PILOT CHART OF THE NORTH ATLANTIC OCEAN

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 conditions 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. Wave heights of 12 feet or higher occur 10 percent of the time north of a line from southern Portugal to just east of Cape Hatteras except for the Davis Strait-Hudson Bay area. Frequencies of 10 percent are also observed in the Mediterranean Sea between the Balearic Islands and Sardinia and in the Caribbean Sea just off the north coast of Columbia. An elongated area extending from near 50°N, 25°W, to 62°N, 15°W, experiences wave heights 12 feet or more 60 percent of the time and wave heights 20 feet or more 15 percent of the time. The intermediate percentages fall between the 10 and 60 percent lines described above.

GALES: The occurence of gales is more frequent over middle and northern latitudes than in November. Winds of force 8 or higher occur in 10 percent or more of the observations north of a line from the Bay of Biscay to some 500 miles off Cape Hatteras to the Davis Strait. Two areas in the Mediterranean Sea reporting gale frequencies of 10 percent are located off the coast of Libya and an area extending nearly 200 miles southeastward across the Golfe du Lion. The area of maximum gale frequency, 20 percent or more, is found along a band some 800 to 1000 miles wide extending from southern Greenland to near 45°N.

EXTRATROPICAL CYCLONES: The principal areas of cyclogenesis occur along the Gulf and east coast of the United States; east of Newfoundland; the waters surrounding Iceland; and the Ligurian Sea and northern Adriatic. The primary track leading from the Great Lakes crosses Nova Scotia into the Davis strait, with a secondary primary track running east of Nova Scotia across northwest Iceland into the Norwegian Sea. Secondary storm tracks cross Hudson Bay, southern Sweden, the Mediterranean from Spain to Greece, and along the east coast of the United States.

AIR TEMPERATURE: The mean air temperatures continue to decrease from under –4°C in Baffin Bay to 27°C in the Caribbean. Along the 40°N parallel, the mean temperatures range from 5°C off the New Jersey coast to 16°C northwest of the Azores. Only 1 percent of the observations fall below –12°C and above 9°C over Baffin Bay, while generally south of 20°N only 1 percent fall below 20°C and above 28°C.

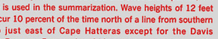
TROPICAL CYCLONES: Few tropical cyclones have been observed over the North Atlantic during December. Only 7 tropical storms (force 8 or greater) have been documented for the period of record , of which 3 occurred in 1887. Of tnese 7 storms, 5 reached hurricane force (64 knots or greater).

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.

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.

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.



WINDS: The prevailing winds over the North Atlantic between 40°N amd 60°N are from the western quadrant except for the northerly winds off Portugal. South of 40°N, the winds are generally east and northeasterly except from the southeastern United States to the Azores where they remain westerly. The winds north of 60°N are fairly variable but do establish a general southerly component east of 0° and a northerly component west of 0°. Wind speeds average force 4 to 6 north of 40°N and force 3 to 5 south of 40°N. Winds over the Mediterranean Sea are predominately from the northwest at force 3 to 5.

PRESSURE: The north-south pressure gradient increases markedly between 40°N and 60°N as the Icelandic Low deepens to 1000 millibars and the Azores High intensifies to 1023 millibars. The mean pressure pattern of the Icelandic Low has two centers during December, one between Iceland and Greenland and the other off the northwest coast of Norway. The north-south extent of the Azores High is less than the previous month with its central position moving east to approximately 35°N, 22°W.

VISIBILITY: Since November, the frequency of visibility less than 2 miles has increased over the Labrador Sea with the rest of the north Atlantic not changing significantly. Areas experiencing visibilities less than 2 miles in 10 percent or more of their observations roughly include: the area from the Bay of Fundy to the west coast of Greenland; coastal areas of the North Sea, Baltic Sea, and Irish Sea; and generally latitudes north of Iceland.

EXCEPTIONAL ICE SIGHTINGS
△ Berg (year sighted)
○ Growler (year sighted)

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.

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. Movements 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.

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.