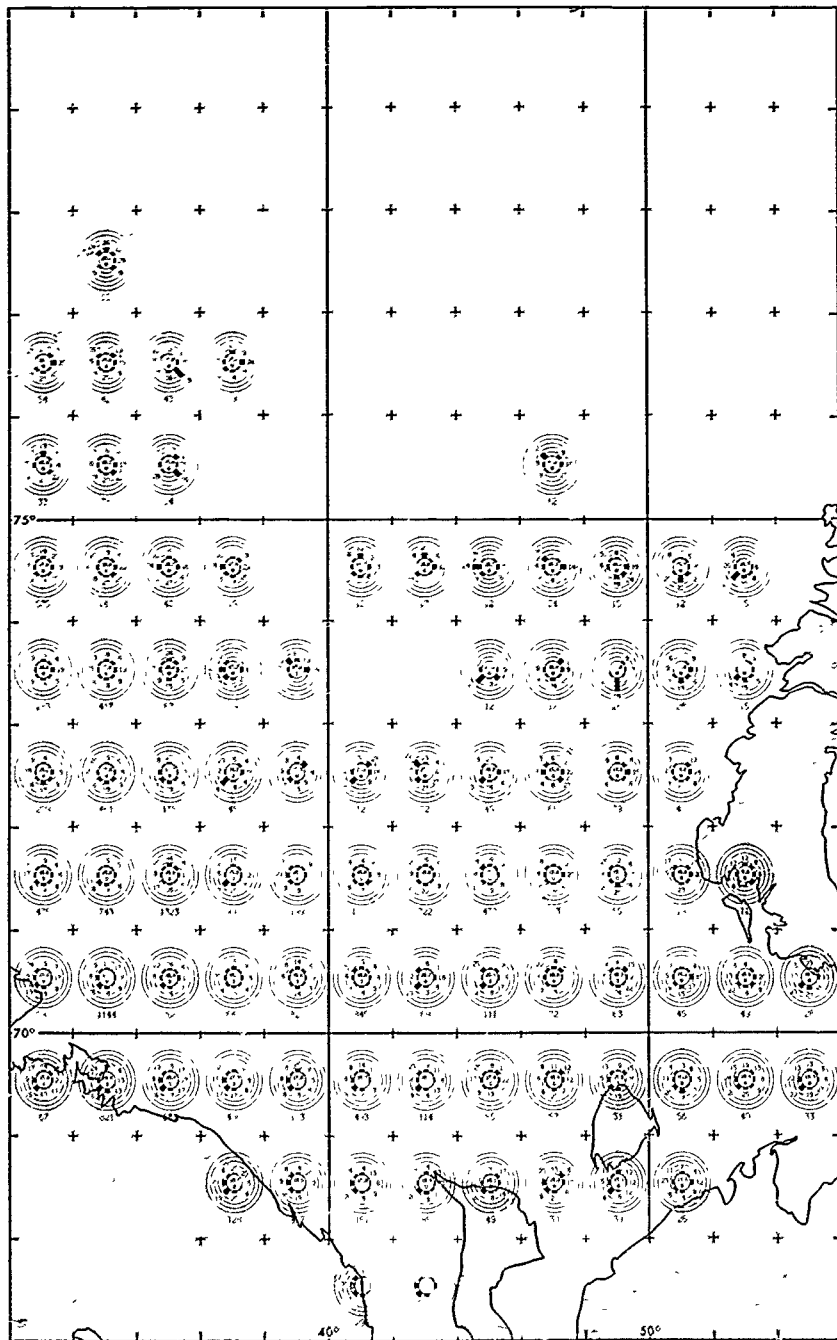


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts



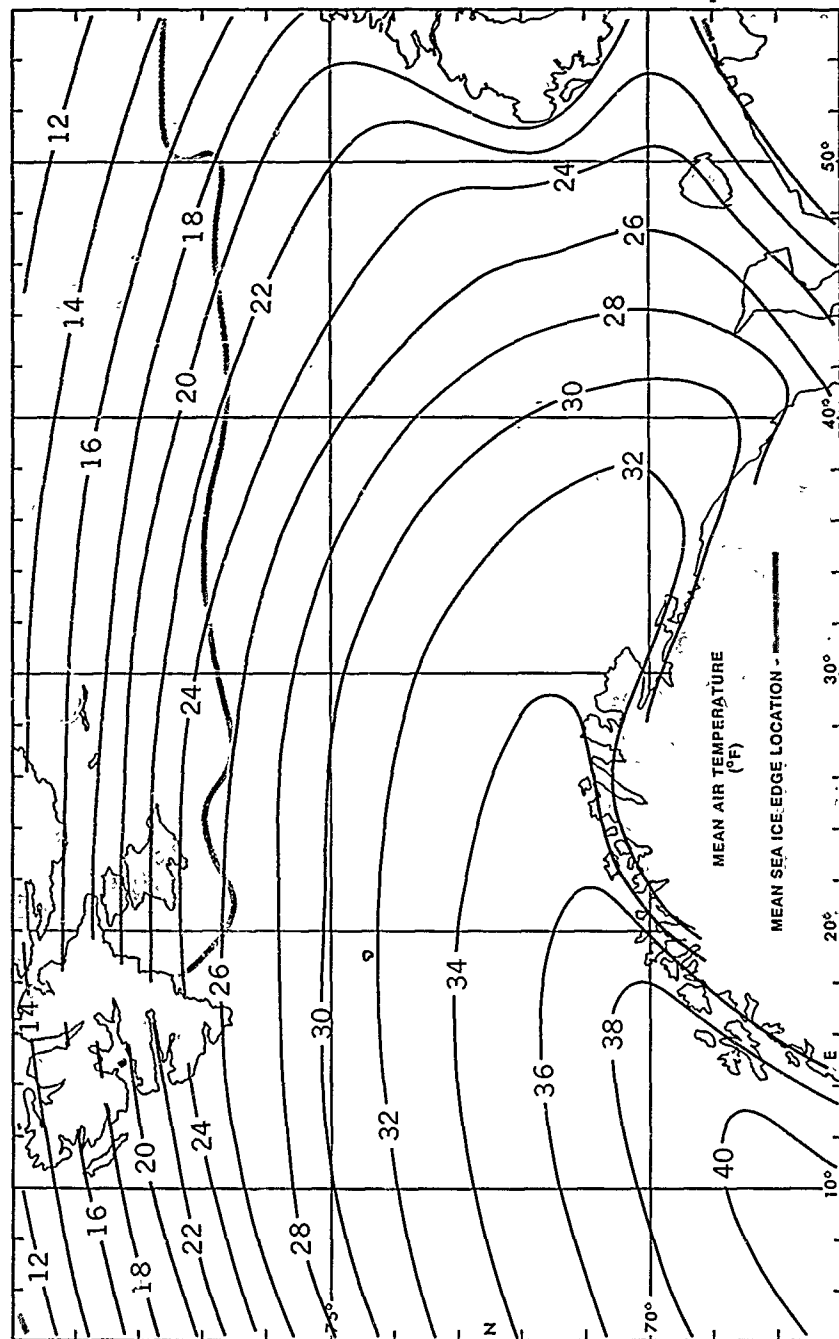
November

Surface Wind Roses



November

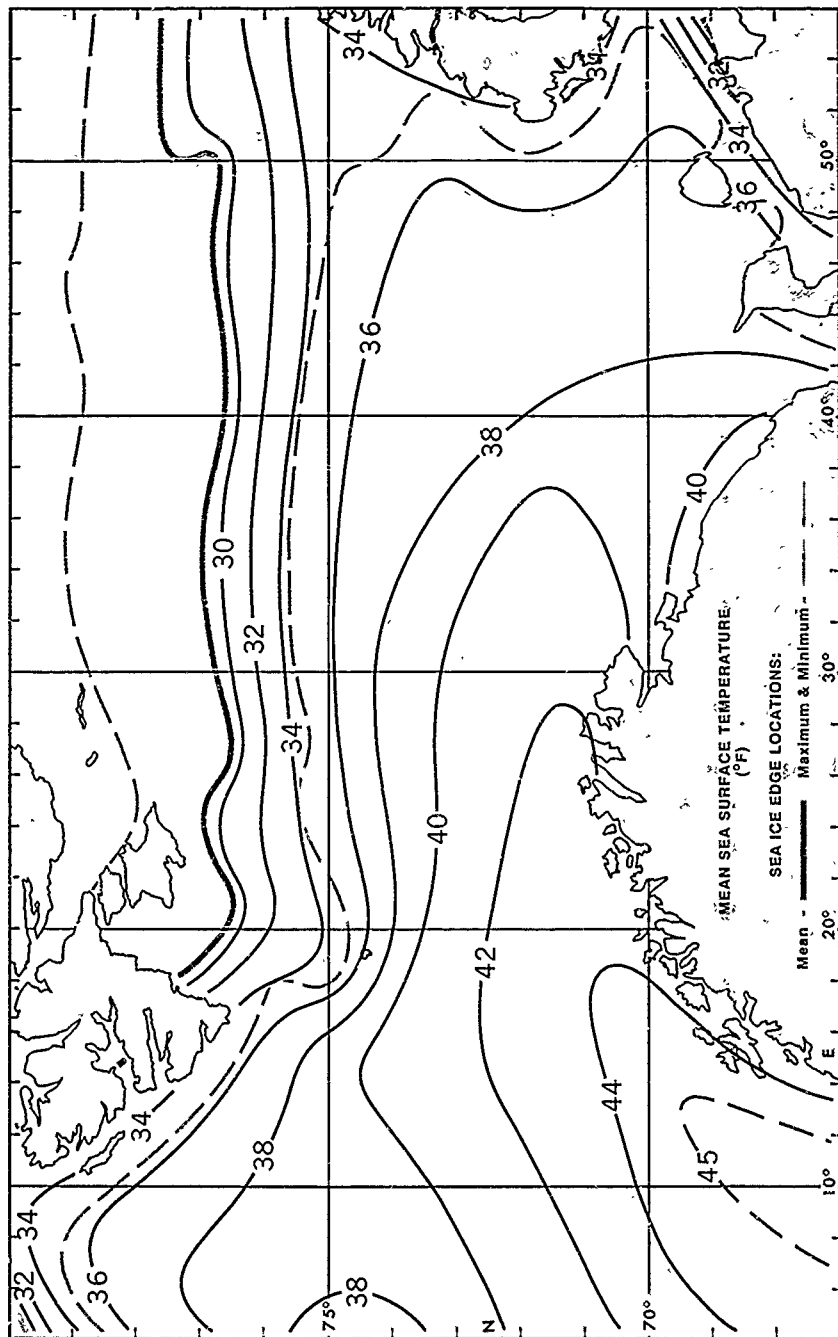
Mean Air Temperature



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

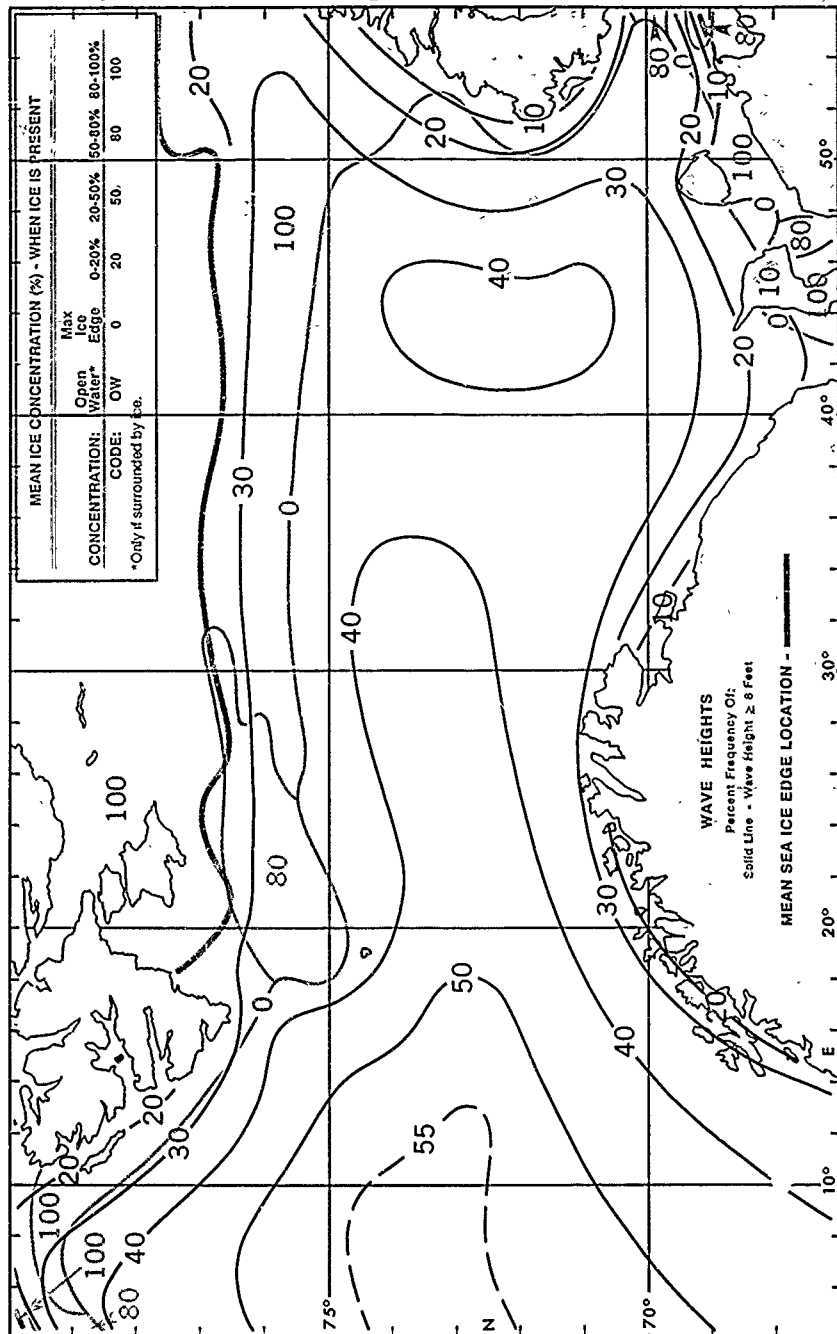
November

Mean Sea Temperature & Ice Edge

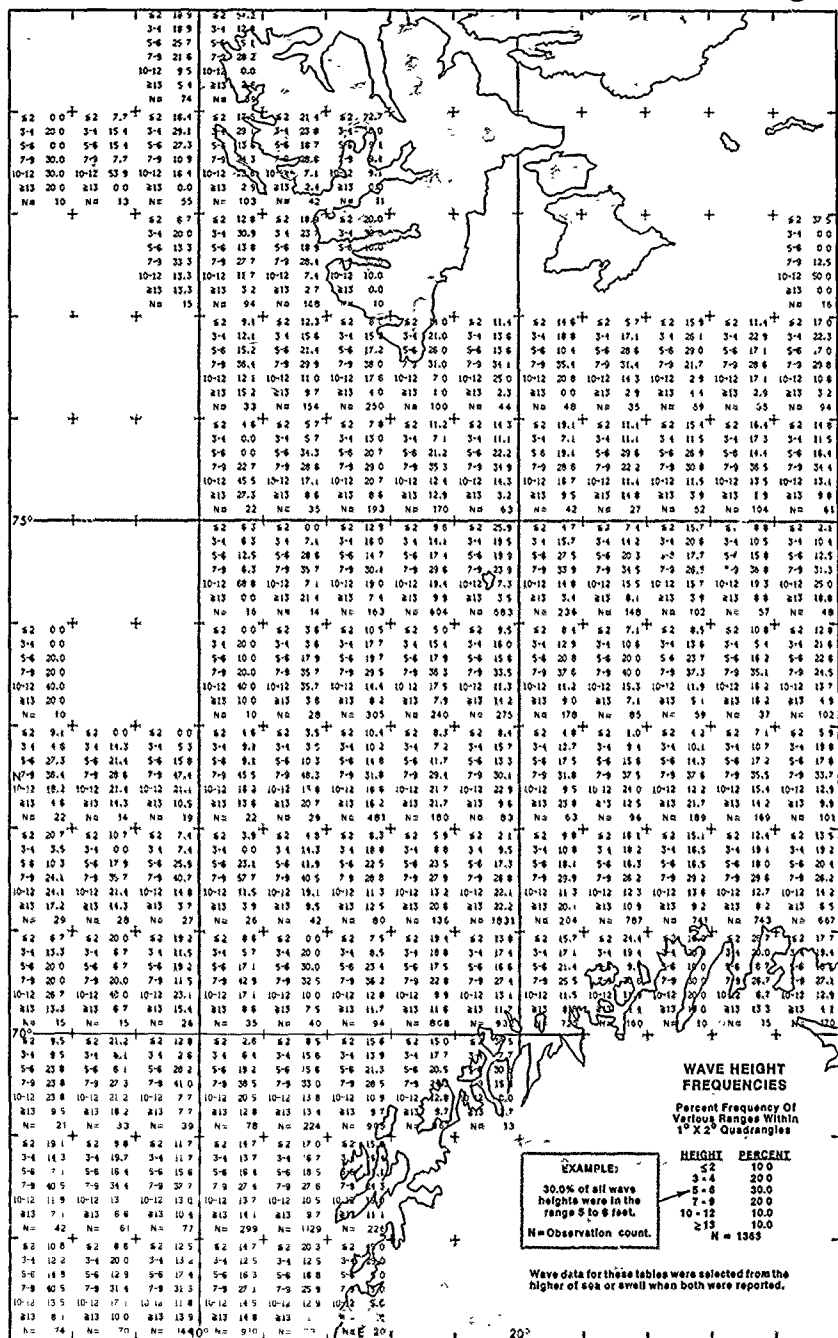


NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

November Wave Height ≥ 8 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice ice edge is highly subjective due to low observation counts



The chart displays a grid of weather data points across the North Pacific. The grid is defined by latitude (40°N to 60°N) and longitude (120°E to 180°). Data points are plotted for various weather variables, including temperature, pressure, and wind. Some points are labeled with numbers, while others are marked with symbols like '+' or 'x'. The chart also shows the outlines of the continents of North America and Asia.

Key features of the chart include:

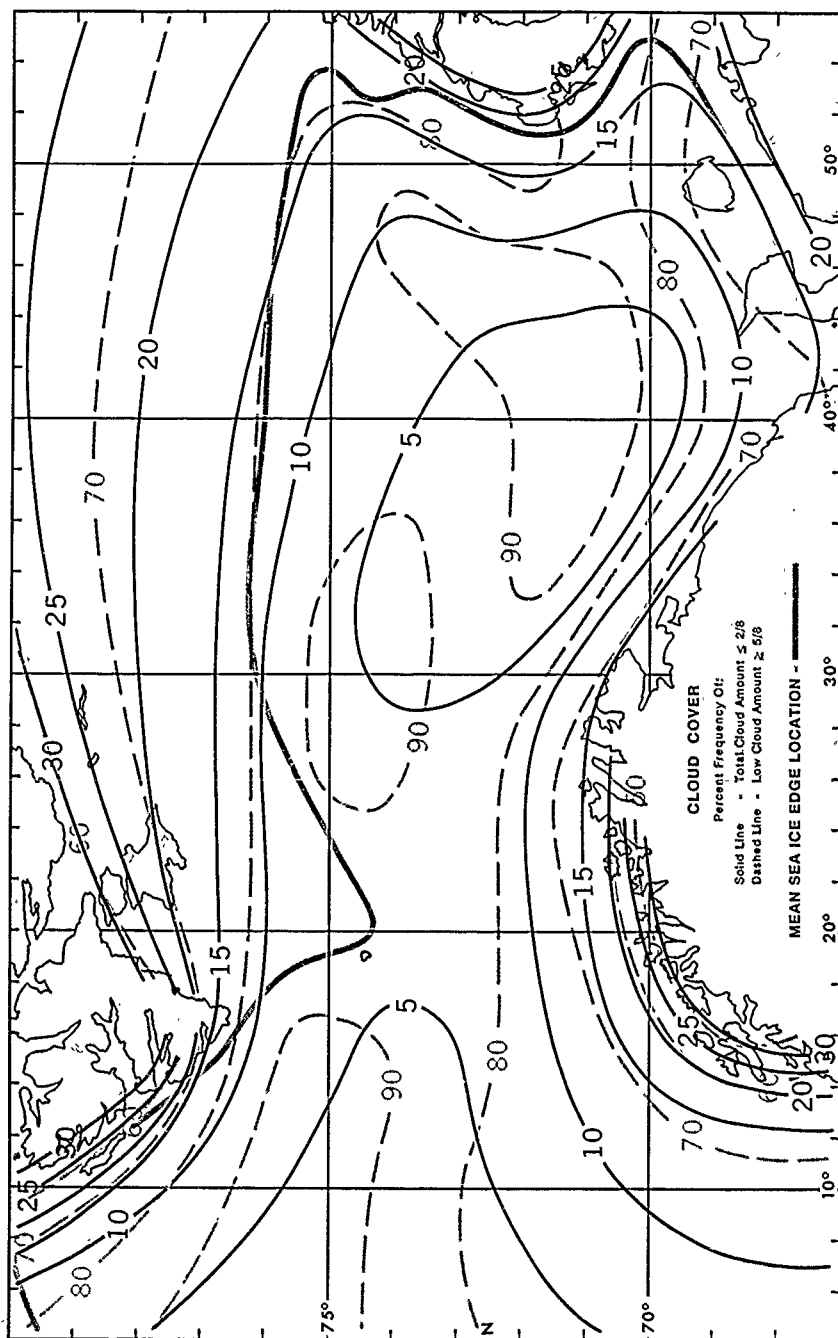
- Latitude and Longitude Grid:** The chart is divided into a grid of 1-degree squares. Latitude is marked from 40°N to 60°N, and longitude is marked from 120°E to 180°.
- Weather Data Points:** Data points are plotted for various weather variables. Some points are labeled with numbers, while others are marked with symbols like '+' or 'x'. The chart also shows the outlines of the continents of North America and Asia.
- Isobars and Isotherms:** The chart displays isobars (lines of equal pressure) and isotherms (lines of equal temperature). These lines are drawn through the data points to show the distribution of these variables across the region.
- Continental Outlines:** The outlines of the continents of North America and Asia are shown, providing a geographical context for the weather data.

The chart is a valuable tool for understanding the weather patterns in the North Pacific Ocean. It provides a detailed view of the distribution of various weather variables and allows for the identification of trends and patterns in the data.

[illegible]

December

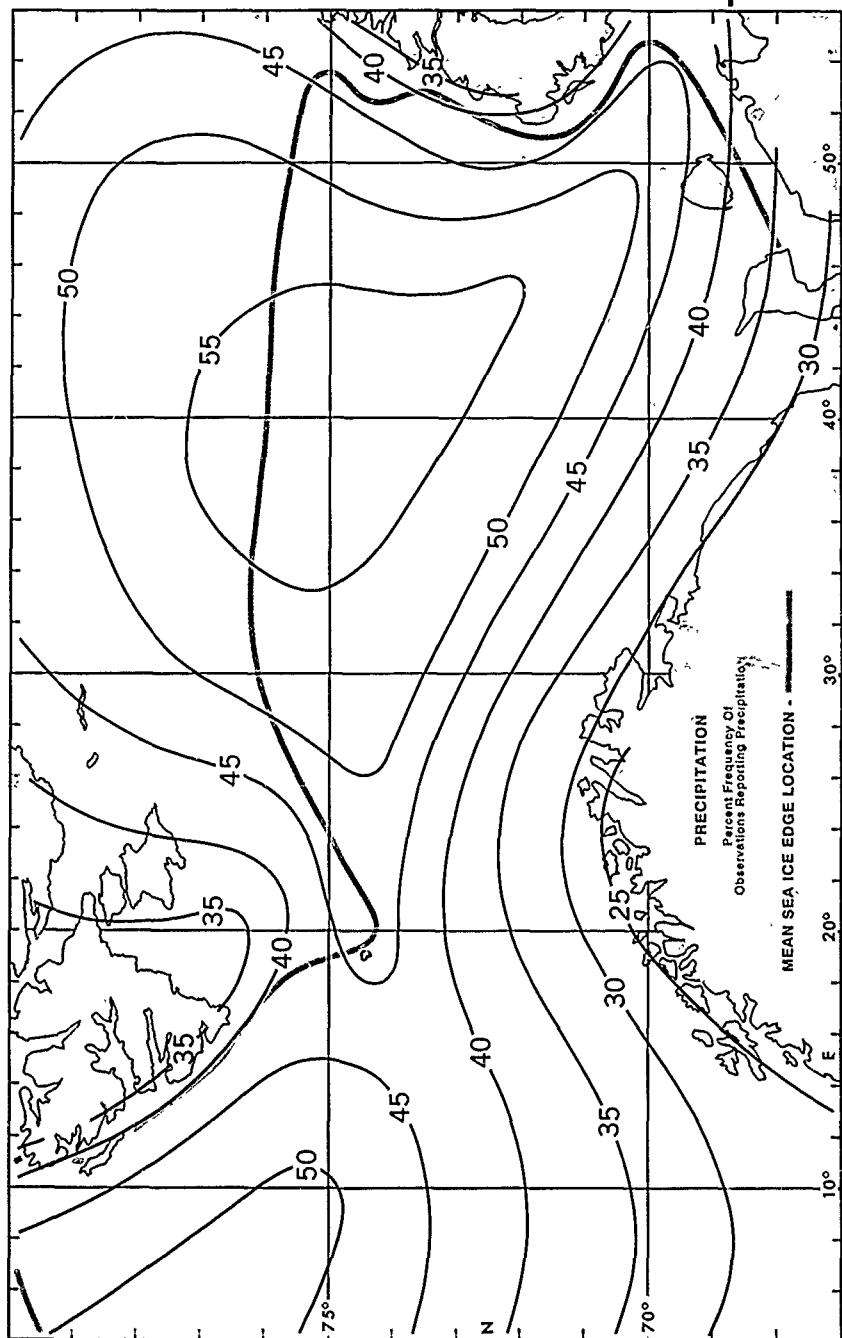
Clouds



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

December

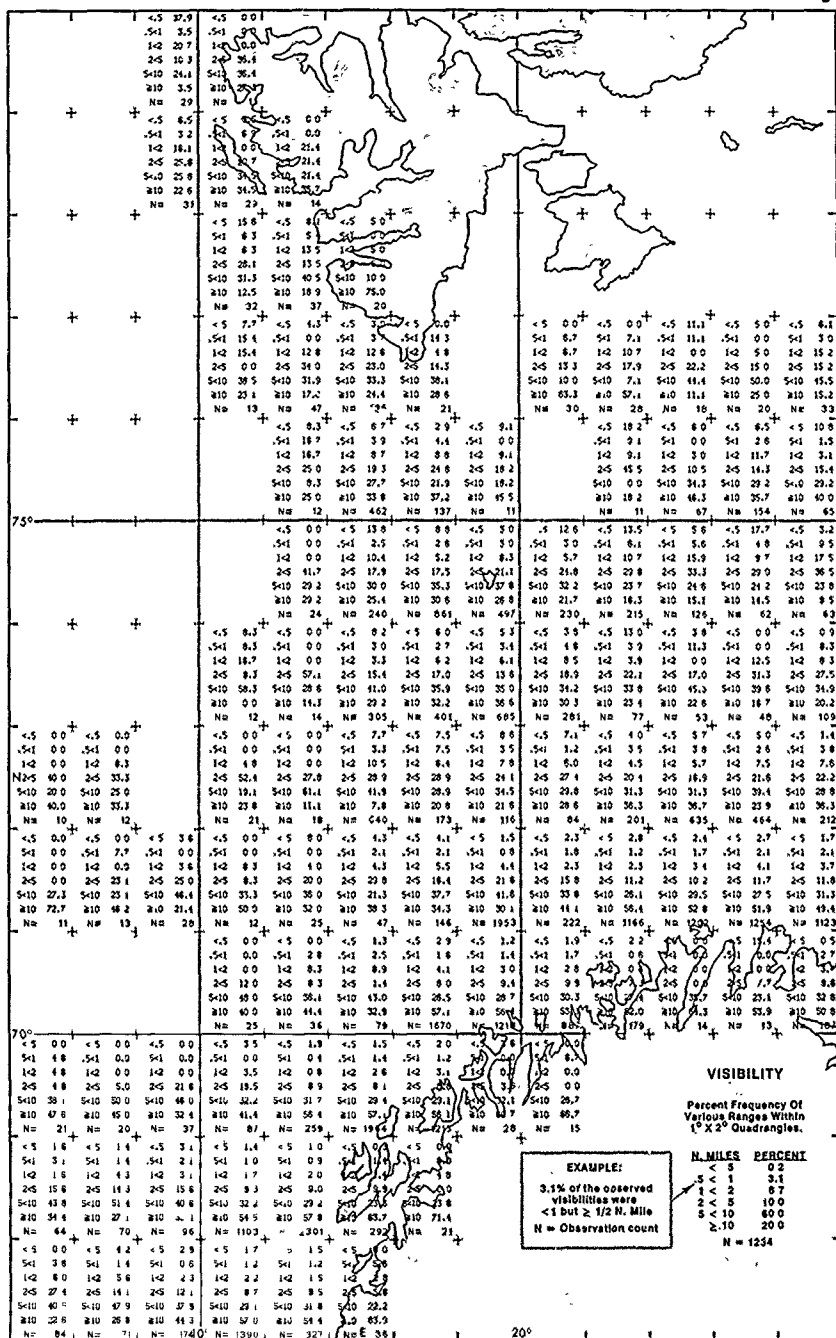
Precipitation



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

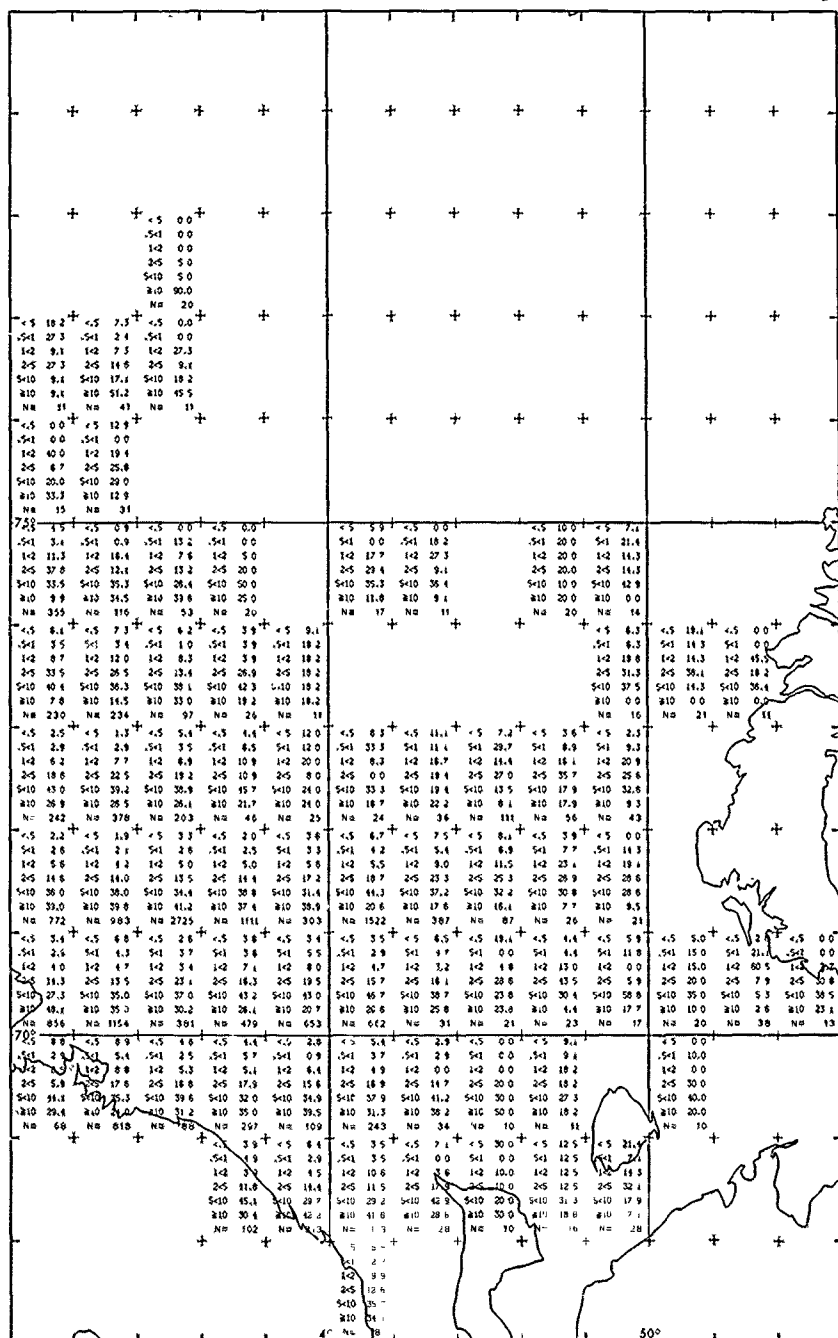
December

Visibility



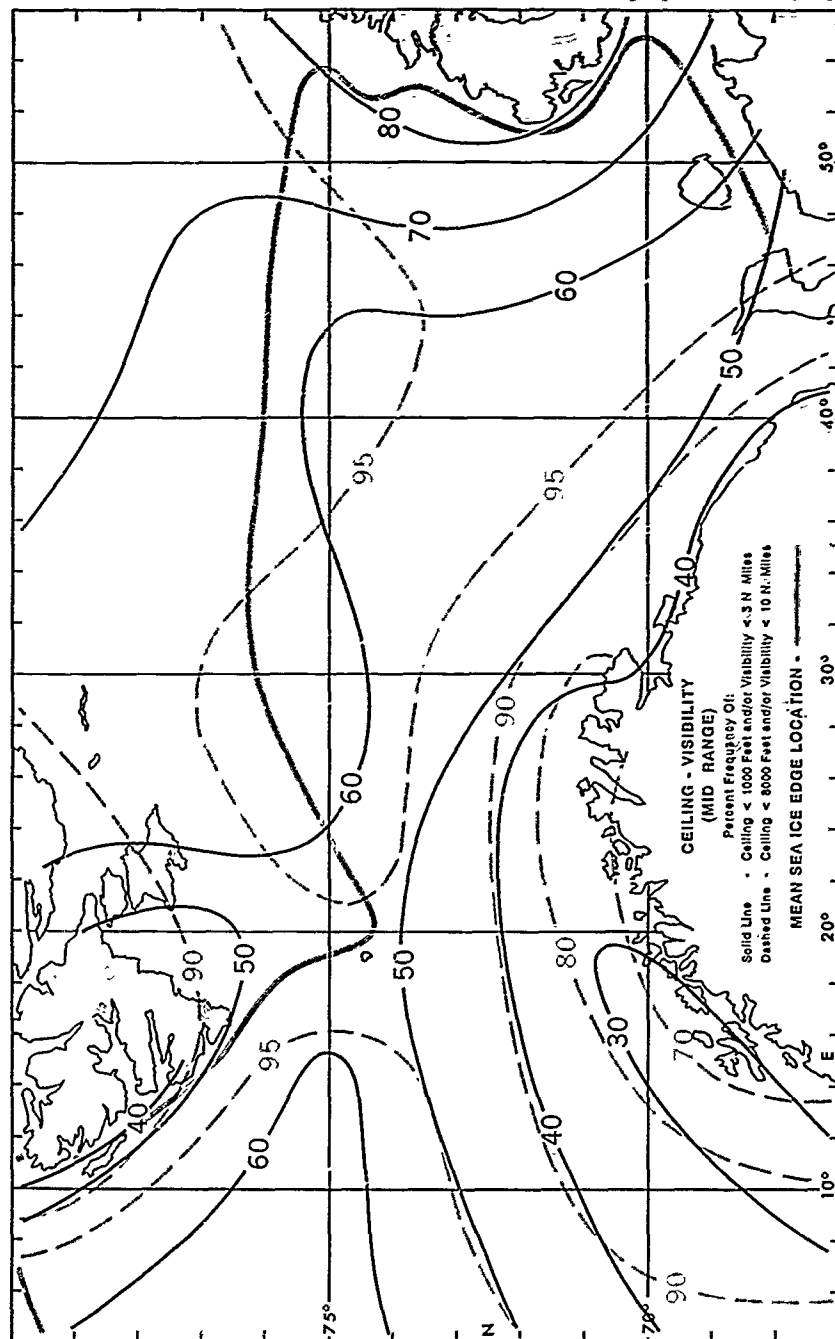
December

Visibility



December

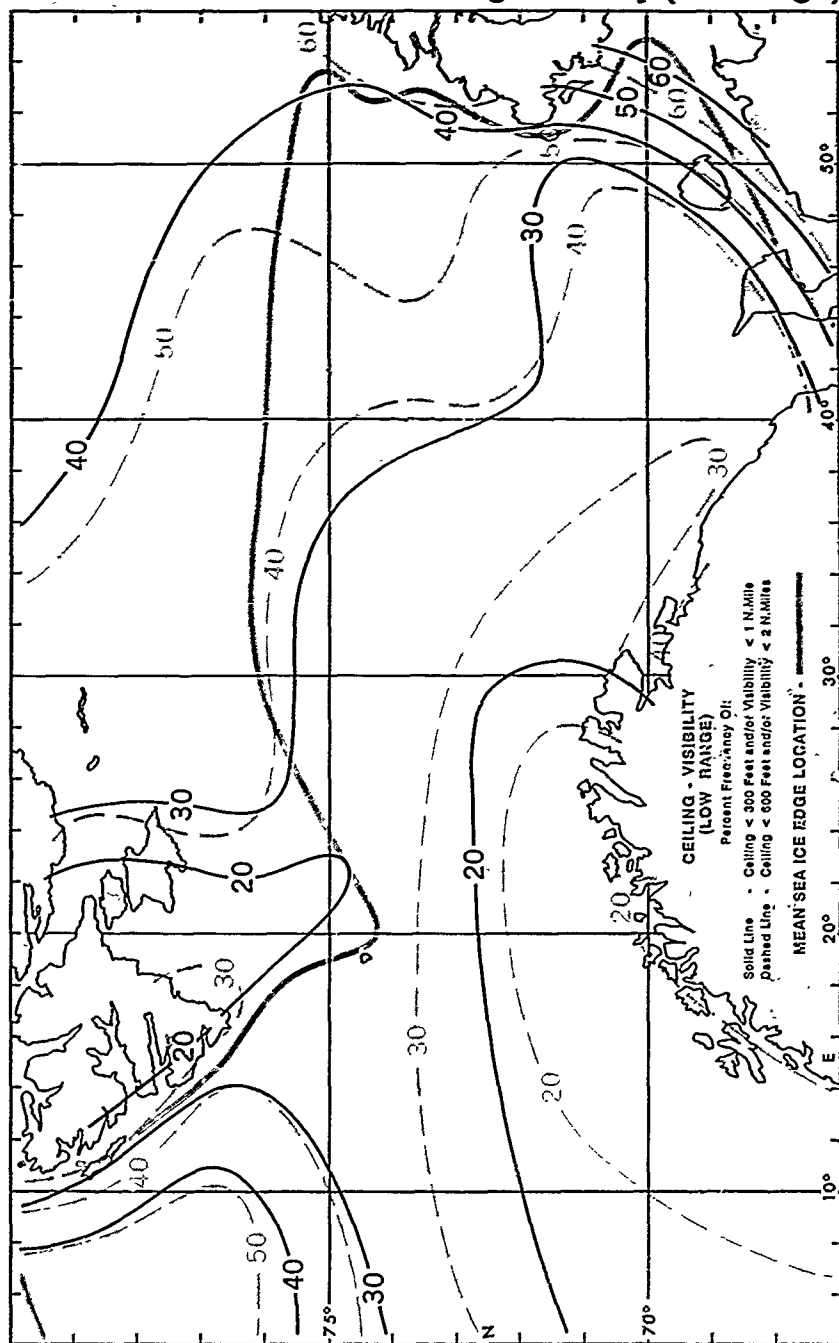
Ceiling-Visibility (mid range)



NOTE : Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

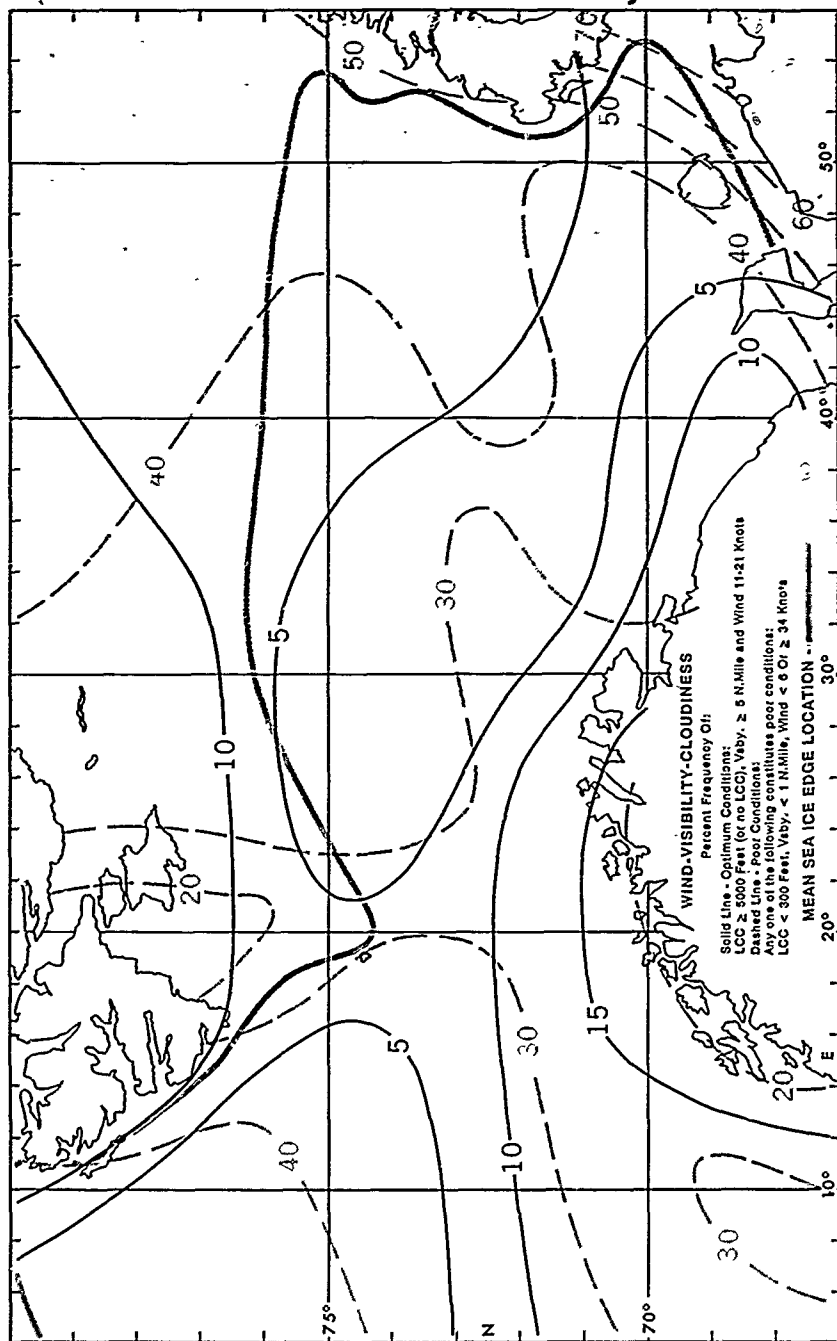
Ceiling-Visibility (low range)



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

December

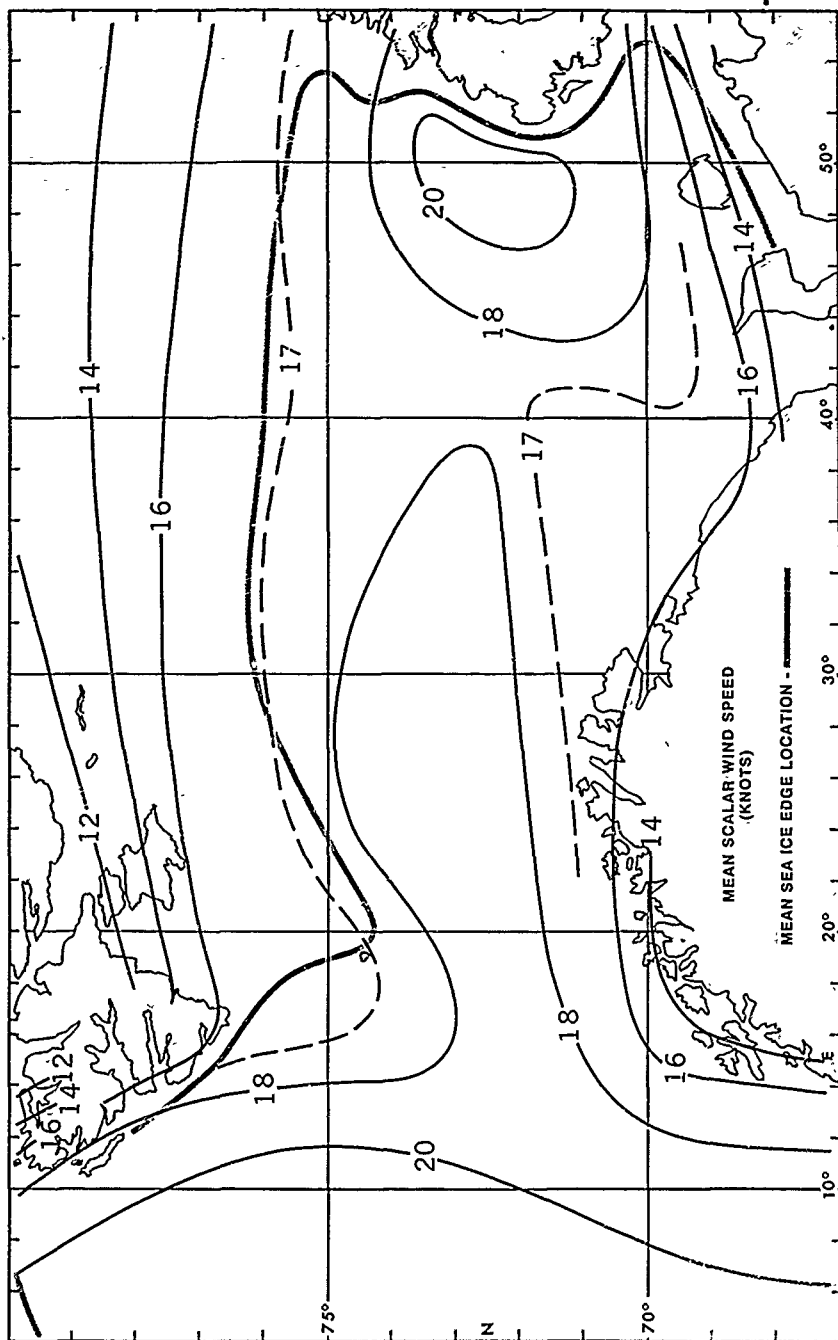
Wind-Visibility-Cloudiness



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

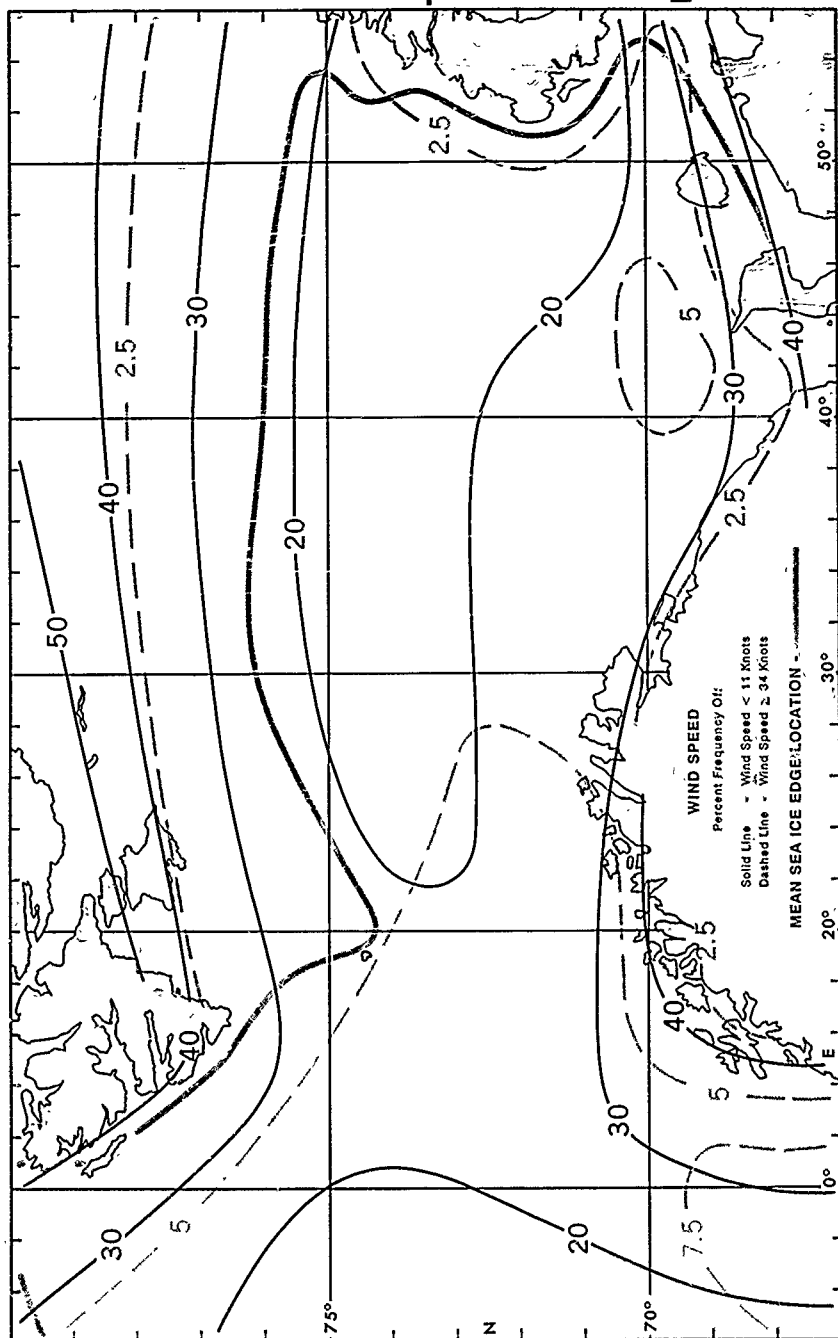
Mean Scalar Wind Speed



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December

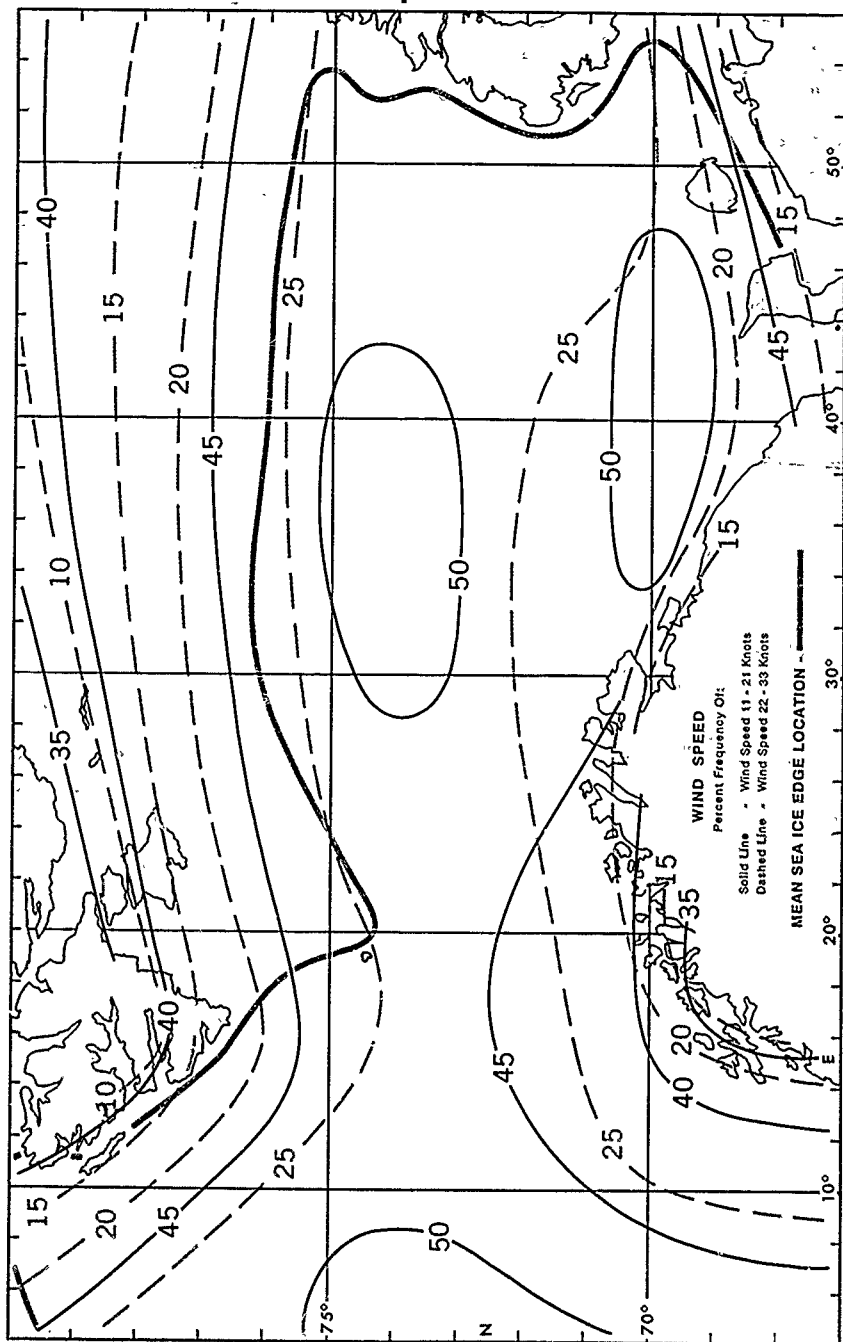
Wind Speed < 11 and ≥ 34 Knots



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

December

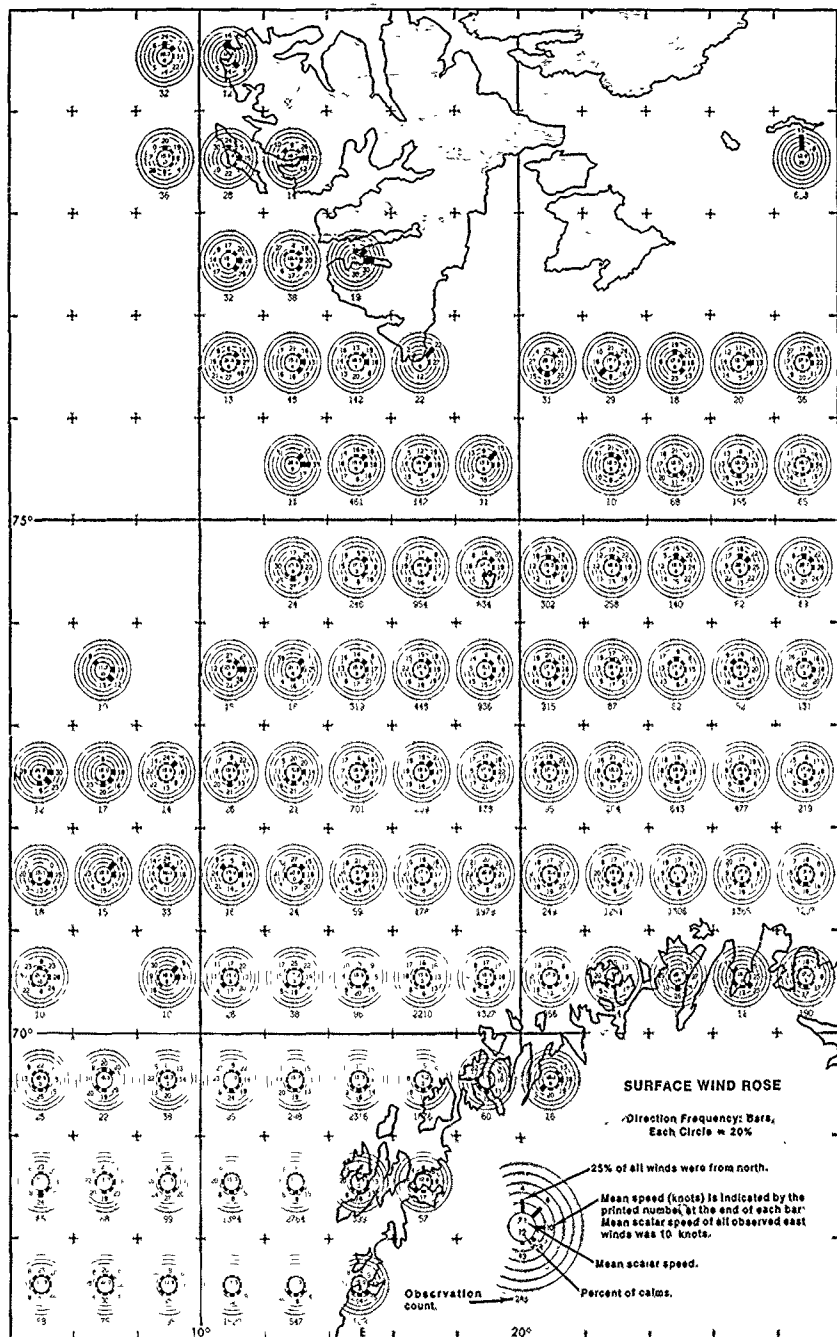
Wind Speed 11-21 and 22-33 Knots



NOTE: Analysis beyond the mean ice edge is highly subjective due to low observation counts.

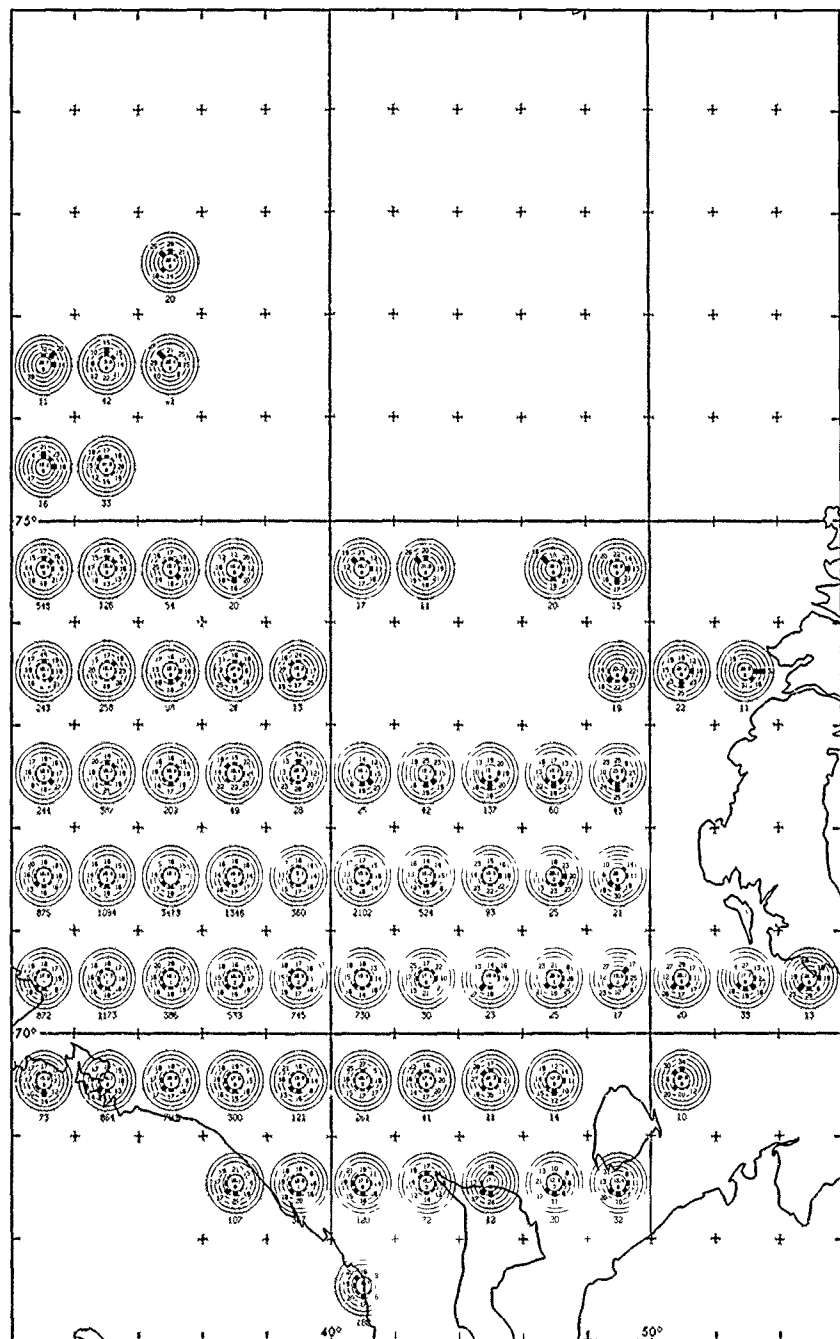
December

Surface Wind Roses



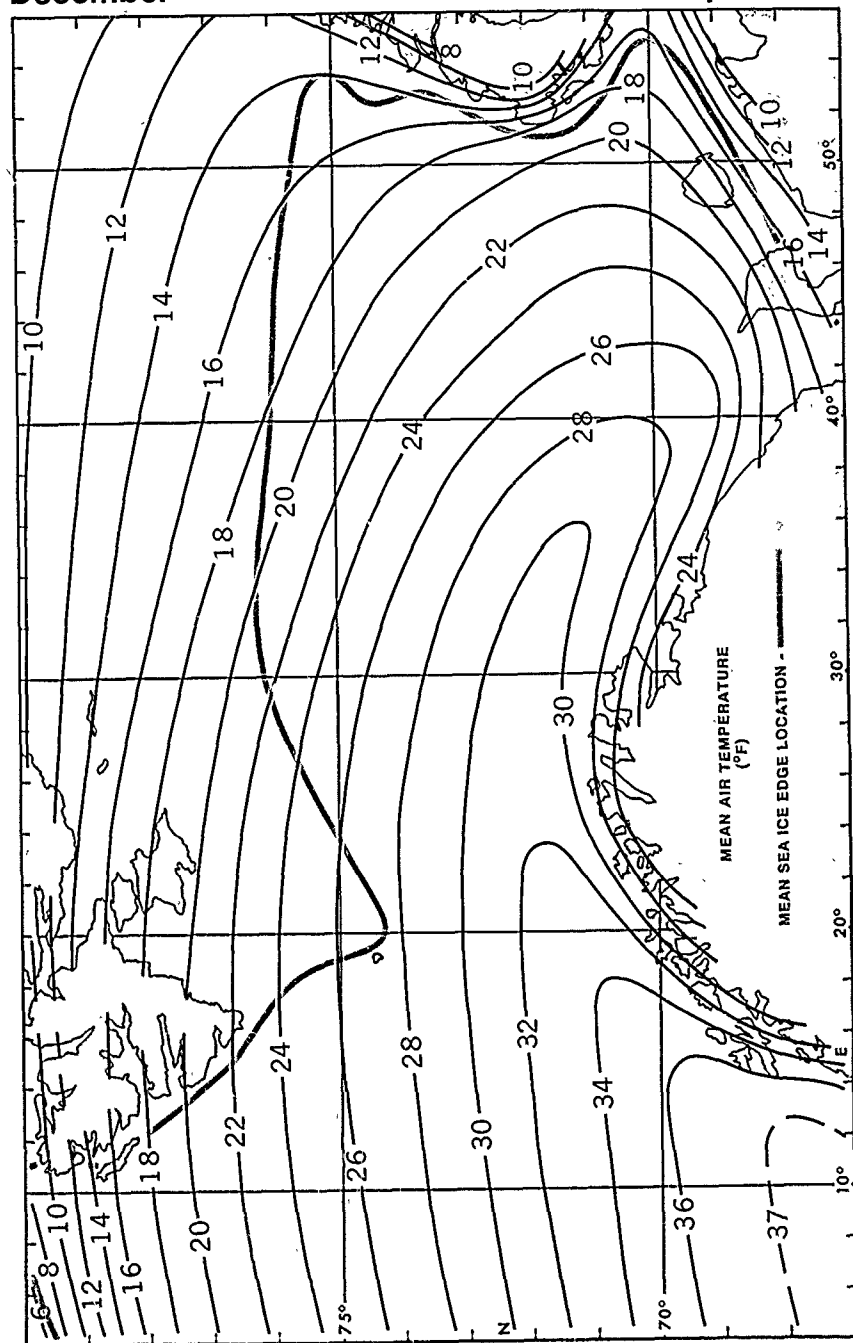
December

Surface Wind Roses



December

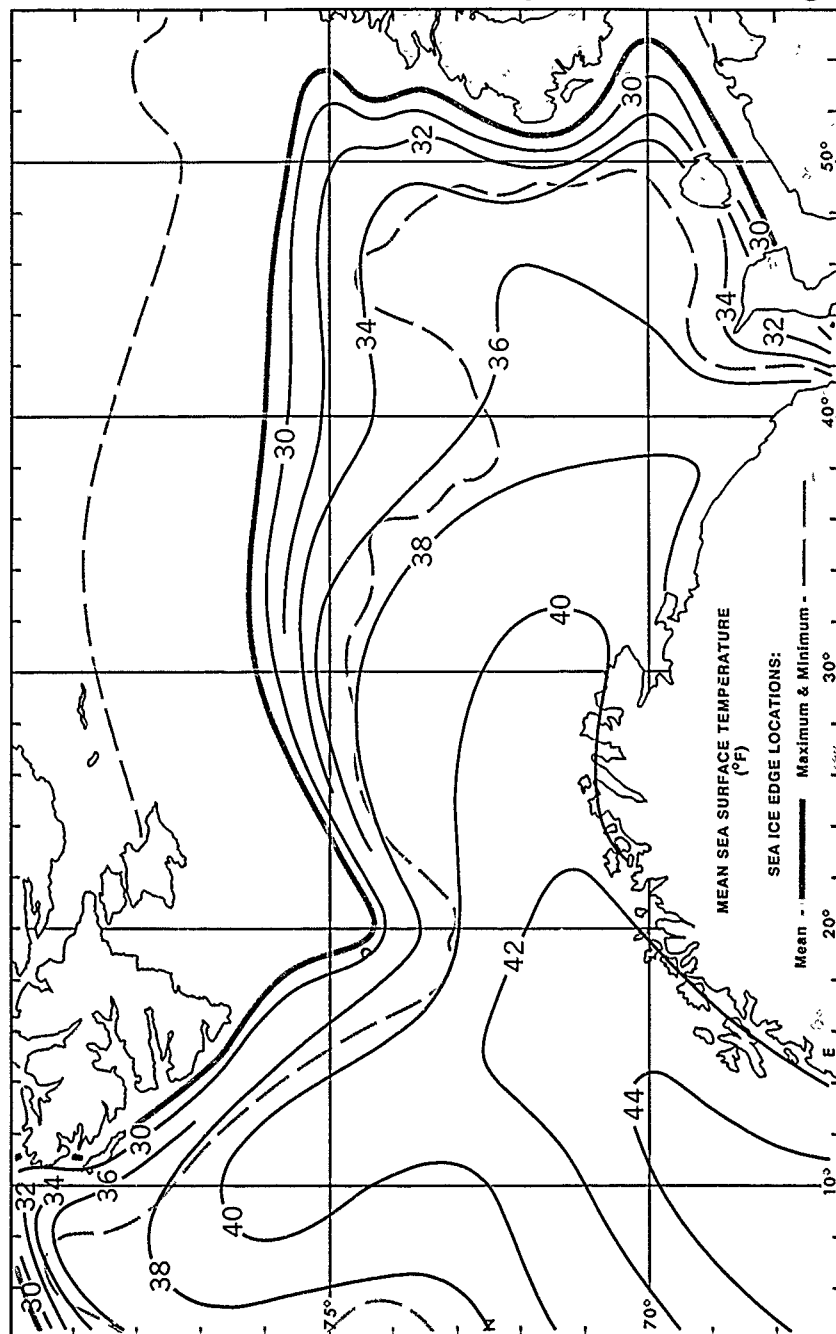
Mean Air Temperature



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

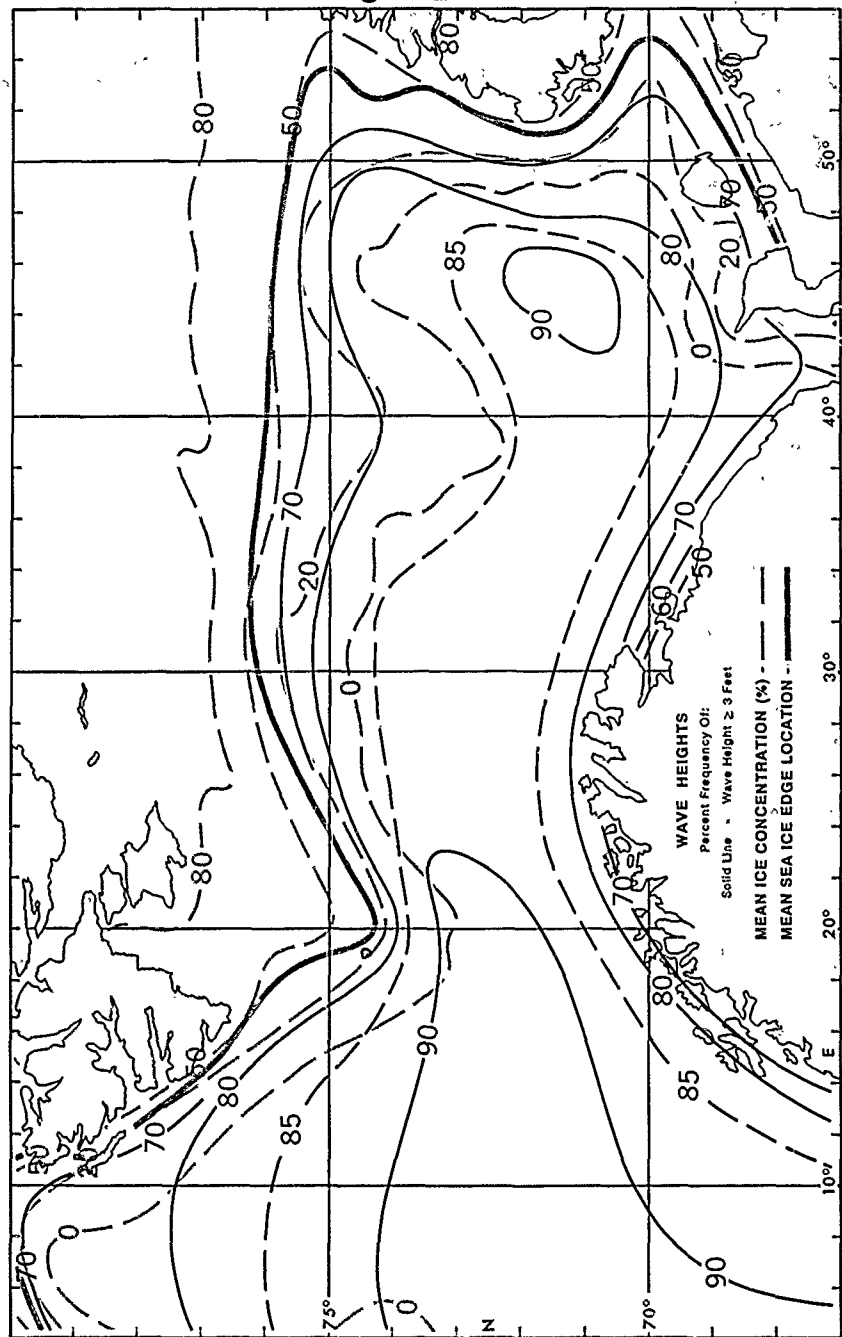
December

Mean Sea Temperature & Ice Edge



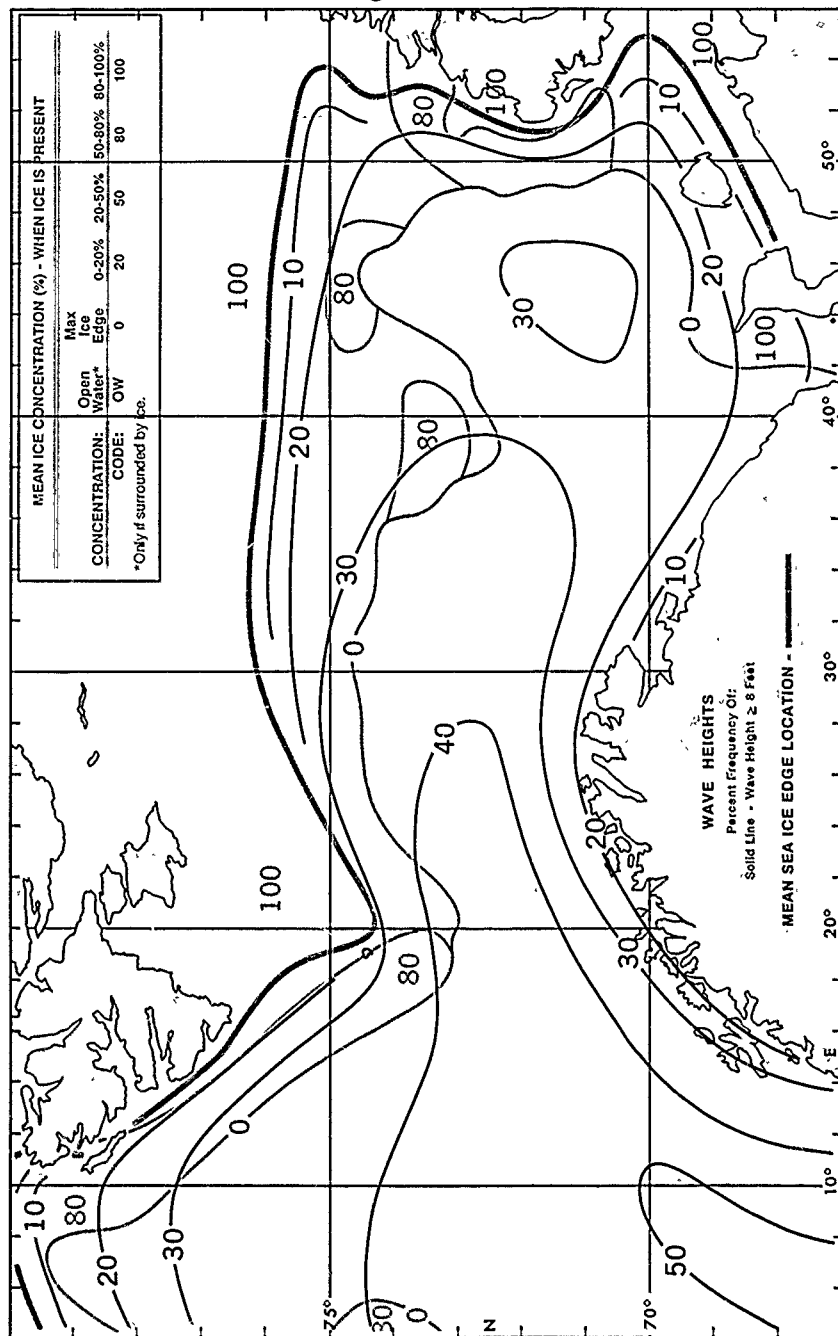
NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

December Wave Height ≥ 3 Ft. & Ice Concentration



NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts.

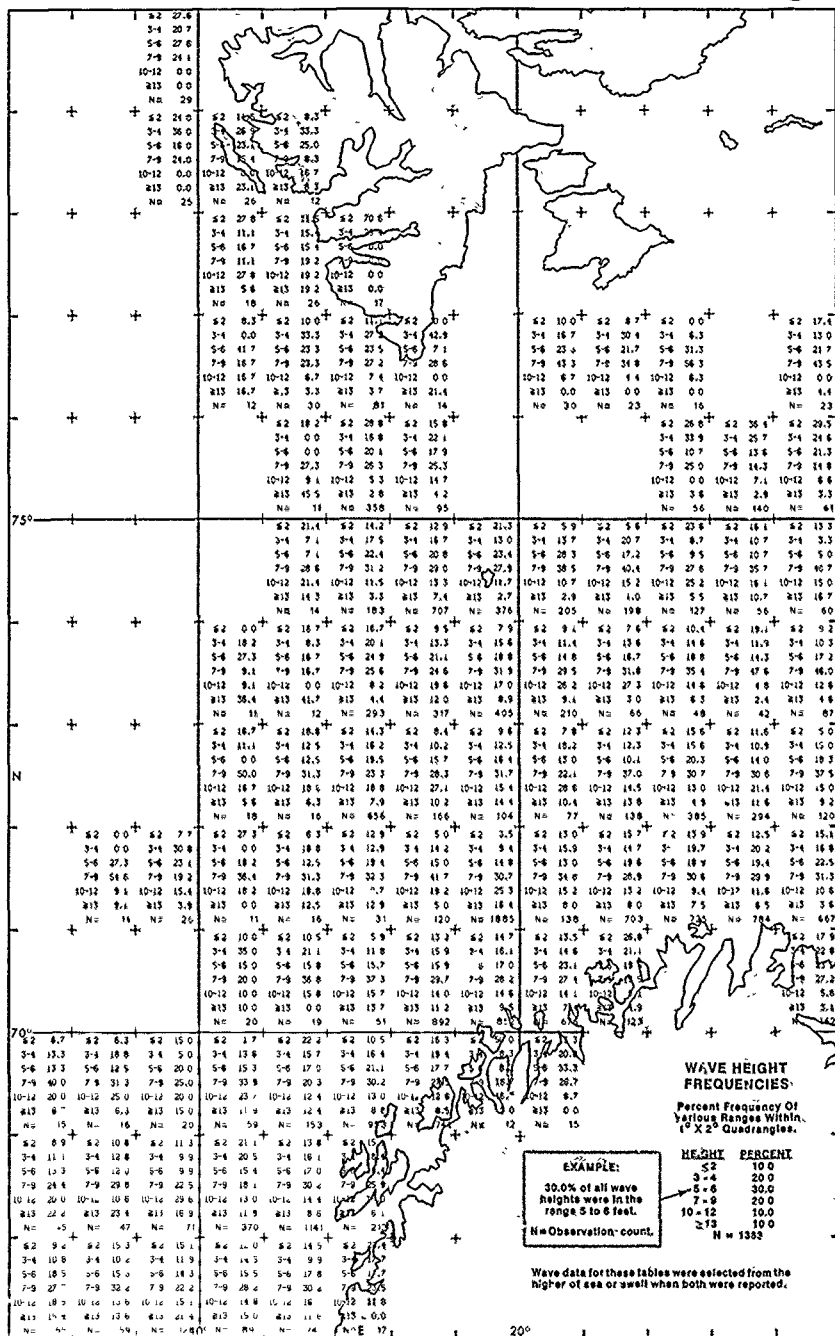
December

Wave Height ≥ 8 Ft. & Ice Concentration

NOTE . Analysis beyond the mean ice edge is highly subjective due to low observation counts

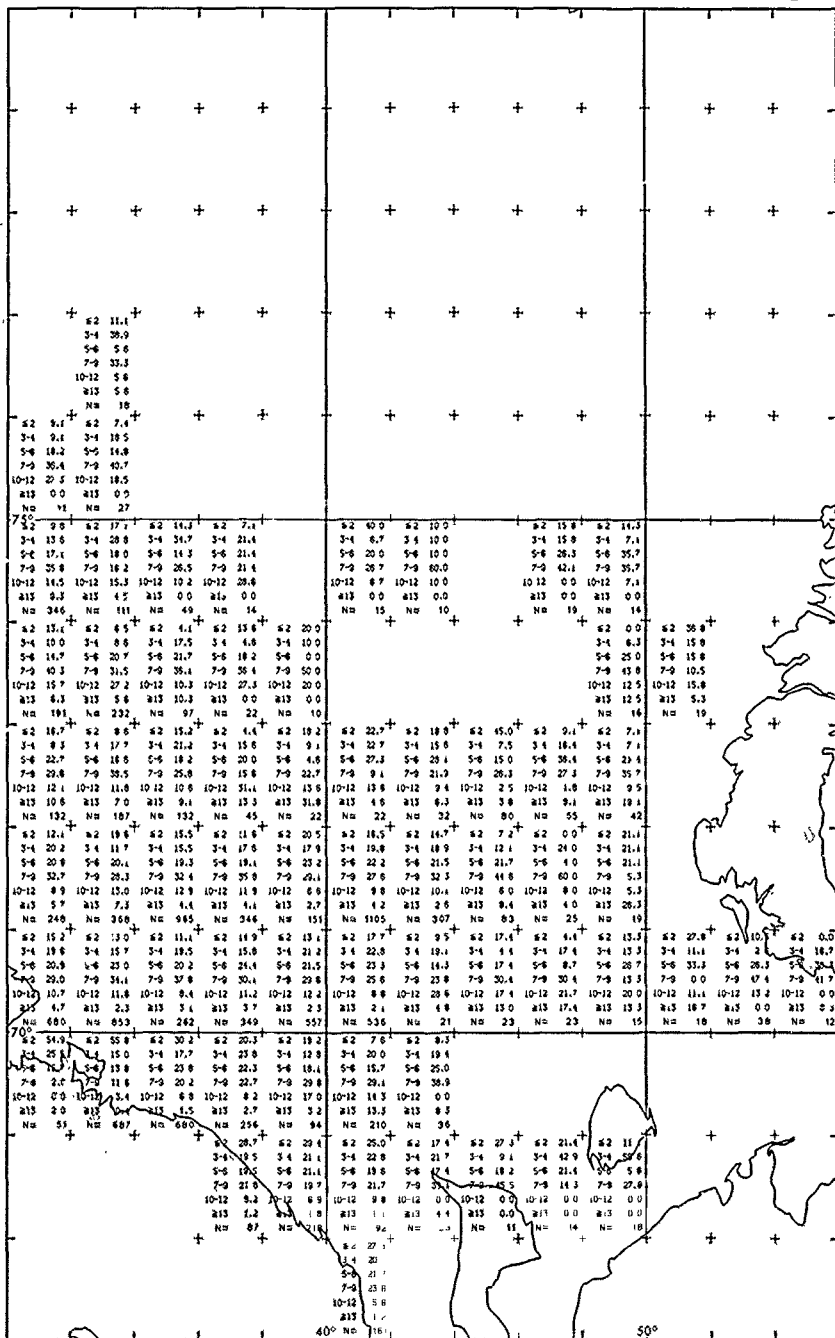
December

Wave Height



December

Wave Height



(Derived from hourly telecommunications data)

WMO NO. 01025: Tromsø/Langnes, Norway

LAT: 69°41'N

Longitude 18°55'E

ELEV: 33 FT

Period of record (hourly): 1973-1983

Period of record (daily): 1973-1989

[illegible][illegible]

NOTES:

- * Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, must included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

NO. 2	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	# VES
(LAST)														
	CEILING LESS THAN 5000 FEET AND VISIBILITY LESS THAN 5.00 MILES													
01	49	53	41	51	48	54	49	56	49	52	52	50	55	1
02	50	52	43	51	48	54	50	56	52	51	51	50	55	1
07	47	50	41	49	44	56	47	53	51	50	51	51	50	1
10	46	48	38	46	44	56	46	49	53	50	51	49	48	1
13	45	47	38	45	45	52	45	49	51	52	50	49	47	1
16	44	56	36	47	44	52	46	48	52	50	52	50	48	1
19	48	56	40	50	45	51	44	43	52	52	53	51	48	1
22	47	49	40	50	42	50	47	52	52	51	51	49	48	1
ALL	47	50	39	48	45	53	47	49	52	52	53	51	49	1

CEILING LESS THAN 3000 FEET AND/OR VISIBILITY LESS THAN 3.00 MILES

01	26	32	26	27	27	26	29	26	25	27	32	31	27	17
04	29	32	22	26	23	28	31	30	25	26	32	30	26	17
07	26	32	24	27	24	27	32	32	25	29	29	29	26	17
10	28	36	24	24	20	23	27	24	26	28	30	30	26	17
15	25	27	20	22	17	19	22	20	22	28	29	33	24	17
16	26	30	21	23	17	16	19	27	21	26	31	33	23	17
19	26	31	22	24	22	18	25	17	21	28	32	32	26	17
22	26	31	22	24	21	22	26	18	22	26	31	31	26	17
4LL	26	31	23	25	21	22	26	23	22	29	31	31	26	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	13	12	11	10	6	6	12	9	5	8	12	12	10	17
04	13	12	9	10	8	12	12	12	7	8	11	12	11	17
07	11	13	9	9	8	9	12	12	9	9	9	12	11	17
10	12	12	10	8	6	6	12	11	8	5	8	13	9	17
13	12	9	9	7	4	4	8	6	6	7	10	13	8	17
16	12	9	8	8	4	5	7	6	6	8	11	12	8	17
19	12	12	12	8	5	4	9	6	6	7	11	13	6	17
22	12	13	7	8	5	4	9	6	7	10	11	15	9	17
ALL	12	12	9	9	6	5	11	9	7	8	10	13	9	17

CEILING LESS THAN 500 FEET AND/OR VISIBILITY LESS THAN 1.00 MILES

01	5	5	4	2	5	11	7	2	2	5	7	5	17	
04	5	5	2	3	4	11	10	5	3	4	6	6	17	
07	5	5	4	4	5	10	12	7	4	5	6	6	17	
10	6	7	4	4	2	4	8	5	4	3	7	5	17	
13	5	4	4	3	1	2	5	4	3	5	7	4	17	
16	6	5	3	6	2	2	4	3	3	5	4	7	4	17
19	6	5	3	7	1	2	6	4	3	3	5	6	4	17
22	5	4	7	2	1	8	4	2	3	4	5	4	17	
All	5	5	3	3	3	4	8	4	3	4	6	5	17	

CEILING LESS THAN 200 FEET AND VISIBILITY LESS THAN 3/4 MILES

01	5	2	1	1	1	1	2	1	0*	2	1	1	1*
04	2	2	1	1	1	1	2	2	1	2	2	2	
07	2	1	2	1	1	C*	1	2	0*	1	2	1	
10	1	3	2	1	0	0	1	2	1	0*	1	1	
13	2	2	1	1	0	0	0	0*	0*	1	1	1	
16	2	2	1	2	0	0	0	0*	0*	1	1	1	
19	1	1	1	1	0	C*	1	0	C*	1	1	1	
22	2	C*	1	1	0*	0*	C*	1	C*	1	2	1	
ALL	2	2	1	1	1	C*	1	1	1	1	2	1	

NOTE 1
* 2 VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

VWAO NO. 01022: Biontra Island, Norway

LAT: 74°31'78"

LONG 15°01'E

ELEV: 151 FT

Period of record (hourly): 1973-1929

Period of record (daily): 1973-1989

[illegible]

NOTES:

- # - Mean number of days < 5 days
- \$ - Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- * - The predominant sky condition
- - Visibility is not considered, most included when reported
- & - Annual totals may differ from the sums of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

WEEK	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	W HSE
COUNTING LESS THAN 5000 FEET CASH WITHIN 100 FEET LESS THAN 5000 FEET														
01	46	73	70	72	80	80	84	82	83	80	78	68	76	17
02	76	73	72	73	81	82	84	82	83	80	78	68	76	17
03	49	73	70	72	80	80	84	82	83	80	78	68	76	17
10	67	73	69	69	77	78	85	77	82	79	81	65	76	17
15	65	72	69	70	78	78	76	76	76	76	76	76	76	17
16	68	72	69	67	78	76	82	77	77	78	77	66	76	17
19	69	72	69	69	78	80	82	78	79	81	78	68	75	17
20	67	72	65	62	73	78	81	65	82	82	61	69	77	17
ALL	67	73	71	70	79	78	84	82	80	79	79	67	76	17

CEILING LESS THAN 3000 FEET AND/OR VISIBILITY LESS THAN 3.00 MILES

21	51	40	57	41	66	69	79	75	75	70	66	51	65	17
26	52	59	58	40	68	69	80	76	76	71	68	53	66	17
07	55	62	61	59	65	68	80	74	72	68	60	50	65	17
10	53	61	60	59	63	67	79	69	73	64	68	49	64	17
13	51	61	60	59	64	59	77	68	66	66	68	52	63	17
16	53	58	60	58	65	62	77	69	67	68	65	52	63	17
19	55	60	61	60	63	66	72	71	71	71	66	52	64	17
22	51	60	60	61	65	67	81	73	75	69	68	53	65	17
ALL	52	60	60	60	65	66	79	72	72	68	67	52	64	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

G1	25	29	29	29	33	43	62	51	62	31	31	24	36	1
G4	23	29	30	31	33	39	63	56	60	32	31	25	36	1
G7	24	30	36	31	31	39	63	52	67	32	31	23	37	1
10	27	40	37	28	30	37	61	47	63	35	25	21	37	1
11	25	35	36	30	32	39	58	44	35	40	25	36	36	1
15	25	38	36	32	29	31	58	47	65	36	36	24	39	1
16	24	35	36	30	29	35	58	47	65	36	36	24	35	1
19	25	34	34	31	29	37	58	47	65	36	36	24	35	1
22	26	33	33	33	33	38	65	47	66	32	29	23	37	1
ALL	25	33	34	31	31	37	61	47	66	33	33	24	36	1

CEILING LESS THAN 500 FEET C/OD VISIBILITY LESS THAN 1.00 MILES

01	8	10	10	8	16	21	46	32	25	12	9	7	17	1
05	8	10	10	9	15	26	46	35	24	12	10	6	17	1
07	7	10	10	8	13	19	42	34	27	16	9	7	17	1
10	8	12	9	7	12	17	41	28	27	13	10	6	14	1
13	7	12	9	9	11	36	49	29	16	15	7	16	1	1
16	7	11	11	7	13	18	36	25	17	8	7	15	1	1
19	7	9	11	7	13	18	40	26	13	6	7	15	1	1
22	9	9	11	8	14	19	43	26	24	10	8	6	16	1
ALL	8	11	10	8	13	18	41	30	24	14	9	7	16	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

01	7	8	9	5	10	12	25	16	15	6	5	6	10	1
04	7	8	9	5	6	13	25	21	21	7	5	5	10	1
07	7	9	9	5	7	9	22	19	15	7	5	6	10	1
10	8	9	7	4	7	7	21	16	12	6	5	5	9	1
13	7	10	6	6	7	16	15	15	5	6	6	9	1	
16	6	8	6	5	7	6	17	14	13	6	5	6	9	1
19	6	8	6	5	9	11	20	15	13	6	6	6	9	1
22	6	8	9	5	10	10	23	15	14	6	5	5	10	1
ALL	7	9	8	5	6	10	21	16	14	6	5	6	9	1

NOTE: 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. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 01052: Hopen Island, Norway

LAT: 76°30'N

LOH: 25°04'E

ELEV: 103 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE										PRECIPITATION									
MEAN										MAXIMUM									
JAN										JAN									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	21	22	23	24	25	26	27	28	29	30
31										31									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	21	22	23	24	25	26	27	28	29	30
31										31									

NOTES:

- # - Mean number of days < 5 days
- \$ - Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + - The predominant sky condition
- * - Visibility is not considered, just included when reported
- & - Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# HRS
CEILING LESS THAN 3000 FEET OVER VISIBILITY LESS THAN 4.00 MILES													
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82	82	72	53	68
24	46	56	46	55	72	77	76	83	82				

CEILING LESS THAN 3000 FEET EACH VISIBILITY LESS THAN 3.00 MILES

01	46	56	52	47	44	72	74	72	70	68	59	47	60	17
02	46	56	46	47	43	69	72	72	72	69	46	44	60	17
07	47	52	52	48	65	69	76	74	72	61	57	45	60	17
10	48	69	46	47	44	67	77	72	72	63	55	46	59	17
13	47	47	48	45	61	47	75	72	63	58	58	46	58	17
16	46	47	48	44	43	48	74	72	71	66	47	47	58	17
19	45	42	51	46	44	67	74	72	71	68	46	44	58	17
22	42	47	47	45	44	70	75	78	75	76	43	52	62	17
25	47	47	53	46	63	69	76	72	72	67	58	46	59	17

CEILING LESS THAN 1000 FEET EACH VISIBILITY LESS THAN 3.00 MILES

24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
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24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29	33	25
24	23	27	33	32	40	49	45	58	45	29	33	25	36	17	24	23	27	33	32	40	49	45	58	45	29</		

CEILING LESS THAN 500 FEET EACH VISIBILITY LESS THAN 1.00 MILES

21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
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21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17	21	9	11	14	12	21	25	26	42	26	14	11	12
21	9	11	14	12	21	25	26	42	26	14	11	12	21	17													

(Derived from hourly telecommunications data)

WHO NO. 01098: Vardo, Norway

LAT: 70°22'N

LON: 31°06'E

FI EV- 161 FI

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

[illegible][illegible]

NOTES:

- = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, most included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

MAY JUN JUL AUG SEP OCT NOV DEC JANUARY FEB

CEILING LESS THAN 5000 FEET AND/OR VISIBILITY LESS THAN 5.00 MILES

04	74	71	66	63	62	63	59	67	67	71	71	76	67	17
05	76	72	66	63	61	62	62	67	65	69	64	71	68	17
07	73	71	64	57	59	63	61	62	63	64	68	72	65	17
10	70	60	57	57	59	60	60	64	58	62	64	67	62	17
13	70	63	54	62	57	55	59	61	58	60	65	68	61	17
16	70	66	54	62	57	58	57	63	58	68	69	76	63	17
19	73	64	61	63	58	58	57	63	64	68	72	76	65	17
22	77	66	61	63	61	60	59	67	65	70	70	74	64	17
ALL	77	60	61	59	10	59	69	62	62	68	72	68	17	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	44	44	41	58	55	56	59	59	61	44	56	46	61	17
04	08	66	40	55	53	53	57	59	54	67	61	65	60	17
27	44	44	56	51	50	57	57	56	56	56	40	44	50	17
16	01	51	52	50	51	52	50	54	51	53	56	42	54	17
13	42	58	48	55	48	50	54	56	52	51	58	40	54	17
16	41	58	49	56	51	51	52	56	52	59	59	46	56	17
19	44	41	54	57	51	53	51	59	59	61	42	46	58	17
22	40	61	54	57	54	54	53	56	54	61	42	46	58	17
414	44	40	54	55	52	53	59	58	56	52	41	46	50	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

D1	24	21	20	35	16	22	28	26	15	14	18	26	20	1
G0	26	21	22	20	17	21	30	25	17	12	16	22	21	1
07	24	22	21	18	17	22	29	19	26	17	19	22	21	1
1U	22	21	18	17	15	19	28	21	19	13	19	24	20	1
13	26	24	19	21	14	19	17	19	16	13	22	25	20	1
16	23	22	18	18	15	19	27	20	16	19	19	27	20	1
19	23	23	20	19	16	19	28	27	16	13	20	27	20	1
22	24	23	20	17	17	21	27	25	15	12	18	27	20	1
ALL	24	22	20	18	16	20	27	22	17	12	19	25	20	1

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 1.00 MILES

01	7	6	6	3	4	11	18	13	5	2	3	9	7	1
04	6	6	5	4	7	11	18	15	5	2	5	6	7	1
07	6	6	5	4	10	17	12	7	6	6	7	11	7	1
10	7	8	2	5	8	18	11	7	2	6	5	7	7	1
13	8	7	5	8	4	10	16	9	6	2	6	7	7	1
16	6	7	3	5	5	8	16	12	5	2	6	8	7	1
19	6	8	5	5	6	9	15	12	5	2	6	6	6	1
22	6	7	5	3	6	9	17	12	4	2	6	9	7	1
25	6	7	5	3	6	9	17	12	4	2	6	9	7	1
28	6	7	5	3	6	9	17	12	4	2	6	9	7	1
31	6	7	5	3	6	9	17	12	4	2	6	9	7	1
34	6	7	5	3	6	9	17	12	4	2	6	9	7	1
37	6	7	5	3	6	9	17	12	4	2	6	9	7	1
40	6	7	5	3	6	9	17	12	4	2	6	9	7	1
43	6	7	5	3	6	9	17	12	4	2	6	9	7	1
46	6	7	5	3	6	9	17	12	4	2	6	9	7	1
49	6	7	5	3	6	9	17	12	4	2	6	9	7	1
52	6	7	5	3	6	9	17	12	4	2	6	9	7	1
55	6	7	5	3	6	9	17	12	4	2	6	9	7	1
58	6	7	5	3	6	9	17	12	4	2	6	9	7	1
61	6	7	5	3	6	9	17	12	4	2	6	9	7	1
64	6	7	5	3	6	9	17	12	4	2	6	9	7	1
67	6	7	5	3	6	9	17	12	4	2	6	9	7	1
70	6	7	5	3	6	9	17	12	4	2	6	9	7	1
73	6	7	5	3	6	9	17	12	4	2	6	9	7	1
76	6	7	5	3	6	9	17	12	4	2	6	9	7	1
79	6	7	5	3	6	9	17	12	4	2	6	9	7	1
82	6	7	5	3	6	9	17	12	4	2	6	9	7	1
85	6	7	5	3	6	9	17	12	4	2	6	9	7	1
88	6	7	5	3	6	9	17	12	4	2	6	9	7	1
91	6	7	5	3	6	9	17	12	4	2	6	9	7	1
94	6	7	5	3	6	9	17	12	4	2	6	9	7	1
97	6	7	5	3	6	9	17	12	4	2	6	9	7	1
100	6	7	5	3	6	9	17	12	4	2	6	9	7	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILE

01	5	4	2	2	3	5	8	8	3	00	2	7	4	1
04	4	5	1	3	2	4	8	8	2	1	2	4	4	1
07	4	4	3	2	2	4	9	5	2	00	2	6	3	1
10	6	7	1	3	1	2	7	4	3	1	4	4	4	1
13	6	7	4	3	1	3	6	3	2	1	4	5	4	1
16	6	5	3	2	2	3	7	4	2	00	3	6	4	1
19	4	6	3	2	3	7	5	2	2	00	2	5	3	1
22	4	5	3	1	3	7	6	1	1	1	1	1	1	1
ALL	5	5	3	2	2	4	7	6	2	1	1	1	1	1

NOTE 3
* 3 VALUE > 0 AND < 100 PERCENT

(Derived from hourly telecommunications data)

LAT: 67°16'N

LON: 14°22'E

ELEV: 141 Ft

Period of record (daily): 1973-1989

[illegible]

- # - Mean number of days < .5 days
- \$ - Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + - The predominant sky condition
- * - Visibility is not considered, mist included when reported
- & - Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

MONTH (LIST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# VES
CEILING LESS THAN 5000 FEET /OR VISIBILITY LESS THAN 5.00 MILES														
01	49	54	42	49	44	55	56	55	4	53	53	51	51	17
04	52	54	42	51	44	53	53	51	51	51	51	51	51	17
07	51	53	42	47	41	52	55	54	50	54	50	51	50	17
10	50	51	35	40	38	48	55	46	50	51	50	52	47	17
13	51	49	36	41	38	48	51	50	52	52	48	46	46	17
16	51	49	36	44	41	44	52	46	49	55	54	51	51	17
19	53	51	37	45	41	45	54	48	52	56	53	51	49	17
22	50	50	34	48	43	47	53	51	51	54	52	52	50	17
25	51	52	39	46	41	49	54	49	52	53	53	51	49	17
ALL	51	52	39	46	41	49	54	49	52	53	53	51	49	17

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	40	41	29	35	25	30	36	30	31	36	36	36	36	37
04	41	41	28	39	24	31	37	33	33	33	39	39	35	37
07	39	39	29	33	23	31	37	32	33	32	37	36	34	37
10	39	39	25	28	23	30	33	28	28	33	35	40	32	37
13	40	38	25	28	21	27	32	23	10	34	35	37	31	37
16	38	36	24	29	25	24	30	25	27	34	37	42	31	37
19	39	39	27	31	24	25	32	26	27	34	38	34	32	37
22	39	39	26	34	28	30	30	29	27	34	35	39	32	37
25	39	39	27	32	24	28	33	28	30	34	37	39	32	37

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	17	16	10	13	9	15	16	11	7	9	12	13	13	17
04	17	17	11	12	10	14	19	13	10	9	12	14	11	17
07	16	15	12	13	9	14	19	14	6	6	12	14	13	17
10	16	15	12	10	9	11	17	11	7	9	12	15	12	17
13	17	17	10	10	7	6	16	10	6	9	11	15	12	17
16	16	14	9	10	9	9	15	9	6	10	13	16	11	17
19	15	15	9	10	9	10	14	10	6	6	12	17	11	17
22	15	16	11	12	9	11	16	11	6	10	10	15	12	17
ALL	16	16	11	11	9	12	17	11	7	9	12	15	12	17

CEILING LESS THAN 300 FEET &/OR VISIBILITY LESS THAN 1.00 MILES

01	7	7	4	5	4	9	11	7	3	4	4	6	17
02	7	6	5	5	4	15	10	5	4	4	4	15	
07	7	6	7	4	5	8	12	10	5	4	4	7	
10	7	7	6	6	5	7	11	7	3	6	5	8	7
13	8	10	6	6	3	5	10	7	4	5	7	8	7
16	7	4	5	5	4	5	9	6	2	5	5	5	5
18	6	7	3	6	5	6	9	6	3	4	9	6	17
22	6	5	5	4	7	10	6	3	3	4	6	6	
ALL	7	7	5	6	4	7	11	7	3	4	6	6	17

CEILING LESS THAN 400 FEET 4/00 VISIBILITY LESS THAN 3/4 MILES

01	3	3	2	1	1	2	2	1	1	1	2	2	17	
04	3	1	1	1	1	2	1	2	0*	1	2	2	17	
07	3	3	1	1	0*	2	3	2	1	1	2	4	17	
10	3	3	2	1	1	0*	1	1	0*	1	1	3	2	17
13	4	4	2	1	1	0	2	0*	1	1	2	4	2	17
16	3	2	1	1	1	0*	2	1	0*	1	1	2	1	17
19	2	3	1	3	1	1	1	0*	0*	1	4	1	1	17
22	2	2	1	1	2	1	1	0*	0*	1	2	1	1	17
ALL	3	3	2	1	1	2	1	1	1	1	3	3	2	17

NOTE: * Z VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

LAT: 80°37'N

ELEV: 66 Ft

Period of record (daily): 1973-1989

[illegible]

NOTES-

- ♂ = Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

MONTH ESTD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	N YRS
	CEILING LESS THAN 5000 FEET 6/10 VISIBILITY LESS THAN 5.00 MILES													
01	43	48	40	35	65	74	70	76	81	59	44	57	17	17
04	43	45	41	35	62	75	72	76	80	60	43	45	57	23
07	46	48	39	39	57	67	68	74	79	58	54	47	59	24
10	43	47	45	34	59	69	64	75	80	61	44	43	56	17
13	43	48	41	32	56	69	68	69	78	59	44	46	56	17
16	45	44	41	34	56	67	67	74	76	60	44	45	57	17
19	42	44	41	35	60	70	72	72	78	61	43	42	55	22
22	44	45	41	35	64	71	73	82	58	42	42	42	56	17
ALL	44	45	41	35	63	71	69	74	78	60	43	43	56	17

CEILING LESS THAN 3000 FEET 4/OR VISIBILITY LESS THAN 3.00 MILES

01	37	39	33	29	55	67	66	70	76	48	36	39	50	17
04	35	36	34	29	54	68	66	66	72	50	38	37	49	17
07	37	40	31	30	57	67	64	65	72	50	33	37	49	17
10	36	40	35	28	52	63	63	68	72	53	35	34	46	17
13	36	41	32	25	50	64	64	63	72	51	37	36	48	17
16	37	38	30	26	51	60	61	66	71	50	36	36	47	17
19	36	36	23	30	54	62	67	65	73	51	36	34	48	17
22	38	38	31	30	58	65	65	67	74	47	35	33	49	17
ALL	36	38	31	28	55	65	67	73	50	36	36	38	49	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

01	23	23	23	21	18	17	19	34	36	35	20	18	25	24	13
04	22	22	22	27	15	16	16	34	34	20	19	23	24	24	13
07	24	23	20	19	15	19	39	32	31	20	20	23	24	13	13
10	24	24	23	18	19	19	32	33	30	22	19	22	24	24	13
13	23	28	23	16	15	18	31	28	29	22	19	21	23	23	13
16	24	25	21	15	14	17	31	30	31	20	19	20	22	13	13
19	22	21	22	16	14	17	34	31	36	18	21	20	23	13	13
22	22	24	19	18	14	21	35	33	34	16	19	20	23	13	13
25	23	24	21	17	16	19	39	32	33	20	19	22	23	13	13

CEILING LESS THAN 500 FEET 4/OR VISIBILITY LESS THAN 1.00 MILES

01	9	9	5	6	3	6	19	18	16	7	6	9	10	1
04	8	7	6	4	4	5	19	18	16	6	8	9	9	1
07	10	11	6	5	3	5	20	15	15	6	6	7	9	1
10	9	8	6	6	3	5	14	13	12	7	7	8	9	1
13	9	6	6	4	3	6	15	13	13	6	7	9	8	1
16	9	9	7	4	3	6	13	15	13	7	6	8	8	1
19	8	7	8	4	3	6	13	15	15	7	9	8	9	1
22	7	7	5	3	5	5	18	14	9	5	5	8	9	1
ALL	9	8	7	5	3	6	16	15	14	7	7	8	9	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

01	6	4	3	6	1	2	9	8	3	1	2	4	4	1
04	5	4	3	2	2	9	7	6	1	2	3	4	1	1
07	7	6	5	2	1	5	8	7	5	1	3	4	1	1
10	4	5	6	9	1	1	5	6	4	2	3	4	6	1
13	6	5	4	2	2	2	6	5	4	1	3	4	4	1
16	5	6	4	2	2	2	6	5	4	2	2	4	4	1
19	4	4	3	6	2	1	5	6	7	4	3	4	4	1
22	4	3	5	3	1	5	6	7	4	1	2	3	5	1
ALL	5	5	4	3	1	2	7	6	4	1	2	3	5	1

NOTE

* IF VALUE > 2 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

LAT: 78°04'N

ELEV: 161 Ft

Period of record (daily): 1973-1989

NOTES:

- # = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	EYES
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	--------	------

CEILING LESS THAN 5000 FEET C/W VISIBILITY LESS THAN 5.00 MILES													
01	46	46	44	40	53	63	60	72	66	63	53	54	17
02	45	45	43	44	53	64	60	71	69	62	50	42	34
03	47	45	45	41	54	61	61	74	66	64	53	43	17
10	46	47	43	37	52	61	60	66	64	66	53	44	27
13	48	46	39	35	51	60	61	67	66	63	53	44	27
16	47	45	38	37	50	57	56	67	67	68	53	44	27
19	48	46	41	35	51	60	59	69	65	66	53	44	27
22	46	46	42	37	50	62	60	69	67	64	53	43	27
41	46	46	42	35	52	61	60	69	66	64	53	43	27

01	42	41	42	34	47	52	53	41	53	56	48	34	46	17
04	41	40	43	42	46	56	55	41	56	56	45	34	46	17
07	42	42	43	40	49	55	55	43	55	55	45	39	49	17
10	42	44	41	36	49	52	55	56	52	57	48	40	46	17
13	44	43	38	33	45	51	50	40	55	56	49	41	47	17
16	44	42	30	34	46	48	51	57	56	56	49	41	47	17
19	44	42	30	32	46	46	52	57	52	59	48	46	47	17
22	42	42	40	42	36	44	51	55	40	54	49	34	47	17
ALL	43	42	41	36	47	51	52	49	54	57	47	39	47	17

01	17	20	19	19	14	11	10	11	12	21	16	15	16	17
04	18	21	20	22	16	12	11	11	12	19	16	15	16	17
07	17	24	25	23	15	15	17	13	15	16	17	16	17	17
10	15	25	26	20	14	11	4	11	13	17	19	13	16	17
13	19	26	23	16	13	10	8	11	12	15	16	16	15	17
16	16	22	19	17	13	4	5	8	12	17	15	17	16	17
19	22	23	20	16	11	4	7	16	16	12	17	17	16	17
22	16	20	21	19	12	10	4	9	12	17	15	13	14	17
ALL	17	23	22	19	13	11	4	10	13	18	17	15	15	17

01	5	3	3	3	3	2	3	2	5	5	4	3	17
04	4	3	5	5	4	3	3	3	4	5	3	3	17
07	4	4	4	3	5	4	3	3	4	4	3	4	17
10	4	6	5	2	4	3	2	2	4	4	3	4	17
13	4	9	5	3	4	2	1	2	3	4	4	4	17
16	5	7	5	1	3	2	1	3	4	3	3	3	17
19	4	6	5	4	1	1	1	3	3	2	4	3	17
22	3	5	5	3	2	3	2	4	2	2	3	3	17
ALL	4	6	5	3	4	2	2	3	4	3	3	3	17

01	3	2	3	2	3	2	2	2	2	4	4	3	3	17
04	3	3	3	4	4	3	2	1	2	3	2	2	3	17
07	4	5	5	3	4	4	2	2	2	3	3	2	3	17
10	5	6	5	2	4	2	1	1	2	3	2	3	3	17
13	3	7	5	3	3	2	1	1	2	3	3	4	3	17
16	4	6	5	1	3	2	1	1	2	4	2	2	3	17
19	2	4	5	3	3	1	1	1	2	3	3	3	3	17
22	2	4	4	3	2	2	1	1	2	3	3	2	3	17
ALL	3	5	4	3	3	2	1	1	2	3	3	3	3	17

NOTE: $\bar{z}$ VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

ELEV: 52 Ft

Period of record (daily): 1973-1989

[illegible]

FEB	9	0	5	35	-23	78	78	-04	0	165	5	25	70	0VR	0	0	20	11	1	8	17	0	17	#	2	#	0	#	23
APR	9	0	5	35	-29	77	76	-03	0	165	5	25	68	0VR	0	0	18	10	1	17	0	17	#	2	#	0	#	20	
MAY	9	0	5	35	-29	77	76	-03	0	165	5	25	68	0VR	0	0	18	10	1	17	0	17	#	2	#	0	#	20	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
MAY	18	23	25	46	-14	79	79	-10	19	40	12	40	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
JUN	9	0	5	35	-29	77	76	-03	0	165	5	25	68	0VR	0	0	18	10	1	17	0	17	#	2	#	0	#	20	
JUL	49	41	45	64	31	63	79	-24	39	70	90	10	52	0VR	2	13	1	0	13	0	1	0	13	0	14	0	#	14	
AUG	43	46	72	29	82	40	60	-23	59	70	12	56	0VR	3	9	1	0	14	0	1	0	14	0	14	0	#	9	#	
SEP	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
GCT	30	24	27	46	-1	82	82	-12	12	135	52	14	52	0VR	0	0	24	6	8	15	0	15	0	4	#	7	#	11	
DEC	21	14	18	37	15	78	78	-12	12	130	52	21	48	0VR	0	0	25	4	5	17	0	17	#	3	#	16	#	18	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#	15	#	17	
APR	17	7	12	44	-21	75	74	-05	5	105	2	27	66	0VR	0	0	22	7	1	16	0	16	#	3	#				

NOTES:

- # = Mean number of days < 5 days
- \$ = Pressure altitude in tens of feet (i.e., \$0 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

MOU (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	% OBS
CEILING LESS THAN 5000 FEET <OR> VISIBILITY LESS THAN 5.00 MILES														
02	50	53	61	47	62	71	57	61	71	58	56	56	59	17
03	53	54	65	45	68	70	54	65	68	64	57	56	59	17
08	53	51	57	43	63	68	53	61	65	60	62	59	58	17
11	54	67	54	02	61	69	50	59	46	61	62	58	57	17
14	53	57	59	52	63	66	67	67	61	62	56	57	58	17
17	51	52	57	45	59	64	51	58	72	61	58	56	57	17
20	50	50	57	46	65	67	55	61	68	57	57	55	58	17
23	60	51	61	65	65	63	68	62	71	76	58	59	59	17
26	52	51	58	44	63	68	53	60	68	59	52	52	57	17

CEILING LESS THAN 3000 FEET 4/OR VISIBILITY LESS THAN 3.00 MILES

02	43	47	56	42	62	45	57	55	63	50	50	48	53	17
05	48	51	62	38	63	46	51	52	59	55	50	50	53	17
08	50	46	52	38	40	66	49	55	58	51	52	52	53	17
11	51	43	51	36	55	67	45	55	55	48	53	52	51	17
14	48	43	51	37	57	62	46	52	59	50	54	53	53	17
17	46	45	53	42	56	63	47	52	63	51	50	52	52	17
20	44	46	47	33	41	60	43	50	59	40	48	49	50	17
23	45	43	54	40	59	54	44	52	54	40	48	48	51	17
ALL	47	45	54	39	59	64	47	54	60	50	51	51	52	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

G2	25	23	30	20	17	29	29	20	34	10	19	22	21	17
G5	26	24	33	20	17	29	29	25	16	21	12	20	22	17
G8	29	25	34	20	19	27	25	16	14	14	23	23	23	17
11	26	25	32	22	16	23	24	14	14	23	22	21	21	17
16	24	24	31	21	17	24	22	16	15	13	20	22	21	17
17	23	23	30	21	16	24	22	16	17	11	19	24	20	17
20	23	21	29	20	19	24	25	17	15	11	21	23	23	17
23	23	21	31	18	20	24	27	14	10	12	24	24	22	17
ALL	25	23	31	20	18	26	25	17	16	12	21	23	23	17

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 1.00 MILES

02	8	8	10	8	1	13	17	9	5	3	5	7	8	17
05	8	4	10	4	6	18	17	7	8	3	7	7	9	17
08	11	6	13	8	4	12	11	7	6	3	6	8	8	17
11	11	10	12	9	7	12	12	4	5	3	7	8	9	17
16	10	11	11	7	5	10	11	7	5	3	7	8	8	17
17	10	10	11	7	5	12	12	7	6	4	8	8	8	17
20	10	11	13	7	7	13	15	7	6	4	9	8	9	17
23	8	9	12	4	7	12	17	6	6	3	6	7	9	17
ATL	10	9	12	8	6	12	14	2	6	3	7	8	9	17

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

02	6	5	6	6	5	8	11	6	3	2	3	5	5	17
05	7	5	7	4	5	7	9	3	7	2	4	4	5	17
08	7	5	6	5	4	6	5	4	3	1	4	6	5	17
11	7	7	7	6	4	6	5	3	4	1	5	5	5	17
14	7	7	6	5	3	5	6	5	3	1	5	4	5	17
17	7	4	7	6	5	3	6	4	3	1	5	6	5	17
20	7	6	8	5	4	7	9	4	5	1	5	5	5	17
23	6	7	6	3	4	10	5	4	1	3	5	5	5	17
26	6	7	6	3	4	10	5	4	1	3	5	5	5	17
29	6	7	5	4	7	8	4	4	1	4	5	5	5	17

NOTE 1
* Z VALUE > 0 AND < 0.5 PERCENT

STATION CLIMATIC SUMMARY

(Derived from hourly telecommunications data)

WMO NO. 22113: Murmansk, USSR

LAT: 68°58'N

LON: 33°03'E

ELEV: 151 Ft

Period of record (hourly): 1973-1989

Period of record (daily): 1973-1989

TEMPERATURE (DEG F) (REL HUMIDITY) (INCHES) (KTS) (HOURS)	MEAN NO. OF DAYS WITH (C)	PRECIPITATION (INCHES)	OBSTR TO VISION (HOURS)
MEANS 1 EXTREME (PERCENT) (INCHES) (KTS) (HOURS)	PRECIPITATION (INCHES)	OBSTR TO VISION (HOURS)	
MAX MIN MEAN (INCHES) (KTS) (HOURS)	PRECIPITATION (INCHES)	OBSTR TO VISION (HOURS)	
JAN 16 6 12 39 -38 85 85 -06 7 185 5 11 33 OVR 0 0 23 8 1 23 0 24 8 12 0 15 8 23			
FEB 18 9 24 43 -31 85 81 -06 5 100 5 11 35 BKN 0 0 21 6 1 21 0 21 8 8 11 8 17			
MAR 24 17 22 50 -19 85 74 -09 16 145 5 10 35 BKN 0 0 24 2 2 19 0 21 0 9 1 7 8 15			
APR 34 25 50 55 -4 83 65 -13 22 115 5 9 24 BKN 0 1 25 6 6 18 0 21 0 5 3 8 7			
MAY 44 35 40 81 34 80 62 -17 30 85 5 9 35 BKN 1 8 12 0 14 0 11 0 21 0 4 8 0 4			
JUN 55 43 49 86 28 78 60 -23 24 70 5 9 35 BKN 4 20 2 0 19 0 4 20 1 4 8 0 6			
JUL 62 49 55 85 35 83 62 -30 45 85 5 9 27 BKN 12 27 0 0 17 0 8 0 18 1 4 8 0 4 5			
AUG 56 46 51 82 29 88 68 -29 44 90 5 9 29 BKN 6 23 8 0 21 0 8 0 21 1 4 8 0 6			
SEP 48 41 46 69 27 88 72 -23 38 110 5 9 31 BKN 8 13 5 0 26 0 3 0 21 1 4 8 0 6			
OCT 34 31 34 58 4 85 60 -16 29 145 5 9 39 BKN 0 1 19 0 13 0 16 0 24 0 5 8 2 6			
NOV 27 19 23 48 -18 86 86 -10 19 175 5 10 33 OVR 0 0 26 2 5 21 0 23 8 9 0 6 8			
DEC 19 10 15 -17 86 85 -04 10 185 5 10 33 OVR 0 0 24 7 2 25 0 25 4 10 8 13 8 20			
ANN 78 28 33 46 -38 84 73 24 140 5 10 39 BKN 25 93 181 25 121 8 141 8 240 3 81 1 57 1 126			
PER 17 12 17 17 17 16 17 16 16 16 16 17 17 17 17 17 16 16 16 16 16 17 17 16 16 16 16			

NOTES:

- # = Mean number of days < .5 days
- \$ = Pressure altitude in tens of feet (e.g., 500 = 500 feet)
- + = The predominant sky condition
- * = Visibility is not considered, mist included when reported
- & = Annual totals may differ from the sum of the monthly values because of rounding

FLYING WEATHER - PERCENT OF HOURS

WMO (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 3.00 MILES														
01	63	55	55	49	57	57	54	62	60	67	63	65	59	17
04	63	57	56	54	61	59	61	64	60	66	66	71	62	17
07	65	58	63	59	61	62	62	69	72	67	69	68	64	17
10	64	60	64	51	58	64	59	70	69	71	69	64	64	17
13	64	54	55	47	59	64	59	70	66	66	69	69	62	17
16	65	50	46	47	59	64	59	70	67	68	65	70	61	17
19	63	54	42	44	55	60	57	66	64	69	67	67	59	17
22	64	53	47	45	52	56	51	58	62	69	64	64	57	17
ALL	64	55	51	49	58	61	58	66	65	68	67	68	61	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WMO (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	51	47	44	39	44	46	45	48	44	54	54	57	48	17
04	52	47	47	42	46	47	49	51	46	55	59	61	50	17
07	53	47	52	42	50	53	52	57	52	57	62	60	55	17
10	54	50	56	45	59	55	54	63	58	61	64	59	54	17
13	58	45	47	41	50	52	49	57	58	58	62	61	53	17
16	57	42	39	40	48	51	46	58	53	59	58	61	51	17
19	52	45	35	34	43	50	46	52	50	57	59	58	49	17
22	54	42	37	31	42	43	46	46	46	55	55	55	46	17
ALL	54	46	45	41	46	50	48	54	52	57	59	59	51	17

CEILING LESS THAN 1000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WMO (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	23	16	14	10	10	9	12	8	7	12	19	25	14	17
04	24	18	15	13	13	12	18	12	10	13	22	25	16	17
07	21	16	21	20	15	13	20	19	15	13	23	24	19	17
10	25	24	20	19	11	10	13	14	18	19	23	26	19	17
13	31	24	23	14	7	8	14	7	8	14	19	15	12	17
16	34	21	14	8	6	6	5	5	5	14	27	32	15	17
19	26	22	12	11	4	4	5	7	4	15	22	26	13	17
22	24	17	12	10	5	6	7	6	5	11	21	16	13	17
ALL	24	20	14	13	9	8	11	10	9	14	23	27	16	17

CEILING LESS THAN 500 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

WMO (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	7	4	3	1	2	2	2	2	1	2	6	5	3	17
04	6	5	5	2	2	3	6	2	3	4	5	5	4	17
07	7	3	5	2	2	3	5	6	5	5	6	7	5	17
10	7	5	6	2	2	1	3	3	3	6	7	4	6	17
13	7	5	2	2	1	1	1	1	1	4	9	3	12	17
16	4	3	2	1	0	1	0	0	2	3	7	9	3	17
19	6	4	2	1	1	1	1	1	1	1	5	6	3	17
22	6	4	2	1	2	1	1	1	1	3	7	7	3	17
ALL	6	4	3	2	2	2	2	2	2	4	6	7	4	17

CEILING LESS THAN 400 FEET &/OR VISIBILITY LESS THAN 3/4 MILES

WMO (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	# YRS
01	5	3	3	1	2	1	1	0	1	2	2	4	2	17
04	4	4	4	1	1	0	7	2	1	2	3	4	2	17
07	5	2	4	4	3	1	0	2	4	5	3	4	3	17
10	5	2	5	2	1	0	0	2	4	5	4	5	3	17
13	5	4	4	1	1	0	0	1	3	3	4	3	2	17
16	5	3	1	1	0	1	0	0	1	3	5	6	2	17
19	3	4	1	1	1	0	0	0	0	2	3	4	2	17
22	4	3	1	1	1	1	1	1	1	2	3	4	2	17
ALL	4	3	3	2	1	1	1	1	2	3	4	5	2	17

NOTE:
= VALUE > 0 AND < 0.5 PERCENT

(Derived from hourly telecommunications data)

ELEV: 161 Ft

Period of record (daily): 1973-1989

[illegible]

= Mean number of days < .5 day

\$ = Pressure altitude in tens of feet (i.e., 50 = 500 feet)

4 = The predominant sky condition

- * = Visibility is not considered, must included when reported

* Annual totals may differ from the sum of the monthly values because of rounding

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	W. H. 1973
	CEILING LESS THAN 5000 FEET 6/50 VISIBILITY LESS THAN 5.00 MILES													
CO	65	57	56	47	59	55	53	65	59	71	72	70	61	1
03	65	55	59	55	51	54	54	65	61	69	72	71	61	1
06	65	53	57	44	58	54	56	67	62	72	69	69	61	1
09	67	63	52	43	55	52	54	65	63	74	74	72	62	1
12	65	55	55	47	53	55	49	63	61	73	72	71	59	1
15	63	54	49	43	53	52	44	62	61	72	75	72	68	1
18	64	56	57	44	53	57	49	61	62	76	72	72	59	1
21	64	57	54	46	56	56	52	65	60	76	72	72	59	1
24	65	56	54	45	55	50	52	64	63	72	72	71	60	1

CEILING LESS THAN 3000 FEET &/OR VISIBILITY LESS THAN 3.00 MILES

G0	42	53	53	44	57	55	51	44	52	48	47	44	58	1
G3	41	54	51	50	52	52	54	45	59	45	70	45	59	1
C6	42	56	54	43	55	52	51	45	57	48	44	62	48	1
C9	44	59	50	42	54	51	51	45	59	70	72	70	59	1
12	01	51	47	41	52	47	46	40	59	49	69	72	56	1
13	02	51	47	41	51	47	41	47	59	49	72	70	54	1
14	02	51	47	41	50	45	48	54	56	72	70	48	57	1
15	03	51	47	41	53	48	47	57	44	70	48	48	57	1
ALL	42	54	51	43	53	48	50	47	58	48	49	48	57	1

CEILING LESS THAN 3000 FEET 4/OR VISIBILITY LESS THAN 3.00 MILES

00	30	27	23	19	16	14	22	22	26	14	24	34	22	1
03	31	24	21	22	17	21	24	22	19	17	23	13	21	1
06	31	24	24	18	14	20	24	22	17	15	21	12	22	1
09	29	24	24	20	18	18	25	24	18	17	23	10	23	1
12	14	28	24	19	16	18	22	22	20	15	22	33	23	1
15	16	30	22	18	15	14	21	21	19	14	24	34	23	1
18	34	27	24	18	14	17	22	20	16	17	22	22	22	1
21	31	24	25	19	17	14	19	24	19	14	24	11	22	1
ALL	32	28	23	19	15	16	22	22	19	16	23	32	23	1

CEILING LESS THAN 500 FEET AND/OR VISIBILITY LESS THAN 3.00 MILE

00	14	9	4	4	9	13	11	15	14	4	4	13	11	1
03	12	10	4	9	9	14	19	15	11	4	4	10	11	1
06	13	12	4	9	12	15	14	15	12	5	4	12	11	1
09	12	13	11	4	12	12	19	19	17	13	7	4	9	12
12	12	13	7	7	9	13	15	14	14	6	7	11	11	1
15	15	14	7	4	10	10	13	13	11	5	9	15	11	1
18	15	14	4	4	7	9	14	12	13	10	4	12	10	1
21	13	13	9	10	9	12	15	14	10	5	4	11	11	1
24	13	11	4	9	10	12	14	15	12	4	4	12	11	1

CEILING LESS THAN 200 FEET &/OR VISIBILITY LESS THAN 3/4 MILE

00	10	5	5	7	7	12	13	12	9	2	3	1	0	1
03	8	6	4	7	4	12	14	14	4	2	3	4	0	1
06	4	7	6	6	9	13	15	12	9	2	3	4	0	1
09	8	8	7	7	11	10	15	15	9	3	4	7	9	1
12	13	9	2	6	8	10	10	11	8	3	4	8	6	1
15	11	9	4	6	9	7	10	9	8	2	4	9	7	1
18	9	6	6	6	7	8	9	9	8	2	4	7	7	1
21	9	6	4	8	9	8	11	14	7	2	9	7	7	1
ALL	10	7	5	7	4	10	12	12	8	2	9	7	8	1

NOTE 1
* T VALUE > 0 AND < 0.5 PERCENT