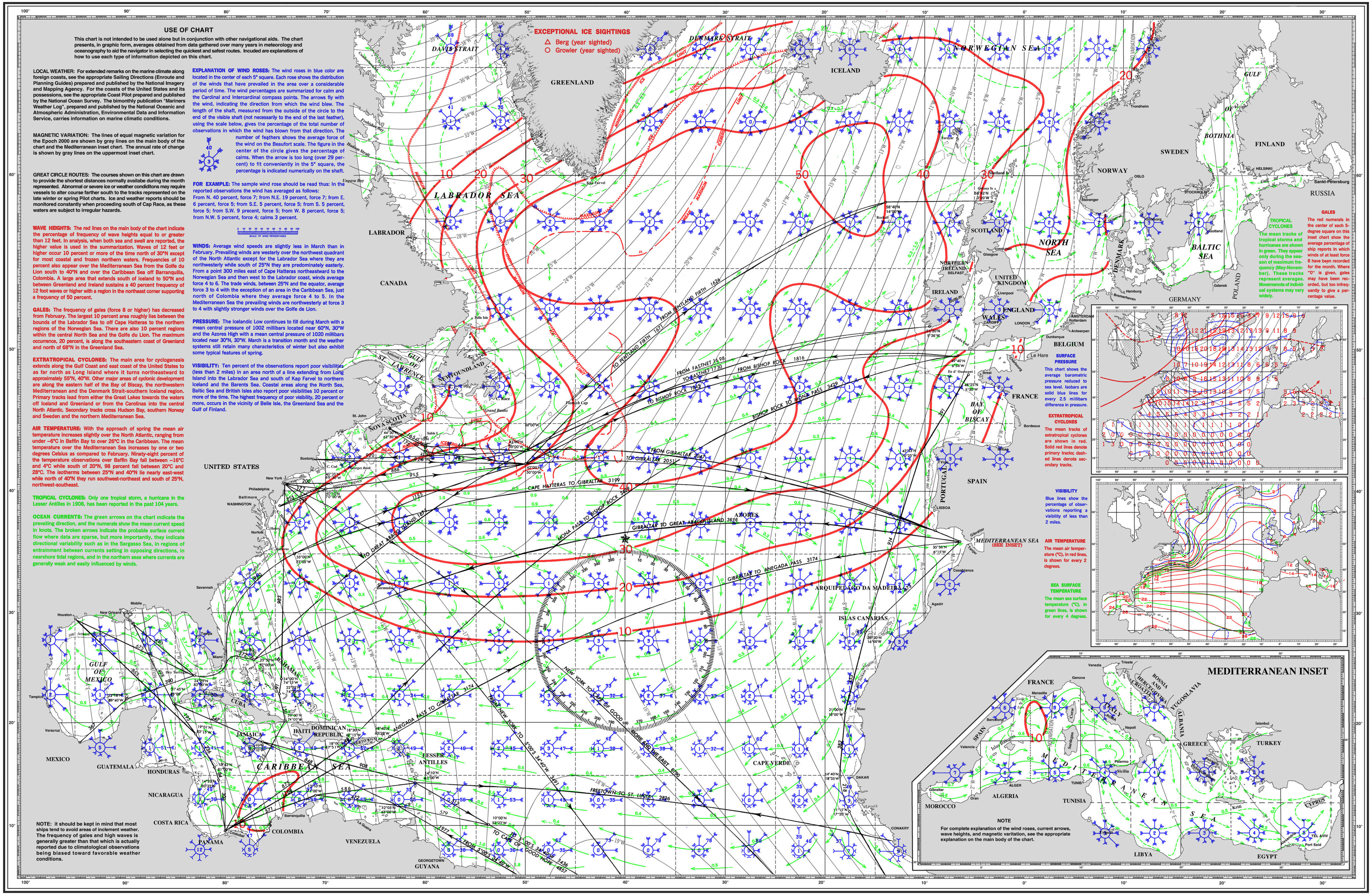
PILOT CHART OF THE NORTH ATLANTIC OCEAN



EXCEPTIONAL ICE SIGHTINGS

△ Berg (year sighted)
○ Growler (year sighted)

USE OF CHART

This chart is not intended to be used alone but in conjunction with other navigational aids. The chart presents, in graphic form, averages obtained from data gathered over many years in meteorology and oceanography to aid the navigator in selecting the quickest and safest routes. Incuded are explanations of how to use each type of information depicted on this chart.

LOCAL WEATHER: For extended remarks on the marine climate along foreign coasts, see the appropriate Sailing Directions (Enroute and Planning Guides) prepared and published by the National Imagery and Mapping Agency. For the coasts of the United States and its possessions, see the appropriate Coast Pilot prepared and published by the National Ocean Survey. The bimonthly publication "Mariners Weather Log", prepared and published by the National Oceanic and Atmospheric Administration, Environmental Data and Information Service, carries information on marine climatic conditions.

MAGNETIC VARIATION: The lines of equal magnetic variation for the Epoch 2000 are shown by gray lines on the main body of the chart and the Mediterranean inset chart. The annual rate of change is shown by gray lines on the uppermost inset chart.

GREAT CIRCLE ROUTES: The courses shown on this chart are drawn to provide the shortest distances normally availabe during the month represented. Abnormal or severe ice or weather condiditons may require vessels to alter course farther south to the tracks represented on the late winter or spring Pilot charts. Ice and weather reports should be monitored constantly when proceeding south of Cap Race, as these waters are subject to irregular hazards.

WAVE HEIGHTS: The red lines on the main body of the chart indicate the percentage of frequency of wave heights equal to or greater than 12 feet. In analysis, when both sea and swell are reported, the higher value is used in the summarization. Waves of 12 feet or higher occur 10 percent or more of the time north of 30°N except for most coastal and frozen northern waters. Frequencies of 10 percent also appear over the Mediterranean Sea from the Golfe du Lion south to 40°N and over the Caribbean Sea off Barranquilla, Colombia. A large area that extends south of Iceland to 50°N and between Greenland and Ireland sustains a 40 percent frequency of 12 foot waves or higher with a region in the northeast corner supporting a frequency of 50 percent.

GALES: The frequency of gales (force 8 or higher) has decreased from February. The largest 10 percent area roughly lies between the bounds of the Labrador Sea to off Cape Hatteras to the northern regions of the Norwegian Sea. There are also 10 percent regions within the central North Sea and the Golfe du Lion. The maximum occurrence, 20 percent, is along the southeastern coast of Greenland and north of 68°N in the Greenland Sea.

EXTRATROPICAL CYCLONES: The main area for cyclogenesis extends along the Gulf Coast and east coast of the United States to as far north as Long Island where it turns northeastward to approximately 55°N, 40°W. Other major areas of cyclonic development are along the eastern half of the Bay of Biscay, the northwestern Mediterranean and the Denmark Strait-southern Iceland region. Primary tracks lead from either the Great Lakes towards the waters off Iceland and Greenland or from the Carolinas into the central North Atlantic. Secondary tracks cross Hudson Bay, southern Norway and Sweden and the northern Mediterranean Sea.

AIR TEMPERATURE: With the approach of spring the mean air temperature increases slightly over the North Atlantic, ranging from under –6°C in Baffin Bay to over 26°C in the Caribbean. The mean temperature over the Mediterranean Sea increases by one or two degrees Celsius as compared to February. Ninety-eight percent of the temperature observations over Baffin Bay fall between –16°C and 4°C while south of 20°N, 98 percent fall between 20°C and 28°C. The isotherms between 25°N and 40°N lie nearly east-west while north of 40°N they run southwest-northeast and south of 25°N, northwest-southeast.

TROPICAL CYCLONES: Only one tropical storm, a hurricane in the Lesser Antilles in 1908, has been reported in the past 104 years.

OCEAN CURRENTS: The green arrows on the chart indicate the prevailing direction, and the numerals show the mean current speed in knots. The broken arrows indicate the probable surface current flow where data are sparse, but more importantly, they indicate directional variability such as in the Sargasso Sea, in regions of entrainment between currents setting in opposing directions, in nearshore tidal regions, and in the northern seas where currents are generally weak and easily influenced by winds.

EXPLANATION OF WIND ROSES: The wind roses in blue color are located in the center of each 5° square. Each rose shows the distribution of the winds that have prevailed in the area over a considerable period of time. The wind percentages are summarized for calm and the Cardinal and Intercardinal compass points. The arrows fly with the wind, indicating the direction from which the wind blew. The length of the shaft, measured from the outside of the circle to the end of the visible shaft (not necessarily to the end of the last feather), using the scale below, gives the percentage of the total number of observations in which the wind has blown from that direction. The number of feathers shows the average force of the wind on the Beaufort scale. The figure in the center of the circle gives the percentage of calms. When the arrow is too long (over 29 percent) to fit conveniently in the 5° square, the percentage is indicated numerically on the shaft.

FOR EXAMPLE: The sample wind rose should be read thus: In the reported observations the wind has averaged as follows:
From N. 40 percent, force 7; from N.E. 19 percent, force 7; from E. 6 percent, force 5; from S.E. 5 percent, force 5; from S. 5 percent, force 5; from S.W. 9 precent, force 5; from W. 8 percent, force 5; from N.W. 5 percent, force 4; calms 3 percent.

0 10 20 30 40 50 60 70 80 90 100
SCALE OF WIND PERCENTAGES

WINDS: Average wind speeds are slightly less in March than in February. Prevailing winds are westerly over the northwest quadrant of the North Atlantic except for the Labrador Sea where they are northwesterly while south of 25°N they are predominately easterly. From a point 300 miles east of Cape Hatteras northeastward to the Norwegian Sea and then west to the Labrador coast, winds average force 4 to 6. The trade winds, between 25°N and the equator, average force 3 to 4 with the exception of an area in the Caribbean Sea, just north of Colombia where they average force 4 to 5. In the Mediterranean Sea the prevailing winds are northwesterly at force 3 to 4 with slightly stronger winds over the Golfe de Lion.

PRESSURE: The Icelandic Low continues to fill during March with a mean central pressure of 1002 millibars located near 60°N, 30°W and the Azores High with a mean central pressure of 1020 millibars located near 30°N, 30°W. March is a transition month and the weather systems still retain many characteristics of winter but also exhibit some typical features of spring.

VISIBILITY: Ten percent of the observations report poor visibilities (less than 2 miles) in an area north of a line extending from Long Island into the Labrador Sea and south of Kap Farvel to northern Iceland and the Barents Sea. Coastal areas along the North Sea, Baltic Sea and British Isles also report poor visibilities 10 percent or more of the time. The highest frequency of poor visibility, 20 percent or more, occurs in the vicinity of Belle Isle, the Greenland Sea and the Gulf of Finland.

NOTE: it should be kept in mind that most ships tend to avoid areas of inclement weather. The frequency of gales and high waves is generally greater than that which is actually reported due to climatological observations being biased toward favorable weather conditions.

TROPICAL CYCLONES

The mean tracks of tropical storms and hurricanes are shown in green. They appear only during the season of maximum frequency (May-November). These tracks represent averages. Movememnts of individual systems may vary widely.

GALES

The red numerals in the center of each 5-degree square on this inset chart show the average percentage of ship reports in which winds of at least force 8 have been recorded for the month. Where "0" is given, gales may have been recorded, but too infrequently to give a percentage value.

SURFACE PRESSURE

This chart shows the average barometric pressure reduced to sea level. Isobars are solid blue lines for every 2.5 millibars difference in pressure.

EXTRATROPICAL CYCLONES

The mean tracks of extratropical cyclones are shown in red. Solid red lines denote primary tracks; dashed lines denote secondary tracks.

VISIBILITY

Blue lines show the percentage of observations reporting a visibility of less than 2 miles.

AIR TEMPERATURE

The mean air temperature (°C), in red lines, is shown for every 2 degrees.

SEA SURFACE TEMPERATURE

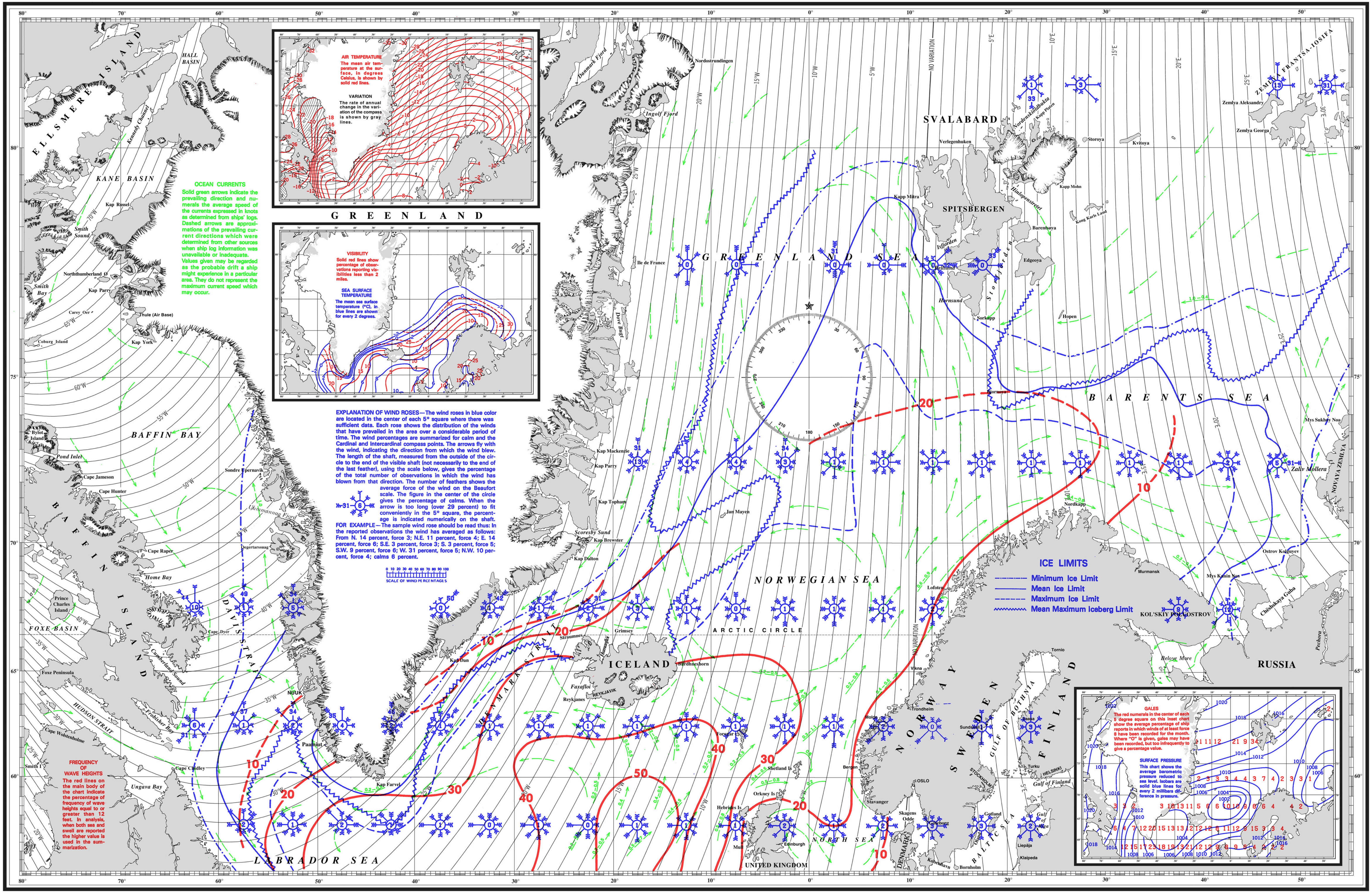
The mean sea surface temperature (°C), in green lines, is shown for every 4 degrees.

NOTE

For complete explanation of the wind roses, current arrows, wave heights, and magnetic varitation, see the appropriate explanation on the main body of the chart.

PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN

(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)



OCEAN CURRENTS

Solid green arrows indicate the prevailing direction and numerals the average speed of the currents expressed in knots as determined from ships' logs. Dashed arrows are approximations of the prevailing current directions which were determined from other sources when ship log information was unavailable or inadequate. Values given may be regarded as the probable drift a ship might experience in a particular area. They do not represent the maximum current speed which may occur.

AIR TEMPERATURE

The mean air temperature at the surface, in degrees Celsius, is shown by solid red lines.

VARIATION

The rate of annual change in the variation of the compass is shown by gray lines.

VISIBILITY

Solid red lines show percentage of observations reporting visibilities less than 2 miles.

SEA SURFACE TEMPERATURE

The mean sea surface temperature (°C), in blue lines are shown for every 2 degrees.

EXPLANATION OF WIND ROSES—The wind roses in blue color are located in the center of each 5° square where there was sufficient data. Each rose shows the distribution of the winds that have prevailed in the area over a considerable period of time. The wind percentages are summarized for calm and the Cardinal and Intercardinal compass points. The arrows fly with the wind, indicating the direction from which the wind blew. The length of the shaft, measured from the outside of the circle to the end of the visible shaft (not necessarily to the end of the last feather), using the scale below, gives the percentage of the total number of observations in which the wind has blown from that direction. The number of feathers shows the average force of the wind on the Beaufort scale. The figure in the center of the circle gives the percentage of calms. When the arrow is too long (over 29 percent) to fit conveniently in the 5° square, the percentage is indicated numerically on the shaft. FOR EXAMPLE—The sample wind rose should be read thus: In the reported observations the wind has averaged as follows: From N. 14 percent, force 3; N.E. 11 percent, force 4; E. 14 percent, force 6; S.E. 3 percent, force 3; S. 3 percent, force 5; S.W. 9 percent, force 6; W. 31 percent, force 5; N.W. 10 percent, force 4; calms 6 percent.

FREQUENCY OF WAVE HEIGHTS

The red lines on the main body of the chart indicate the percentage of frequency of wave heights equal to or greater than 12 feet. In analysis, when both sea and swell are reported the higher value is used in the summarization.

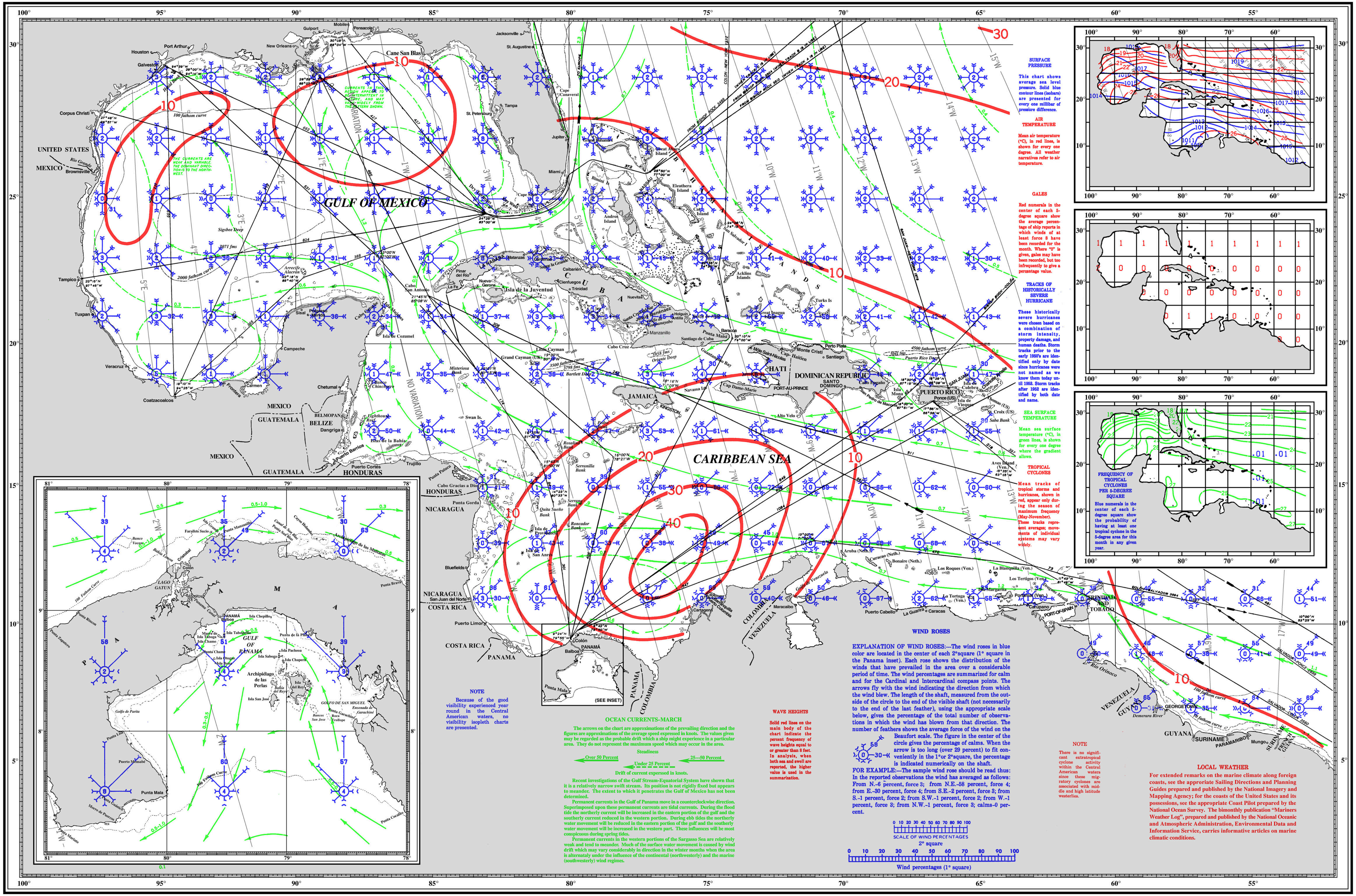
GALES

The red numerals in the center of each 5 degree square on this inset chart show the average percentage of ship reports in which winds of at least force 8 have been recorded for the month. Where "O" is given, gales may have been recorded, but too infrequently to give a percentage value.

SURFACE PRESSURE

This chart shows the average barometric pressure reduced to sea level. Isobars are solid blue lines for every 2 millibars difference in pressure.

PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO



SURFACE PRESSURE

This chart shows average sea level pressure. Solid blue contour lines (isobars) are presented for every one millibar of pressure difference.

AIR TEMPERATURE

Mean air temperature (°C), in red lines, is shown for every one degree. All weather narratives refer to air temperature.

GALES

Red numerals in the center of each 5-degree square show the average percentage of ship reports in which winds of at least force 8 have been recorded for the month. Where "0" is given, gales may have been recorded, but too infrequently to give a percentage value.

TRACKS OF HISTORICALLY SEVERE HURRICANE

These historically severe hurricanes were chosen based on a combination of storm intensity, property damage, and human deaths. Storm tracks prior to the early 1950's are identified only by date since hurricanes were not named as we know them today until 1953. Storm tracks after 1952 are identified by both date and name.

SEA SURFACE TEMPERATURE

Mean sea surface temperature (°C), in green lines, is shown for every one degree where the gradient allows.

TROPICAL CYCLONES

Mean tracks of tropical storms and hurricanes, shown in red, appear only during the season of maximum frequency (May-November). These tracks represent averages; movements of individual systems may vary widely.

FREQUENCY OF TROPICAL CYCLONES PER 5-DEGREE SQUARE

Blue numerals in the center of each 5-degree square show the probability of having at least one tropical cyclone in the 5-degree area for this month in any given year.

NOTE

Because of the good visibility experienced year round in the Central American waters, no visibility isopleth charts are presented.

OCEAN CURRENTS-MARCH

The arrows on the chart are approximations of the prevailing direction and the figures are approximations of the average speed expressed in knots. The values given may be regarded as the probable drift which a ship might experience in a particular area. They do not represent the maximum speed which may occur in the area.

Steadiness

Over 50 Percent

Under 25 Percent

25---50 Percent

Drift of current experssed in knots.

Recent investigations of the Gulf Stream-Equatorial System have shown that it is a relatively narrow swift stream. Its position is not rigidly fixed but appears to meander. The extent to which it penetrates the Gulf of Mexico has not been determined.

Permanent currents in the Gulf of Panama move in a counterclockwise direction. Superimposed upon these permanent currents are tidal currents. During the flood tide the northerly current will be increased in the eastern portion of the gulf and the southerly current reduced in the western portion. During ebb tides the northerly water movement will be reduced in the eastern portion of the gulf and the southerly water movement will be increased in the western part. These influences will be most conspicuous during spring tides.

Permanent currents in the western portions of the Sargasso Sea are relatively weak and tend to meander. Much of the surface water movement is caused by wind drift which may vary considerably in direction in the winter months when the area is alternataly under the influence of the continental (northwesterly) and the marine (southwesterly) wind regimes.

WAVE HEIGHTS

Solid red lines on the main body of the chart indicate the percent frequency of wave heights equal to or greater than 8 feet. In analysis, when both sea and swell are reported, the higher value is used in the summarization.

WIND ROSES

EXPLANATION OF WIND ROSES:—The wind roses in blue color are located in the center of each 2°square (1° square in the Panama inset). Each rose shows the distribution of the winds that have prevailed in the area over a considerable period of time. The wind percentages are summarized for calm and for the Cardinal and Intercardinal compass points. The arrows fly with the wind indicating the direction from which the wind blew. The length of the shaft, measured from the outside of the circle to the end of the visible shaft (not necessarily to the end of the last feather), using the appropriate scale below, gives the percentage of the total number of observations in which the wind has blown from that direction. The number of feathers shows the average force of the wind on the Beaufort scale. The figure in the center of the circle gives the percentage of calms. When the arrow is too long (over 29 percent) to fit conveniently in the 1°or 2°square, the percentage is indicated numerically on the shaft.

FOR EXAMPLE:—The sample wind rose should be read thus: In the reported observations the wind has averaged as follows: From N.-6 percent, force 3; from N.E.-58 percent, force 4; from E.-30 percent, force 4; from S.E.-2 percent, force 3; from S.-1 percent, force 2; from S.W.-1 percent, force 2; from W.-1 percent, force 3; from N.W.-1 percent, force 3; calms-0 percent.

SCALE OF WIND PERCENTAGES

2° square

Wind percentages (1° square)

NOTE

There is no significant extratropical cyclone activity within the Central American waters since these migratory cyclones are associated with middle and high latitude westerlies.

LOCAL WEATHER

For extended remarks on the marine climate along foreign coasts, see the approriate Sailing Directions and Planning Guides prepared and published by the National Imagery and Mapping Agency; for the coasts of the United States and its possessions, see the appropriate Coast Pilot prepared by the National Ocean Survey. The bimonthly publication "Mariners Weather Log", prepared and published by the National Oceanic and Atmospheric Administration, Environmental Data and Information Service, carries informative articles on marine climatic conditions.