

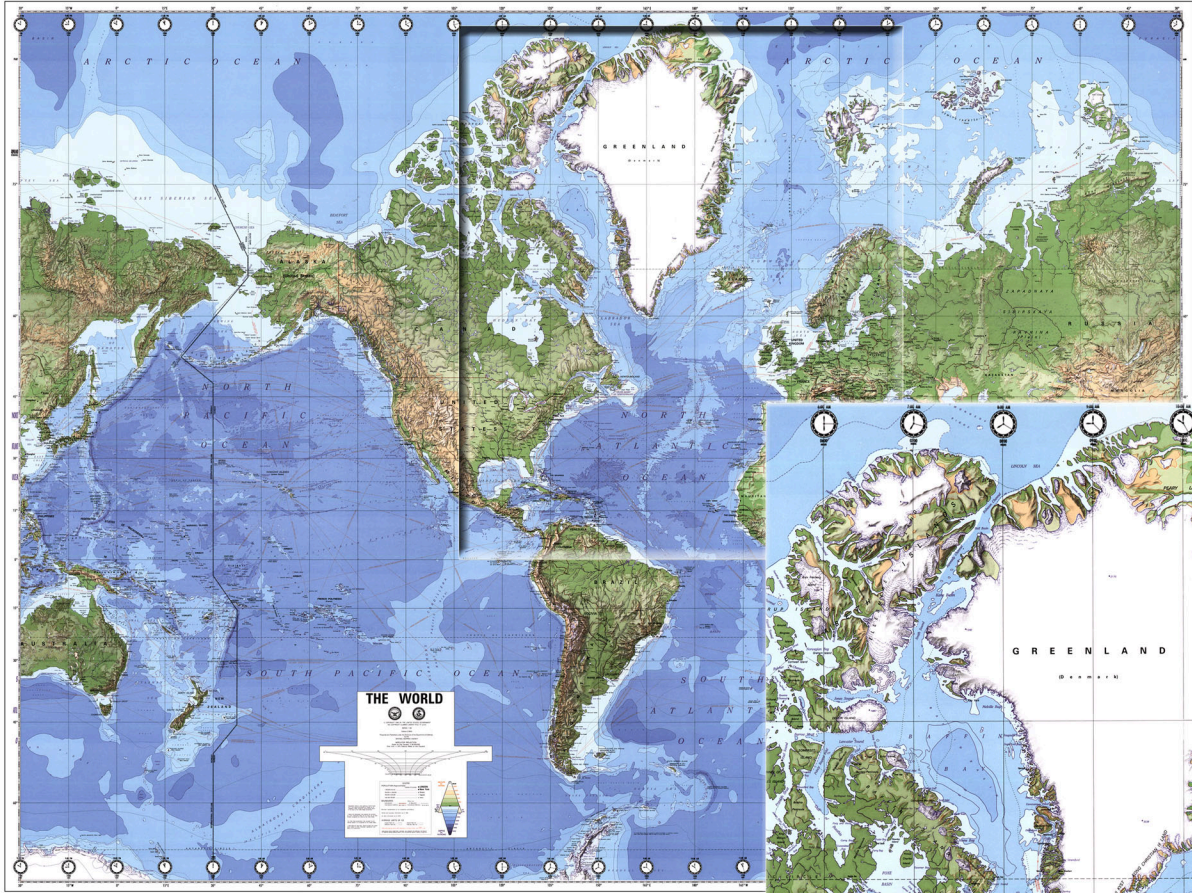
Atlas of Pilot Charts North Atlantic Ocean 2002

NVPUB106



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MONTHLY WEATHER INFORMATION

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. Included 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 (formerly DMAHTC). 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.

MAGNETIC VARIATION—The lines of equal magnetic variation for the epoch 1980 are shown by gray lines on the main body of the chart. The annual rate of change is shown by gray lines on the uppermost inset chartlet.

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.

JANUARY

PRESSURE—The Icelandic Low is the dominant pressure feature over the Northern North Atlantic during January. Centered somewhat southeast of the southern tip of Greenland its mean central pressure averages just under 997 millibars, the lowest of any month. The associated trough of low pressure extends from the Newfoundland coast northeast to near Novaya Zemlya. North of the trough lies a relatively weak ridge of high pressure covering much of northern Greenland, the Greenland Sea, and the Arctic Ocean.

TEMPERATURE—The mean air temperatures across the Northern North Atlantic range from 8°C off the northwest coast of Ireland to -34°C off northern Greenland. The zero isotherm runs from just east of Kap Farvel to north of Iceland and continues eastward to the east coast of Greenland. At any given latitude, especially at the higher ones, the warmer air temperatures coincide closely with the warm ocean currents (North Atlantic and Norway currents).

WINDS—South of Iceland from the Labrador Sea through the Norwegian Sea, the prevailing winds are out of the southwest. East to northeast winds prevail over the Greenland Sea and the northern end of the Barents Sea. West of Greenland prevailing winds are out of the north. North of 65°N, winds average force 4 to 5 while south of 65°N, they average force 5 to 6. The strongest winds are found south of 60°N between 20°W and 45°W.

GALES—The highest frequency of gale winds (Beaufort force 8 or higher) is 30 percent of the time off the southeast tip of Greenland. Frequencies run 10 percent or higher from the Labrador Sea to the Norwegian Sea with frequencies dropping below 10 percent upon approaching the ice limit.

VISIBILITY—Poor visibilities (less than 2 nautical miles) are observed 10 percent or more of the time across most of the Labrador Sea, the Denmark Strait, and north of a line from northern Iceland to just north of Norway. An exception is along the southwest coast of Greenland where frequencies run just under 10 percent. Frequencies of 10 percent or more are also found in the eastern North Sea and southwestern Baltic Sea where frequencies reach 20 percent along the coast of northern Germany. As one approaches the ice bound areas the data becomes rather sparse; however, it does seem to indicate that visibilities of 2 miles or less are experienced 20 to 30 percent of the time.

WAVE HEIGHTS—Most open water areas of the Northern North Atlantic observe wave heights of at least 12 feet, 10 percent or more of the time. Frequencies of less than 10 percent are found in the Baltic Sea and near areas of concentrated ice. South of 60°N, the area in the open ocean between Newfoundland and the British Isles reports frequencies in the 60 percent range, the highest observed.

FEBRUARY

PRESSURE—During February, the Icelandic Low continues to dominate the pressure field over the Northern North Atlantic Ocean. Remaining southeast of the tip of Greenland, the central pressure averages just under 1000 millibars, a value not quite as low as in the previous two months. The associated low pressure trough still extends from Canada northeast to the Barents Sea. A relatively weak high pressure ridge still lies to the north over northern Greenland and the Arctic Ocean.

TEMPERATURE—February is somewhat colder than January as reflected in the zero isotherm being farther south. The zero isotherm remains off the tip of Greenland and to the north of Iceland as in the preceding month, however it has moved noticeably south along the Norwegian coast. Mean air temperatures across the Northern North Atlantic range from 8°C west of Ireland to -36°C off northern Greenland. At 70°N, mean temperatures range from just above freezing off Norway to -28°C off Baffin Island.

WINDS—With little variation occurring in the mean pressure pattern since January, the mean wind pattern also remains relatively unchanged. Prevailing winds are out of the southwest between Iceland and Europe and out of the northeast between Spitzbergen and Baffin Bay. Northwestern winds then prevail over the Labrador Sea. The strongest mean winds of any month appear during February off the southeast coast of Greenland where they average force 6 to 7. For the remainder of the Northern North Atlantic, winds south of 70°N average force 5 to 6 while those north of 70°N average force 4 to 5.

GALES—Occurrences of gales (winds 34 knots or greater) during February are very similar to those in January across

the Northern North Atlantic. These two months are the peak months with frequencies reaching 30 percent off the southeast tip of Greenland. Frequencies of 10 percent or greater are observed from the Labrador Sea to the Norwegian Sea. Frequencies drop off near the ice limit, as does observational information.

VISIBILITY—The frequency of visibilities less than 2 nautical miles is equal to or greater than 10 percent across most of the Labrador Sea, the Denmark Strait, and the area north of a line from east-central Iceland to northern Norway. Frequencies of 10 percent or greater are also found in the eastern North Sea and Baltic Sea. In the eastern and northern Baltic and along the ice bound regions of the Northern North Atlantic observations are rather sparse, but indications are that frequencies of visibilities of less than 2 miles reach 20 to 30 percent.

WAVE HEIGHTS—Wave heights of 12 feet or higher are observed 10 percent or more of the time over most of the Northern North Atlantic. Exceptions are found near the ice limit, the southeastern North Sea, and the Baltic Sea. Just south of Iceland, between Greenland and the British Isles, frequencies reach a maximum of slightly over 50 percent.

MARCH

PRESSURE—Although continuing to fill, the Icelandic Low is nevertheless the dominant feature on the mean pressure charts for the Northern North Atlantic. The associated low pressure trough continues to extend from eastern Canada northeastward to the Barents Sea. The lowest mean pressure center is no longer southeast of Greenland but has re-centered northeast of Iceland, where its central pressure averages just under 1002 millibars. The high pressure ridge remains over northern Greenland becoming slightly more intense.

TEMPERATURE—The March mean air temperature range over the Northern North Atlantic remains relatively unchanged from February. It runs from 5°C off Ireland to -36°C off northern Greenland. However, some increase in temperatures is noted as many isotherms spread out in an east-west direction in addition to the movement northward of the zero isotherm along the Norwegian coast. At 70°N, mean temperatures range from 2°C off Norway to -23°C off Baffin Island, an increase of 2°C to 5°C over the previous month for this latitude.

WINDS—A major low pressure trough still lies centered between Greenland and Europe producing prevailing winds out of the southwest between Iceland and the continent. This influencing feature produces prevailing winds out of the northeast between Spitzbergen and Greenland, northerly winds over the Labrador Sea, and southerly winds over the Barents Sea. Scalar wind speeds average force 4 north of 70°N, and force 5 to 6 south of 70°N. Again, as in February, the strongest winds are found southeast of the tip of Greenland.

GALES—The frequency of gales (force 8 or higher) has decreased since February. The highest frequencies are still observed off the southwestern tip of Greenland where they now average 20 percent, a drop of 10 percent since February. Frequencies of 10 percent or greater are observed from the southeastern Labrador Sea northeastward to near 70°N, and between the coast of Greenland and the Hebrides Islo.

VISIBILITY—Across the Labrador Sea, through the Denmark Strait and north of a line from Iceland to northern Norway, frequencies of poor visibility (less than 2 nautical miles) run 10 percent or higher. One exception is along the southwest coast of Greenland where frequencies are slightly less than 10 percent. Poor visibilities are also observed 10 percent or more of the time across the Baltic Sea and eastern North Sea. Although based on relatively sparse data, frequencies seem to reach 20 to 30 percent in the Gulf of Bothnia, the Gulf of Finland, and along the ice bound regions of the Northern North Atlantic.

WAVE HEIGHTS—Waves of 12 feet or higher are observed in most open water areas of the Northern North Atlantic at least 10 percent of the time. Frequencies of less than 10 percent are found in the Baltic Sea and near the ice limit. As in February, frequencies reach a maximum of 50 percent but cover a much smaller portion of the Northern North Atlantic. Most of these high frequencies (50 percent) are observed in the region to the south of Iceland and west of the British Isles.

APRIL

PRESSURE—The Icelandic Low continues to fill and thus weaken as its central pressure, now centered between southeastern Greenland and Iceland, averages near 1007 millibars. Its associated low pressure trough still extends northeastward from Newfoundland, now only reaching the Barents Sea, somewhat west of its position in the colder months. Better definition of the Arctic High now appears as it continues to intensify over northern Greenland.

TEMPERATURE—The mean air temperatures over the Northern North Atlantic show at least a small increase in all areas over the previous month. Much larger increases are noted in the higher latitudes: Baffin Bay, Greenland Sea, and the Arctic Ocean. Mean temperatures range from 9°C off Ireland to -28°C off northern Greenland, amounting to a 1°C warming in the southern regions and an 8°C increase in the northern regions. At 70°N, temperatures range from 3°C west of Norway to -16°C off Baffin Island producing an increase of 1°C to 7°C from the previous month at this latitude.

WINDS—The prevailing winds north of Iceland are east to northeasterly whereas those between Iceland and the North Sea run southwestwesterly. Northerly winds still prevail over the Labrador Sea. Most of the prevailing winds over the Barents Sea are out of the east, while those over the southern portion are southerly. Scalar winds average force 3 to 4 north of 70°N and force 4 to 5 south of 70°N. The strongest winds lie mostly south of 60°N between 10°W and 45°W.

GALES—The frequency of gales (winds of 34 knots or greater) has decreased by approximately 5 percent since March. However, geographic patterns are similar, with the highest frequencies (15 percent) occurring along the southeastern

coast of Greenland. Ten percent frequencies run from the entrance of the Labrador Sea along the east coast of Greenland to the northern end of the Denmark Strait.

VISIBILITY—The frequency of visibilities less than 2 nautical miles has changed only slightly since March. Frequencies of 10 percent or higher are still observed over the Labrador Sea and Denmark Strait with the exception of a small region along the southwest coast of Greenland. The 10 percent isoline has moved slightly east enlarging the area of poor visibility (less than 2 nautical miles). Since March, frequencies have increased to over 10 percent off the southeast coast of Scotland. Frequencies remain at least equal to 10 percent over the eastern North Sea but have dropped below 10 percent over the central Baltic Sea. Although based on limited observations the frequency of poor visibilities has improved somewhat near the ice bound regions. Frequencies in these areas tend to run in the neighborhood of 20 to 25 percent.

WAVE HEIGHTS—During April, winds are still strong enough to produce waves of 12 feet or higher 10 percent or more of the time across most of the open waters of the Northern North Atlantic. Frequencies of less than 10 percent are observed in areas adjacent to the ice limit, the Baltic Sea, and a large portion of the North Sea. South of Iceland, between Greenland and Britain a significant decrease in the frequency of 12 foot or greater waves has occurred since the previous month. Frequencies now average 30 percent in this area, a drop of 10 to 20 percent.

MAY

PRESSURE—By May, fewer intense lows are moving across the Northern North Atlantic causing the mean pressure of the Icelandic Low to be higher than in previous months. Now centered just to the east of Kap Farvel, its central pressure averages just under 1010 millibars. The associated trough of low pressure is now restricted between eastern Canada and northern Scandinavia. The Polar High continues to build and extend down over northern Greenland with its central pressure averaging near 1020 millibars.

TEMPERATURE—A marked increase in mean air temperatures has taken place since April. Mean temperatures now range from 10°C off the British Isles to -12°C off northern Greenland. This amounts to a 2°C increase along the southern portion of the Northern North Atlantic and a 16°C increase in the northern regions. At 70°N, mean temperatures range from 5°C off Norway to -5°C off Baffin Island. Southern Greenland and northern Scandinavia are now experiencing average temperatures slightly above freezing.

WINDS—Most prevailing winds north of 60°N have an easterly component except over the eastern Greenland Sea, Barents Sea, and Baffin Bay regions where there is a strong northerly component. South of 60°N, prevailing winds are northerly west of 40°W and southerly east of 20°W with westerly winds in between. Scalar winds average force 3 to 4 across the entire Northern North Atlantic. Since May, the strongest mean winds are observed south of Greenland between 20°W and 50°W.

GALES—Gale force winds (34 knots or greater) continue their monthly decline from their wintertime peak. The maximum number of reported gales is still found off the southeast tip of Greenland where they average 10 percent. Frequencies of 5 percent or greater are mostly confined to the regions off southeast Greenland running from the Labrador Sea to the northern end of the Denmark Strait.

VISIBILITY—Basically little change from the previous month has taken place in the frequency distribution of visibilities less than 2 nautical miles. Frequencies of 10 percent or higher are observed over most of the North Sea. Poor visibilities over the Baltic Sea are slightly improved with frequencies now averaging less than 10 percent. Slight improvements are also noted along the northern Norwegian coast. Remaining areas observing frequencies of 10 percent or higher are mostly restricted to the Labrador Sea, the Denmark Strait, regions north of Iceland, and the northern fringes of the Norwegian Sea. Although only limited observations are available along the ice limit, results tend to show 20 to 25 percent of the observations reporting visibilities of 2 miles or less.

WAVE HEIGHTS—During May across the Northern North Atlantic, wave heights of 12 feet or more are mostly observed in the mid-ocean areas south of Iceland between Greenland and Britain; frequencies average 10 to 20 percent.

JUNE

PRESSURE—During June, the most significant change in the pressure field over the Northern North Atlantic takes place in the Polar High extension over northern Greenland. It becomes noticeably weaker as its mean central pressure drops from 1020 to 1016 millibars. The Icelandic Low then expands to fill this void making it appear to be strengthening. This expansion is not due to an increase in cyclonic activity.

TEMPERATURE—By June, only the northernmost regions (mostly above 80°N) are still experiencing mean air temperatures below freezing (0°C). At 70°N, temperatures generally average between 2°C and 6°C with the warmer temperatures lying along the Norwegian coast. Overall mean temperatures range from 14°C in the vicinity of Denmark to -2°C north of Greenland.

WINDS—Mean scalar wind speeds have decreased somewhat from the previous month but still average force 3 to 4 across most of the Northern North Atlantic basin. The strongest mean winds are found south of Greenland and Iceland between 15°W and 50°W. Predominately, winds are out of the west to southwest south of 60°N, easterly north of Iceland, northerly north of 70°N and along the west and southeast coast of Greenland, and southerly between Iceland and Norway.

GALES—By June, gale force winds (force 8 or higher) appear rather infrequently across the Northern North Atlantic. Only one small area off the southeastern tip of Greenland reports frequencies of 5 percent or greater.

VISIBILITY—The warmer months bring an increase in flow of warm air over the cold Labrador current producing increased

fog and poor visibilities (less than 2 nautical miles). The worst conditions occur just south of our Pilot Chart area over the Grand Banks where frequencies reach 40 percent. These conditions extend up into the Labrador Sea and Baffin Bay regions where frequencies run as high as 25 percent and extend as far east as the central Northern North Atlantic where frequencies run 10 percent. Except for the east coast of the United Kingdom, most areas south of 60°N and east of 30°W observe frequencies of less than 10 percent. These low frequencies (less than 10 percent) also extend up along the Norwegian coast. In nearing the ice limit, observational information becomes rather sparse, but indications are that poor visibilities occur 20 to 30 percent of the time.

WAVE HEIGHTS—The frequency of wave heights greater than or equal to 12 feet continues to decrease across the Northern North Atlantic. Frequencies of 10 percent or greater are observed south of Iceland between Greenland and the British Isles. Within this area frequencies reach a maximum of just over 20 percent south of 60°N between 15°W and 30°W.

JULY

PRESSURE—By July, the pressure gradient has become very weak across the Northern North Atlantic. The Icelandic Low is an ill-defined east-west trough with a mean central pressure of just under 1010 millibars centered over Iceland. Somewhat higher pressure is found over Greenland in the weak extension of the Polar High where the central pressure averages 1013 millibars.

TEMPERATURE—Mean air temperatures during July are all above freezing for the Northern North Atlantic. This is also true of August thus making these two months the warmest of the year. Average July temperatures range from 16°C near Denmark to near freezing (0°C) north of Greenland. At 70°N, mean temperatures range from 4°C to 10°C with the warmer temperatures being found off the Norwegian coast.

WINDS—The lightest scalar monthly mean wind speeds across the Northern North Atlantic are observed during July where they average force 3 to 4. During the month, the strongest mean winds are found south of 60°N between 10°W and 30°W. West to southwesterly winds prevail south of 65°N; north of 65°N, winds are predominately southerly along the west coast of Greenland and northerly east of Greenland.

GALES—The frequency of gale force winds (34 knots or greater) reaches a minimum for the year during July. Frequencies average less than 5 percent across the entire Northern North Atlantic with the highest concentration (2 to 4 percent) occurring south of Greenland.

VISIBILITY—July is the foggiest month of the year across the Northern North Atlantic. Just south of the chart area over the Grand Banks, visibilities of less than 2 miles are observed 50 percent of the time. An extension of this area pushes north along the Labrador current where frequencies of 35 percent are observed off Newfoundland. Except for the North Sea, Baltic Sea, a coastal area of Norway, and a small area south of Greenland, all regions of the Northern North Atlantic observe poor visibilities (less than 2 nautical miles) 10 percent or more of the time. Although increased observations are taken farther north during the warmer months, they are still rather sparse along the ice bound regions. However, available observations do indicate frequencies in the 30 to 35 percent range for these areas.

WAVE HEIGHTS—To encounter waves 12 feet or greater across the Northern North Atlantic during July is less likely than any other month. Only one small area, south of 62°N between 10°W and 30°W, observes frequencies of 10 percent.

AUGUST

PRESSURE—Although it remains a weak east-west trough throughout the summer, during August, the Icelandic Low resumes relatively better definition than in June. Its central mean pressure, near 1008 millibars, runs from the Hudson Strait, past the southern tip of Greenland to just northeast of Iceland. High pressure, both north and south of the trough, is weaker than in the previous month. Over northern Greenland the Polar High is averaging just over 1014 millibars.

TEMPERATURE—Mean air temperatures during August are very similar in pattern and value to those of July for the Northern North Atlantic. These close similarities make determination of the warmer month (thus the warmest of the year) difficult. Average temperatures range from 16°C near Denmark to near freezing (0°C) north of Greenland. At 70°N, mean temperatures range from 4°C to 10°C, with the warmest temperatures being observed along the Norwegian coast and the coldest in Baffin Bay.

WINDS—The general flow pattern remains much the same as that in July with the mean scalar wind speeds increasing slightly. South of 60°N, prevailing winds are from the west to southwest; north of 60°N, they are predominately southerly to the west of Greenland while northerly to the east of Greenland. Scalar winds average force 3 to 4 on the Beaufort scale with the strongest between 15°W and 25°W along the southern boundary of the chart.

GALES—As in July, winds of force 8 or greater occur rather infrequently across the Northern North Atlantic. Frequencies have increased slightly over the July (1 to 2 percent) with the highest occurrences (6 percent) being observed off the southern end of Greenland.

VISIBILITY—The frequency of visibilities less than 2 nautical miles has decreased slightly since July. Frequencies average less than 10 percent in the region from Iceland south and east to the continent, then north along the Norwegian coast. Over the Labrador Sea and around southern Greenland, frequencies generally range from 15 to 25 percent. In the higher latitude, observations are still very limited even though the ice limit is near its most northern position. Mindful of the difficulty of establishing realistic statistics in these latitudes, indications are that visibilities of less than 2 miles occur 25 to 35 percent of the time.

WAVE HEIGHTS—By August the extratropical cyclone activity in the Northern North Atlantic has begun to increase, and in turn, so has the frequency of wave heights of 12 feet or greater. Frequencies of 10 percent run from the eastern Labrador Sea northward to near Iceland and as far east as 10°W. The remaining areas experience wave heights of this magnitude less than 10 percent of the time.

SEPTEMBER

PRESSURE—During September, signs that winter is approaching begin to show up in the mean pressure pattern. The Icelandic Low becomes better defined as the trough extends from the Davis Strait to the Barents Sea. Two closed lows averaging just under 1006 millibars are associated with the Icelandic Low. One center is located between the southern tip of Greenland and Iceland while the other is between northern Norway and Vestspitsbergen. The Polar High pressure ridge has strengthened somewhat and has extended down the east coast of Greenland. Over northern Greenland the mean pressure is running just over 1016 millibars.

TEMPERATURE—By September, the summer peak has passed and rather rapid cooling by as much as 9°C has taken place in the higher latitudes (north of 75°N). Mean temperatures range from 14°C in the waters around Denmark to -9°C off northern Greenland. At 70°N, mean temperatures range from 1°C in Baffin Bay to 9°C off the Norwegian coast.

WINDS—Winds south of 60°N are predominately out of the west while north of this latitude wind directions are much more variable due to the number of separate closed centers within the Icelandic Low. North of 60°N, prevailing winds are: southerly along the west coast of Greenland, northerly along the east side of Baffin Island, northerly in the vicinity of Iceland, easterly north of 75°N, and southwesterly along the northern Norwegian coast. Gale force winds average force 5 from the Labrador Sea to the south of Iceland and throughout the Norwegian Sea. Remaining areas in the Northern North Atlantic average force 4.

GALES—The frequency of gales (34 knots or greater winds) increases in September producing similar results to those in May. Frequencies of 5 percent or greater are found off Greenland from the Davis Strait to just east of Iceland and as far north as Kap Perry*. A second, much smaller area of 5 percent or greater frequencies is located along the southwest coast of Norway. The highest frequencies observed, just over 10 percent, are found along the southeastern tip of Greenland.

VISIBILITY—A noted decrease in the frequency of visibilities less than 2 nautical miles has taken place since August. Those regions observing the lowest frequencies (less than 10 percent) lie south of a line that runs from the central west coast of Greenland through the center of the Labrador Sea to south of Iceland and northward along the Norwegian coast. The highest frequencies, although based on limited observations, appear to occur near the ice limit where they average over 25 percent.

WAVE HEIGHTS—As compared to the summer months, September brings a significant increase in wave heights of 12 feet or greater. Frequencies of 10 percent or greater are encountered in most open water areas from the Labrador Sea through the Norwegian Sea and as far east as the British Isles and the northern edge of the North Sea. The highest observed frequencies (30 to 35 percent) are found in an area south of 60°N between 15°W and 25°W.

OCTOBER

PRESSURE—The Icelandic Low continues to deepen as both the number and strength of transitory lows increase during October. Two centers, of just under 1002 millibars, appear within the mean low pressure trough. One is centered between southern Greenland and Iceland and a second just west of Novaya Zemlya. A mean high pressure ridge is found over northern Greenland with the pressure averaging near 1014 millibars across the most northern regions.

TEMPERATURE—Mean air temperatures naturally continue to drop with the advent of winter. Average temperatures have dropped by some 2°C in the southern regions of the Northern North Atlantic and by as much as 12°C in the higher latitudes. The means range from 12°C off Denmark to -20°C off northern Greenland. At 70°N, mean temperatures range from -3°C off Baffin Island to 6°C off the Norwegian coast. Except for portions of the northern coast of Russia, northern Europe and southern Greenland are still maintaining mean temperatures above freezing (0°C).

WINDS—By October, the Icelandic Low is well entrenched and producing more stable wind patterns across the Northern North Atlantic. West to southwesterly winds prevail across those regions south of Greenland and Iceland along the Norwegian coast. Mean scalar winds in these regions average force 5. Easterly winds are predominant north of this southern sector except for the Baffin Bay region where northerly winds prevail. Mean scalar winds across these more northern areas average force 4.

GALES—The frequency of 34 knots or greater winds has increased by approximately 5 percent since September for most regions south of 70°N. Frequencies of 10 percent of more are found in an area that extends from the Labrador Sea to Iceland and in a second much smaller area off the southwest coast of Norway. The highest frequencies are still observed off the southeastern tip of Greenland where they average 15 percent.

VISIBILITIES—Poor visibilities (those less than 2 nautical miles) are less frequent during October than any other month. Frequencies of 10 percent or greater are observed along the coastal waters of North America and in regions to the north of Iceland and 400 to 500 nautical miles northwest of the Norwegian coast. Although based on limited observations, indications are that frequencies average 20 percent or higher in the higher latitudes of ice free water between Greenland (north of Kap Dalton) and Novaya Zemlya (near 75°N).

NOVEMBER

PRESSURE—The mean central pressure of the Icelandic Low is just under 1002 millibars, the same as in the previous month. However, in November there is only one closed center and it is located over western Iceland. High pressure is still found over northern Greenland where the pressure has increased somewhat from the previous month and is the highest it has been since May. It averages near 1018 millibars over the extreme northern regions.

TEMPERATURE—A fairly large drop in mean air temperatures has taken place in the Northern North Atlantic since October. Drops occur of at least 3°C in the lower latitudes to as much as 9°C to 10°C in Baffin Bay and off northern Greenland. Average temperatures range from 9°C off Britain to -30°C off northern Greenland. At 70°N, mean temperatures range from 4°C off Norway, to -12°C off Baffin Island.

WINDS—Prevailing winds are westerly south of 60°N, southwesterly from Iceland to Norway, northerly from North America to Iceland, and easterly north of 70°N. Scalar winds continue to average force 4 to 5 across the Northern North Atlantic with the strongest winds being observed south of Greenland and Iceland between the Davis Strait and 20°W.

GALES—The frequency of winds of force 8 (34 knots) or greater has increased slightly (generally 5 percent or less) since October. Nearly all unprotected areas south of 70°N, between Norway and the Labrador Sea, report frequencies of 10 percent or greater. The highest frequencies (15 to 20 percent) are still located off the southeastern tip of Greenland.

VISIBILITY—The frequency of observations reporting visibilities less than 2 nautical miles has increased slightly since October. Frequencies of 10 percent or greater are observed between North America and Greenland, along the southeastern coast of Greenland, and north of a line from Iceland to the southern Barents Sea. Coastal waters off northern Germany also encounter frequencies of 10 percent. Higher frequencies of 20 to 25 percent are observed off the north coast of Newfoundland (affecting portions of the entrance to Hudson Bay), the Greenland Sea, and the northern half of the Barents Sea.

WAVE HEIGHTS—All areas between the Davis Strait and the Baltic Sea and as far north as Spitzbergen report wave heights of 12 feet or greater 10 percent or more of the time. South of Iceland, between the Labrador Sea and the North Sea, frequencies generally average 30 to 40 percent. The highest observed frequencies run near 50 percent south of 60°N between 15°W and 22°W.

DECEMBER

PRESSURE—The Icelandic Low continues to deepen with the lowest central pressure, centered off the west coast of Iceland, averaging just under 998 millibars. A second center over the Norwegian Sea averages just under 1000 millibars. The permanent high pressure ridge over northern Greenland is slightly weaker than in the previous month; pressure over the northernmost regions averages a little over 1014 millibars.

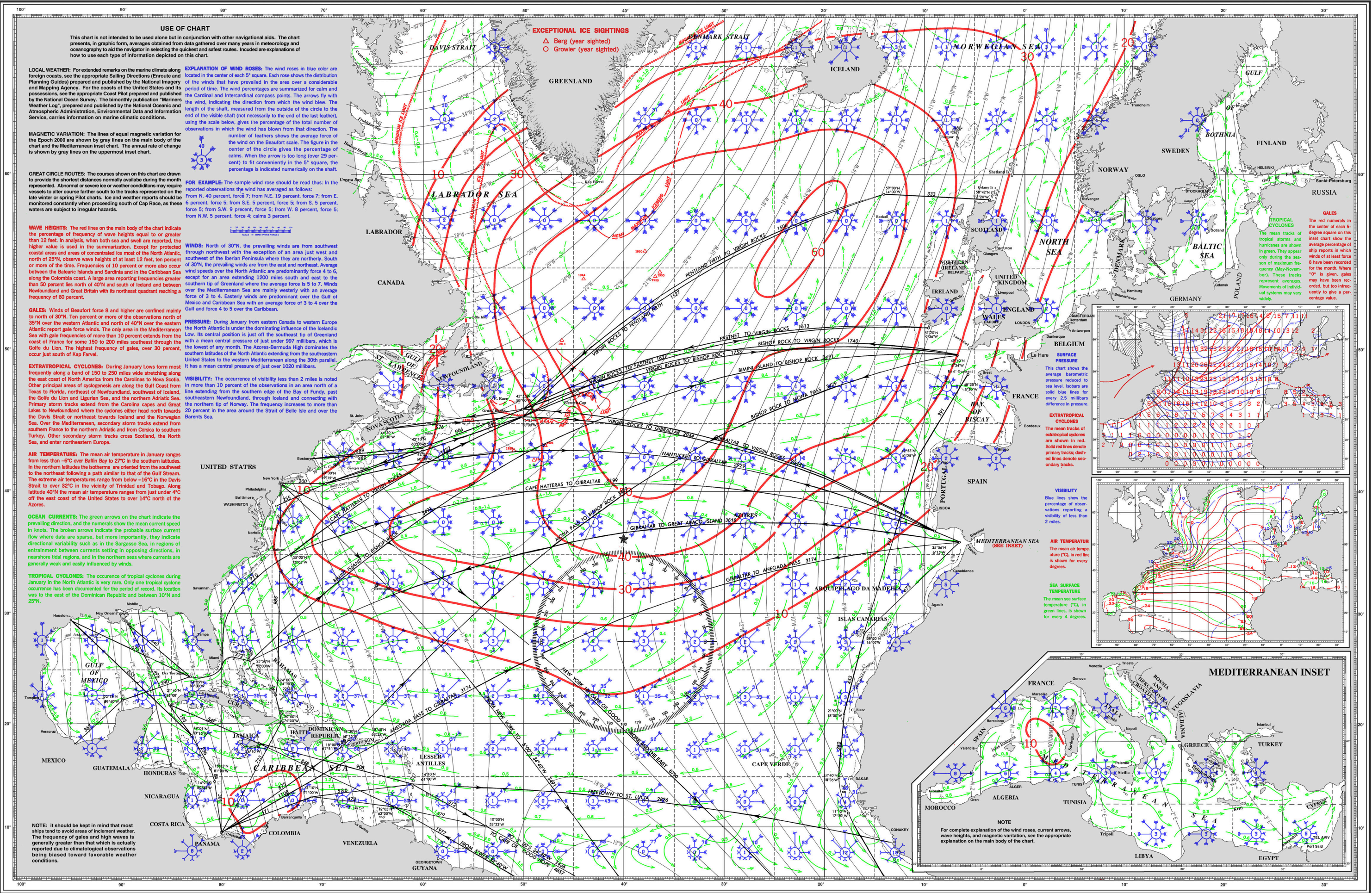
TEMPERATURE—Mean air temperatures continue to decrease with values ranging from near 9°C off northwestern Iceland to -32°C off northern Greenland. At 70°N, means range from 2°C off Norway to -16°C off Baffin Island. Since November, the average freezing line (0°C isotherm) has moved south of southern Greenland and also south into northern Norway. In monthly ranking, December is not as cold across the Northern North Atlantic as the approaching three months (Jan, Feb, Mar).

WINDS—The pressure pattern and wind field are the results of the Icelandic Low's domination over the Northern North Atlantic. Prevailing winds over the central regions are westerly south of 60°N and easterly north of 65°N to 70°N. To the east over the Barents Sea, southerly winds prevail while west of Greenland, they are northerly. Wind speeds south of 70°N, average force 5 to 6 with the strongest winds being observed south of 60°N between 30°W and 45°W. Slightly weaker winds are observed north of 70°N, averaging force 4 to 5.

GALES—Winds of force 8 (34 knots) or greater have increased somewhat since the previous month generally in the region from Greenland to Iceland and southward. Frequencies of 10 percent or greater still lie mostly south of 70°N between the Labrador Sea and Norway. The highest frequencies, near 20 percent, are found along the southeast coast of Greenland and southward. This is basically the area where maximum frequencies of gales occur year-round.

VISIBILITY—Visibility patterns have changed little since November. Frequencies of poor visibilities (those less than 2 nautical miles) have increased slightly over the Labrador Sea while pushing farther to the southeast. Areas experiencing poor visibilities in 10 percent or more of their observations roughly include the Labrador Sea, Denmark Strait, Greenland Sea, Barents Sea, eastern Irish Sea, and northern German coastal waters. Frequencies of 20 percent or higher are observed northward from the Davis Strait and in regions north of a line that runs from Kap Dalton, Greenland, to Bjørnøya to Ostrov Kolyuyev.

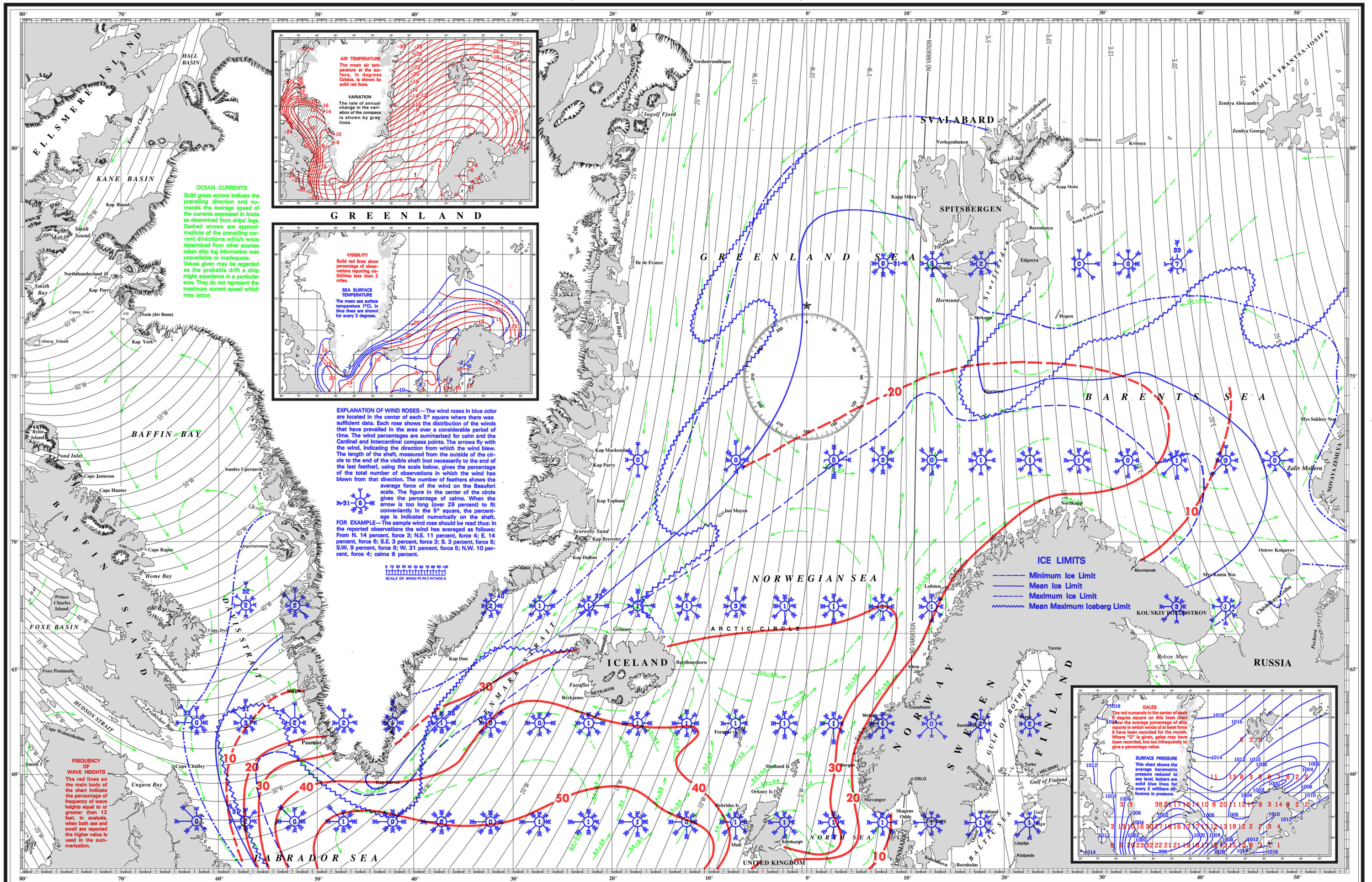
WAVE HEIGHTS—Southward from Spitzbergen between the Davis Strait and the Baltic Sea, wave heights of 12 feet or greater are observed 10 percent or more of the time. South of Iceland, between the Labrador Sea and the British Isles, frequencies generally run 40 to 50 percent. Within this broad area observed frequencies reach 60 percent, the highest of any month, just south of 57°N between 17°W and 22°W.



PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN

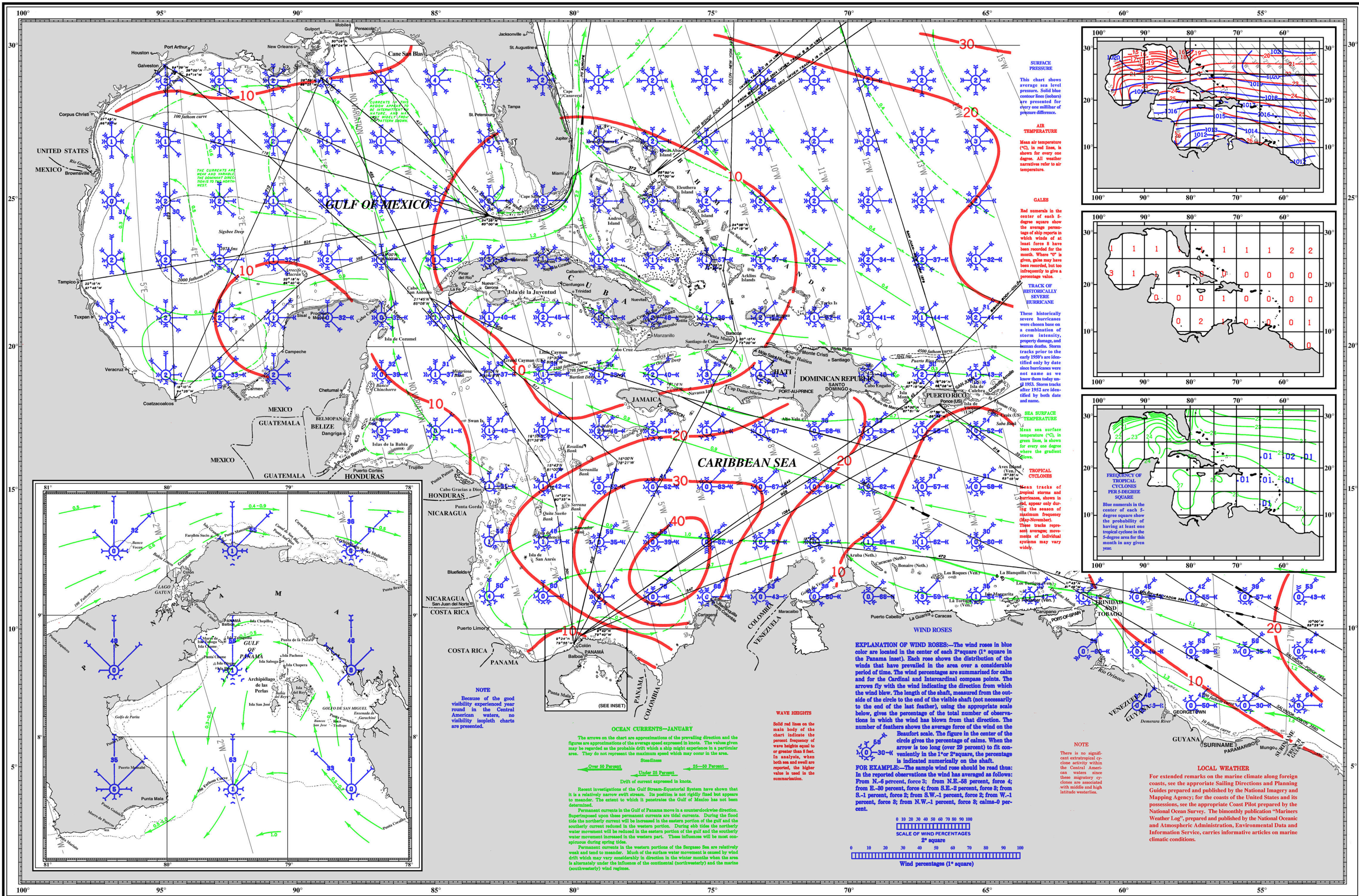
(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)

SEC. II - JANUARY



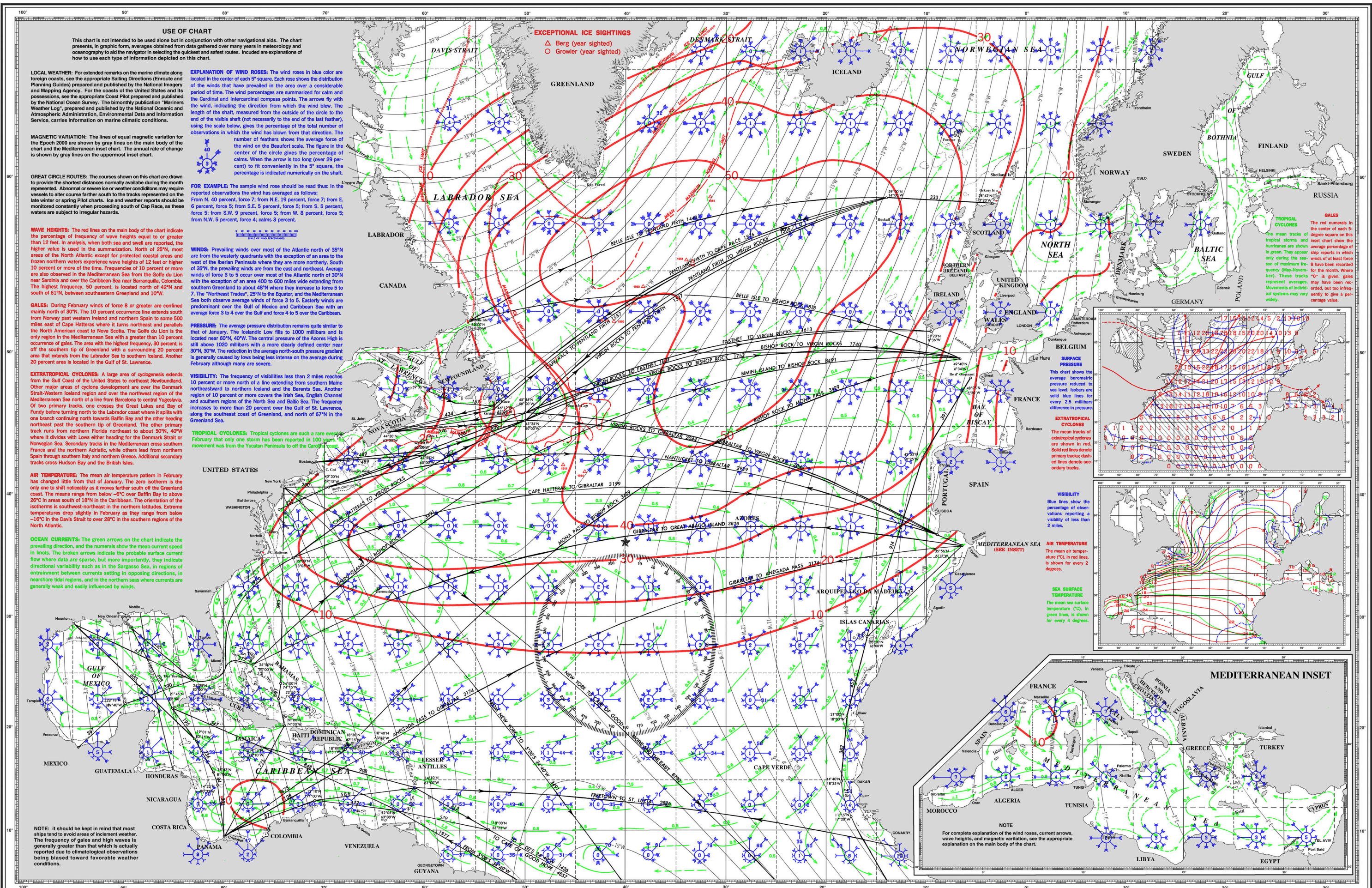
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - JANUARY



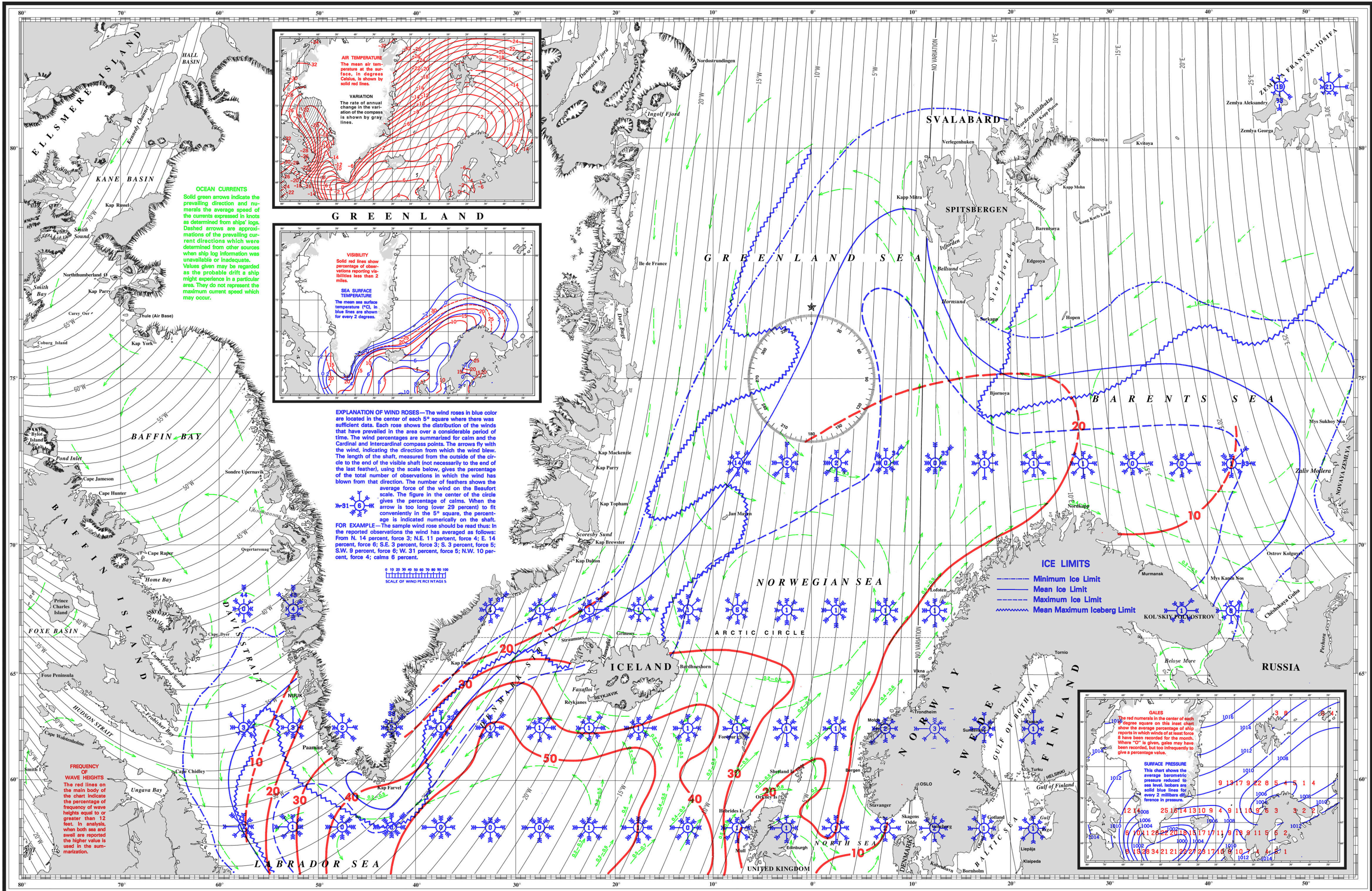
PILOT CHART OF THE NORTH ATLANTIC OCEAN

SEC. I - FEBRUARY

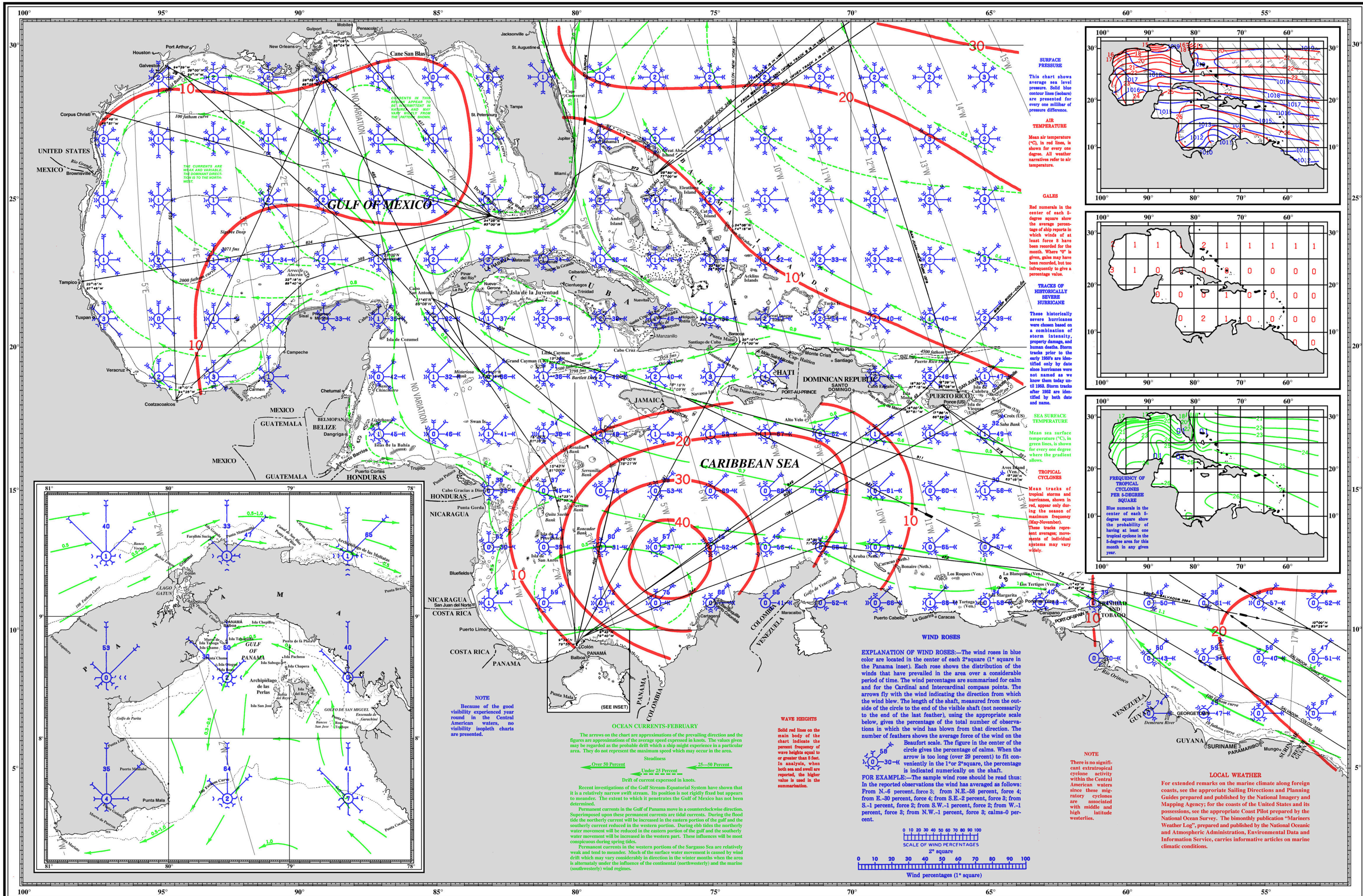


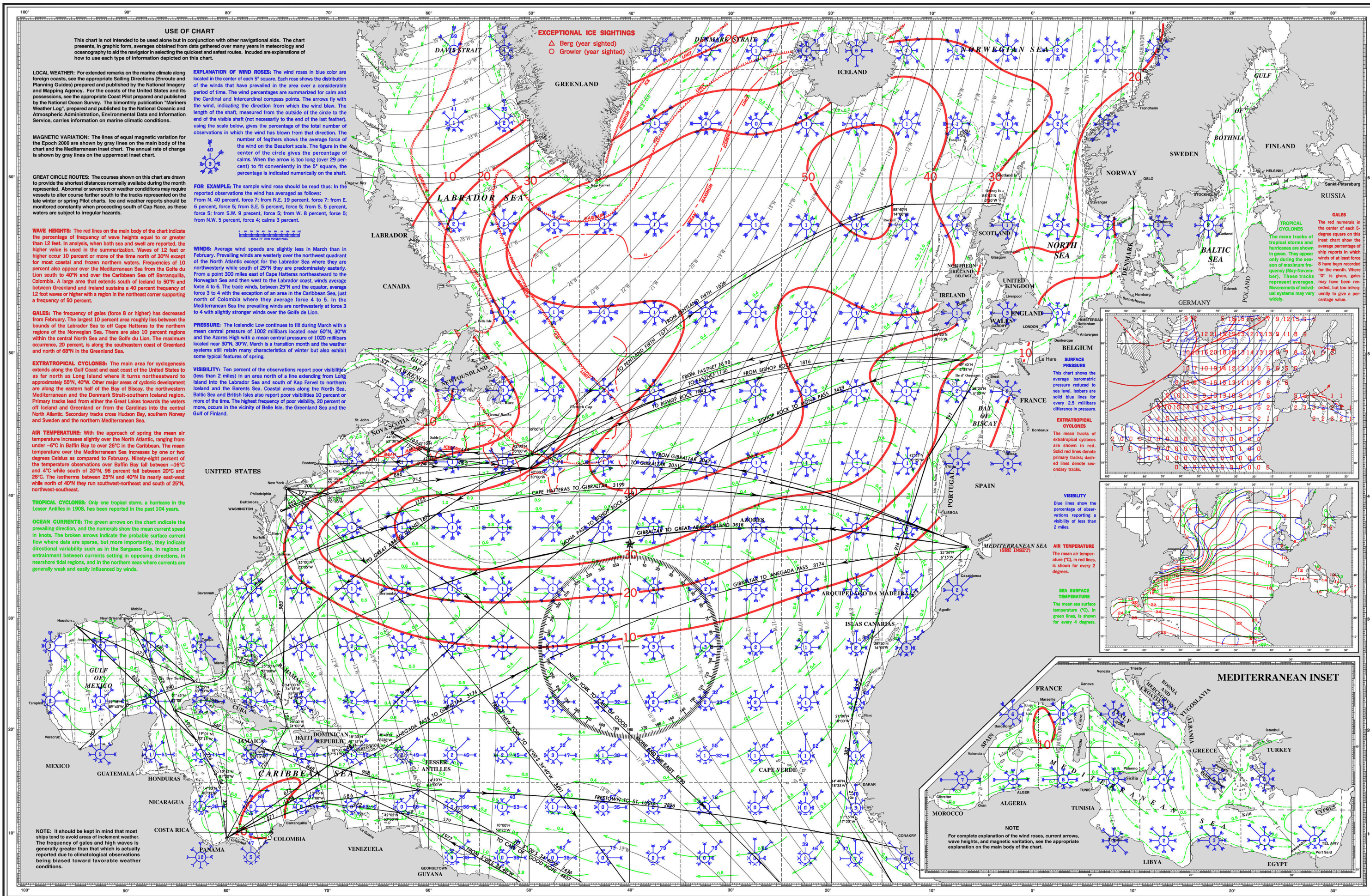
PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN

(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)



PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

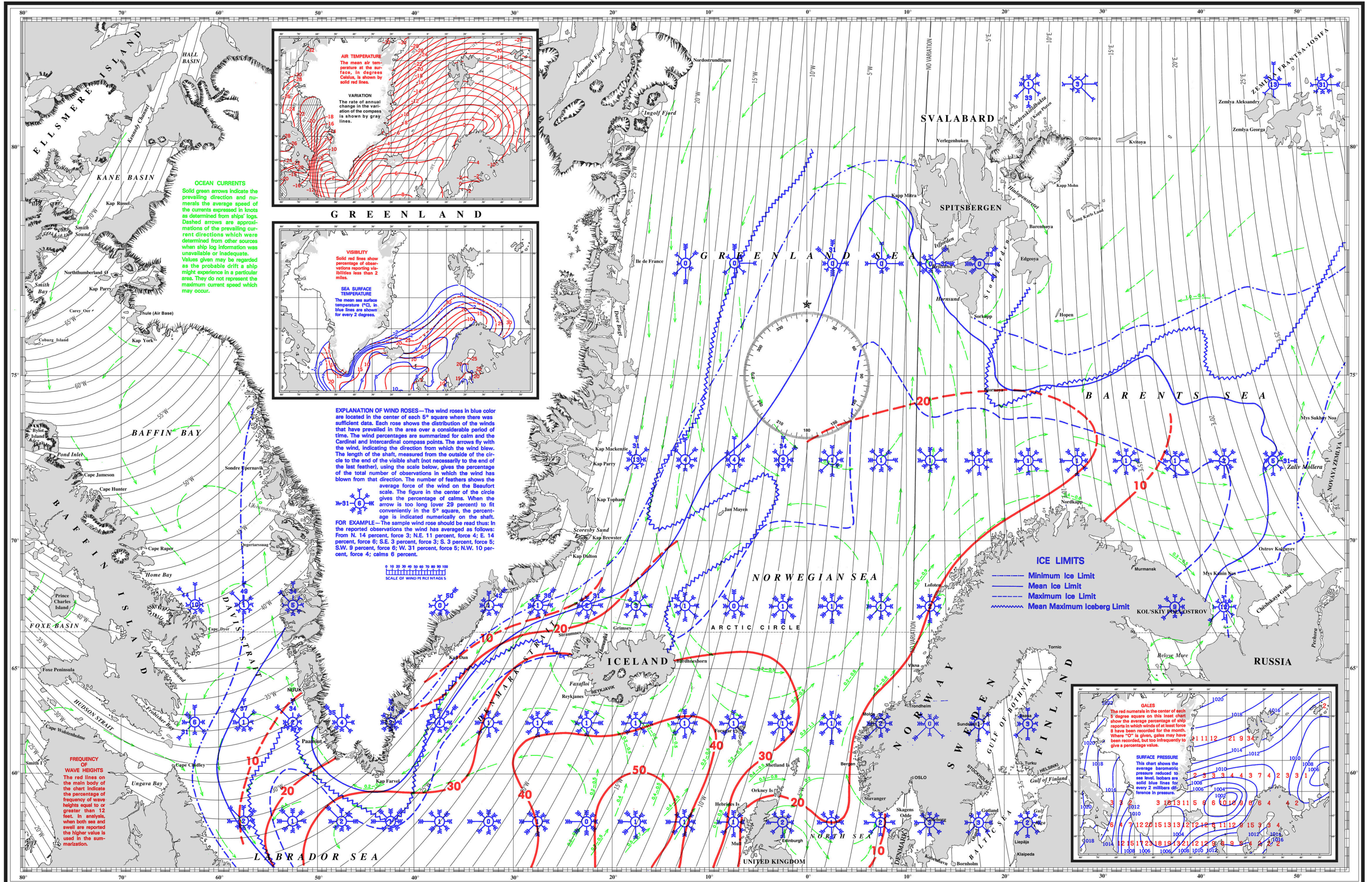




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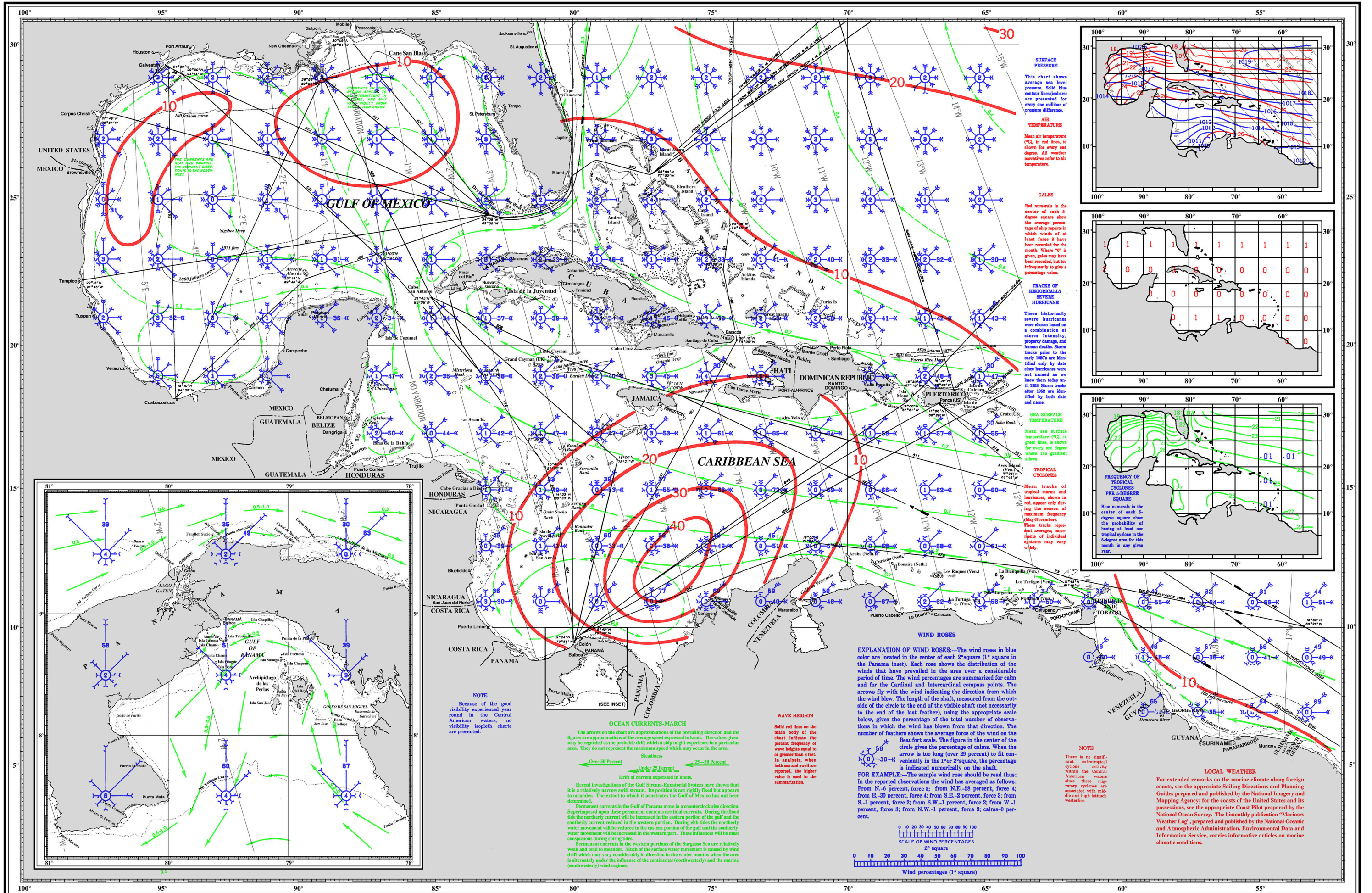
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SEC. II - MARCH



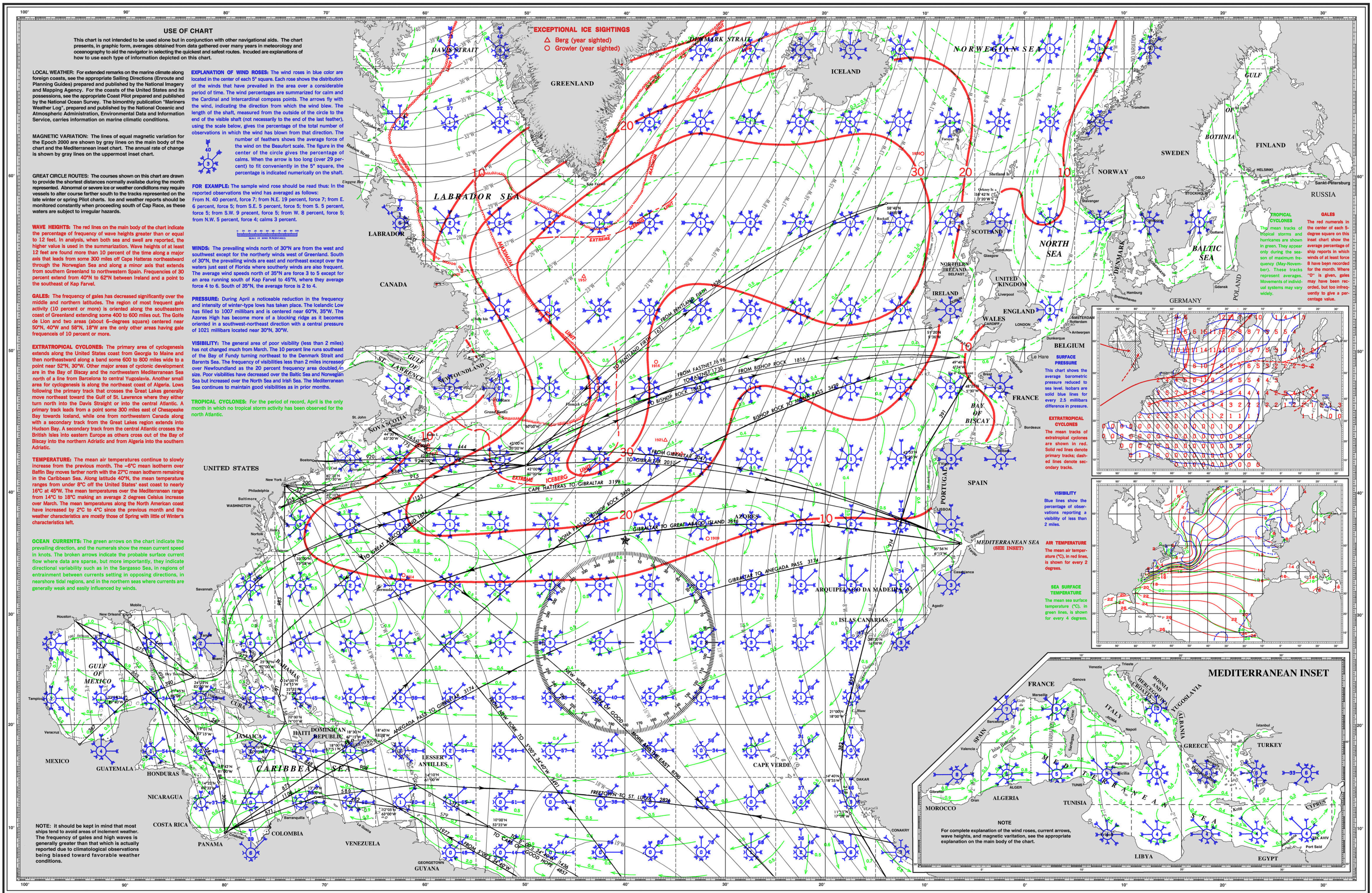
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - MARCH

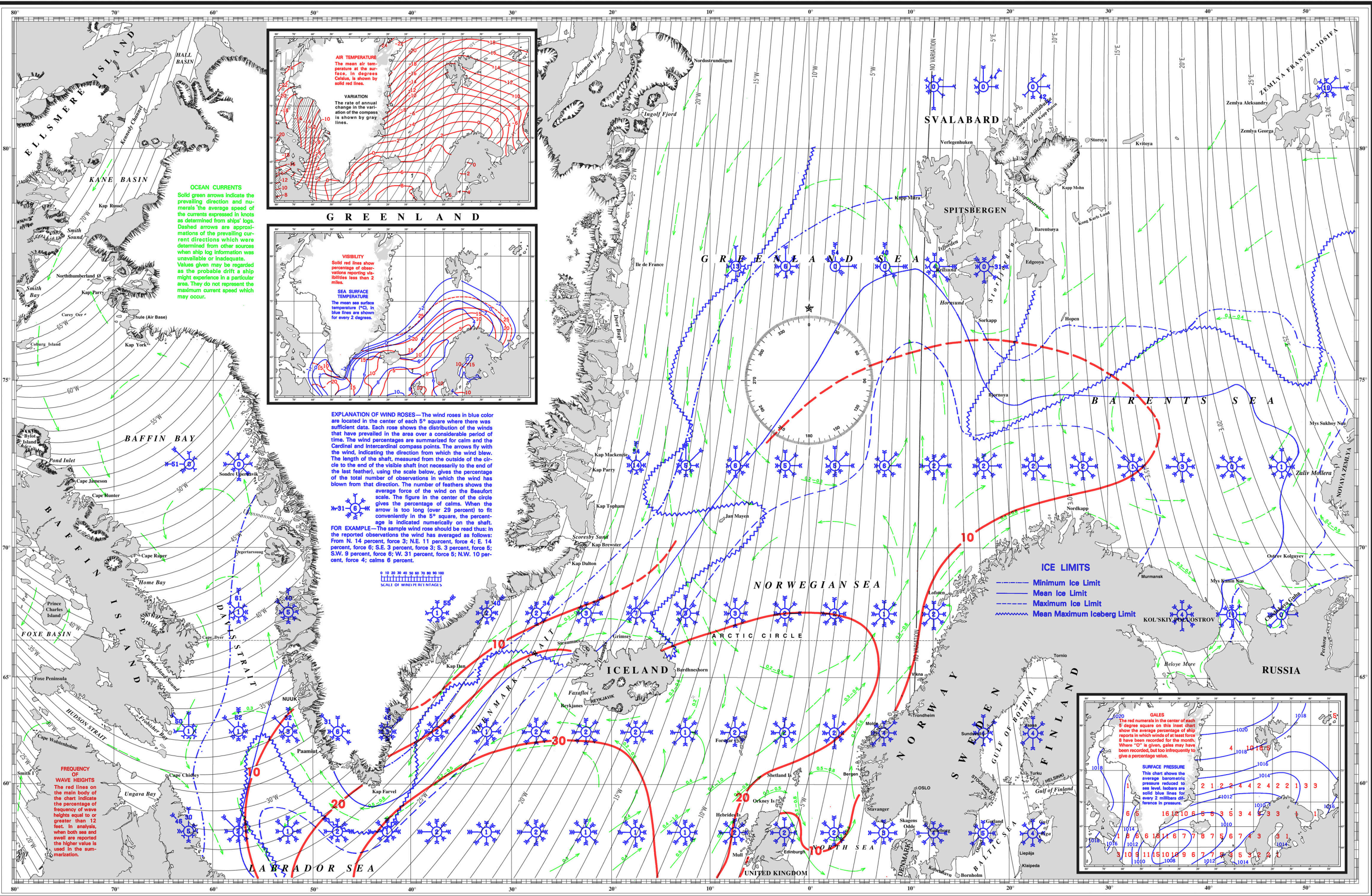


PILOT CHART OF THE NORTH ATLANTIC OCEAN

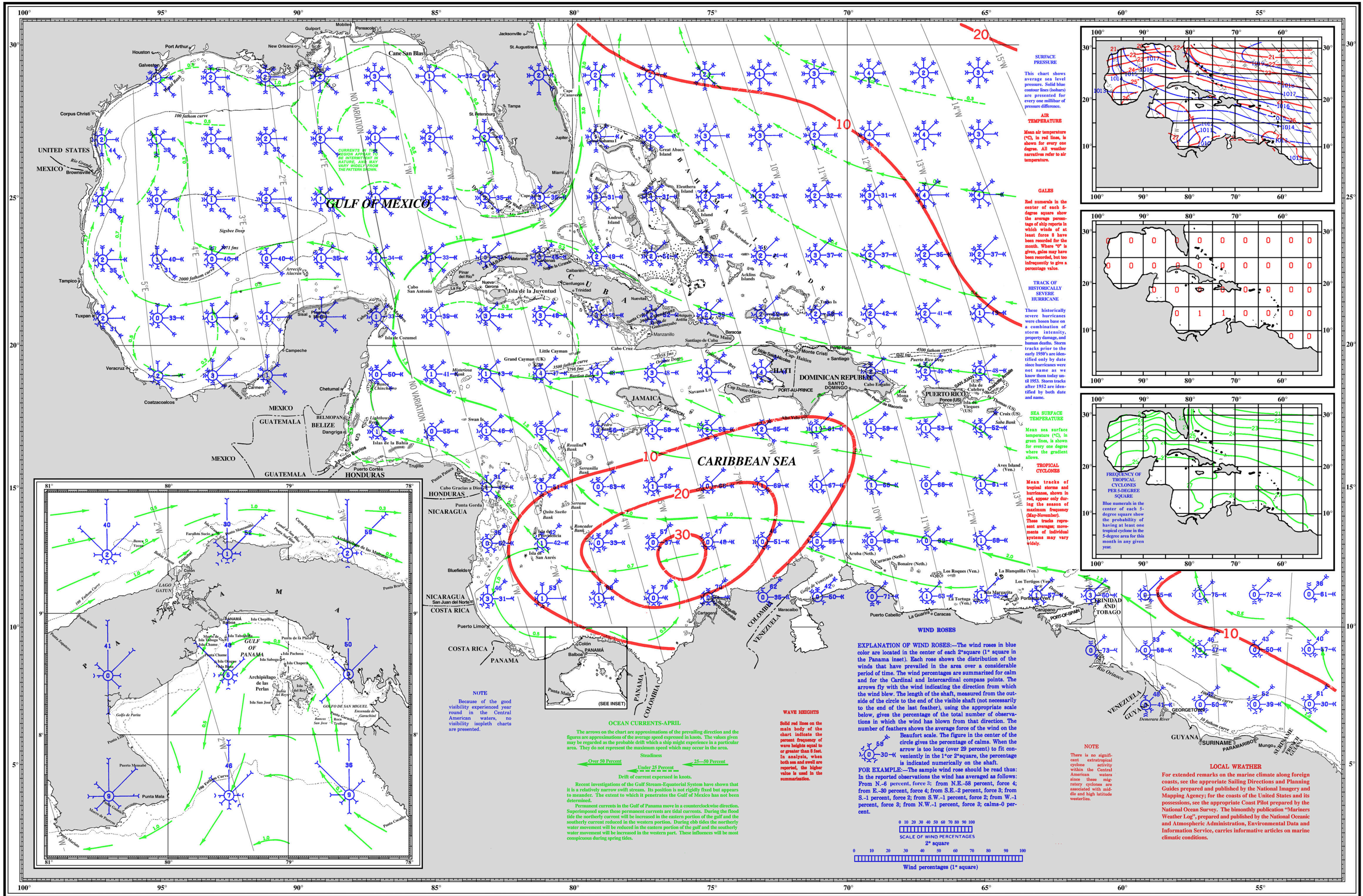
SEC. I - APRIL



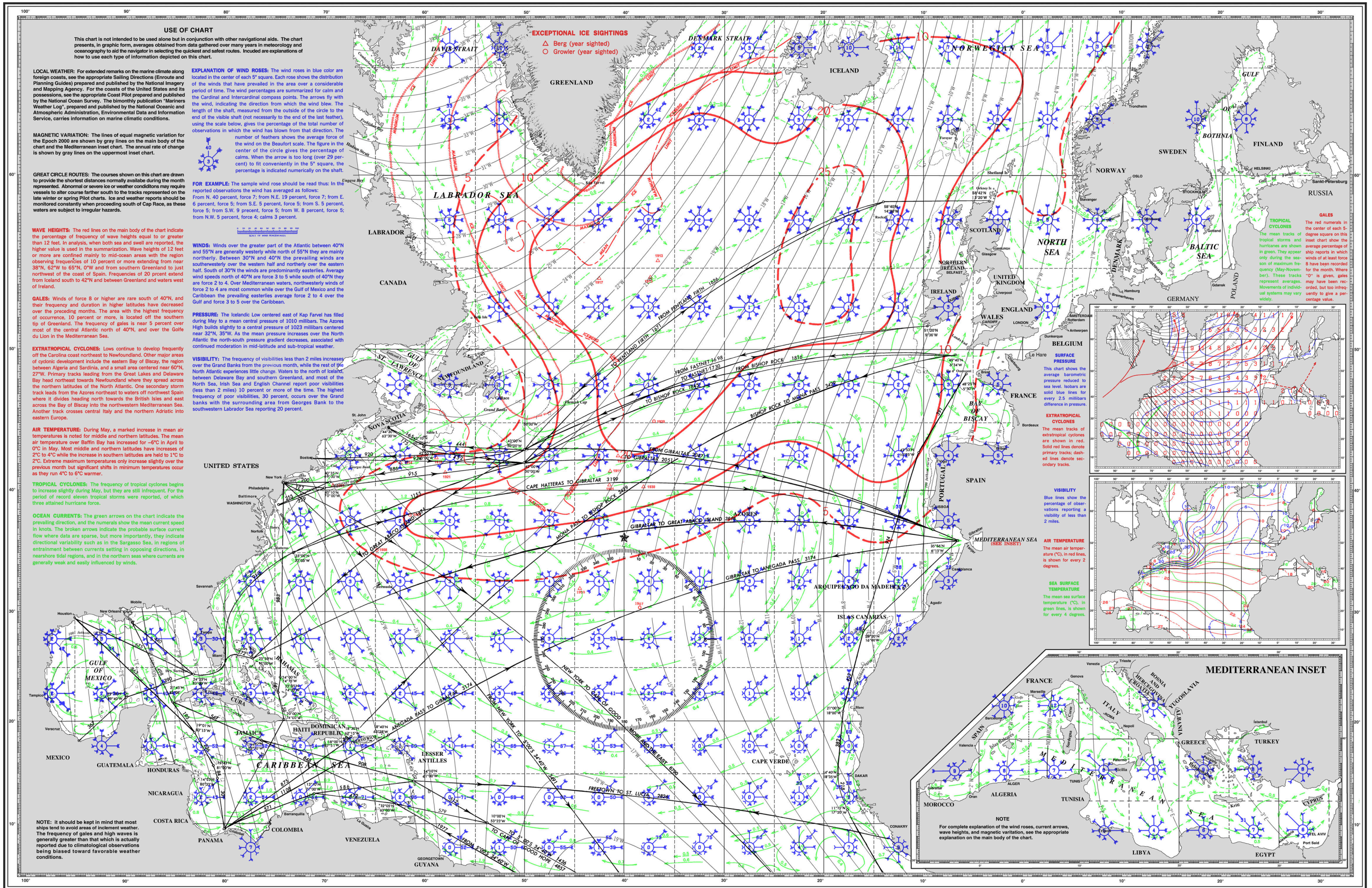
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(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)



PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO



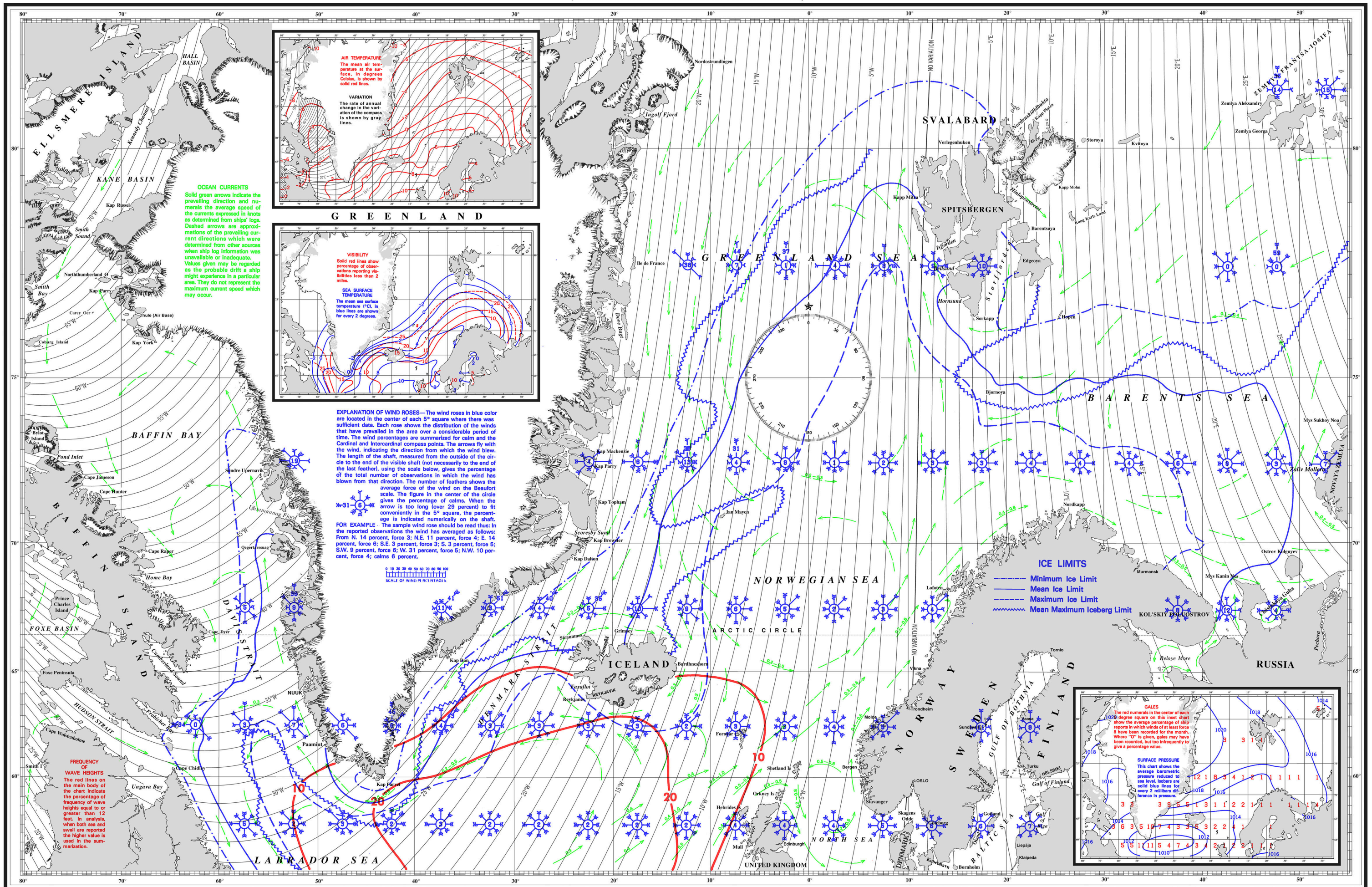
PILOT CHART OF THE NORTH ATLANTIC OCEAN



PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN

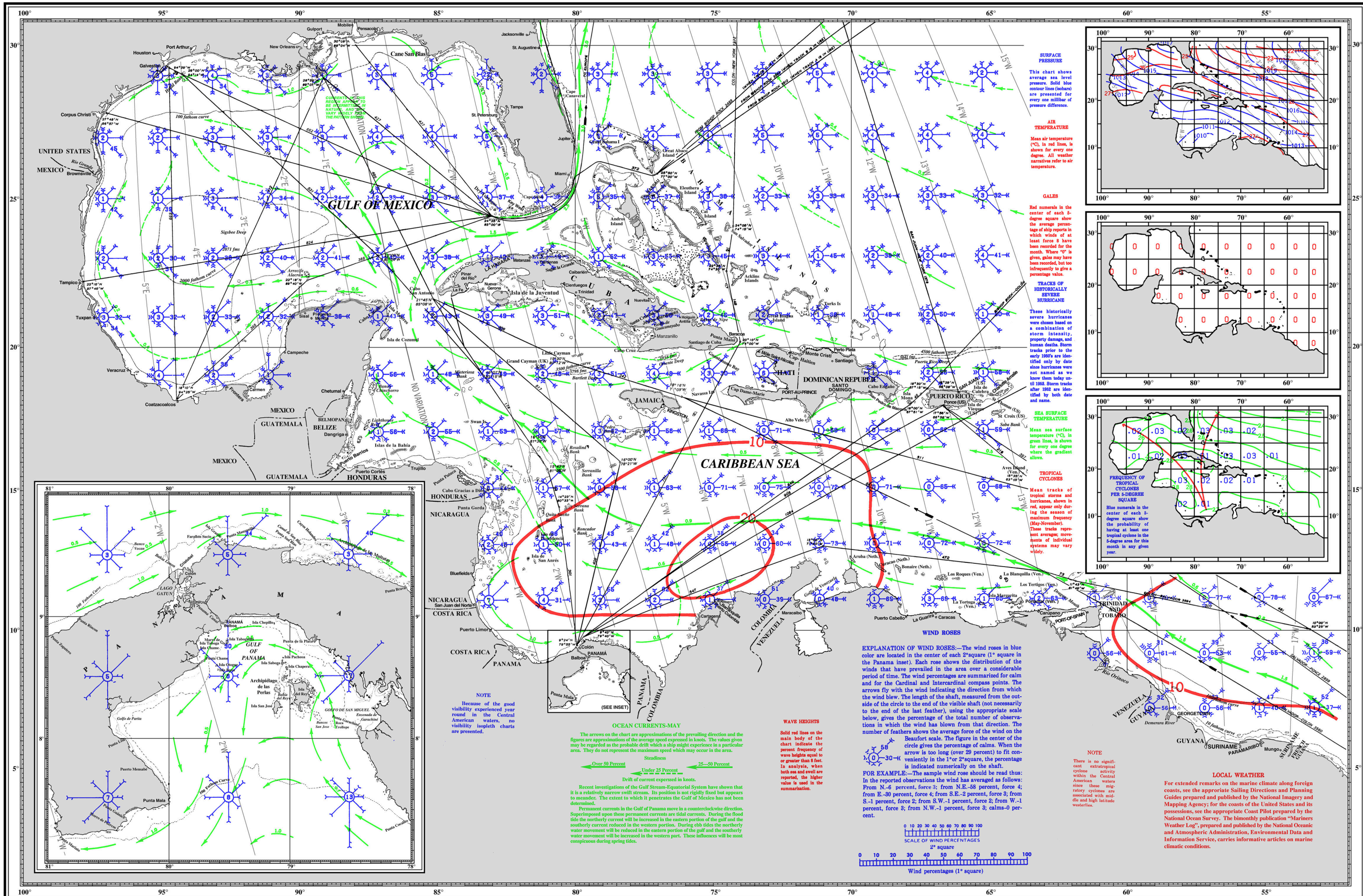
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SEC. II - MAY



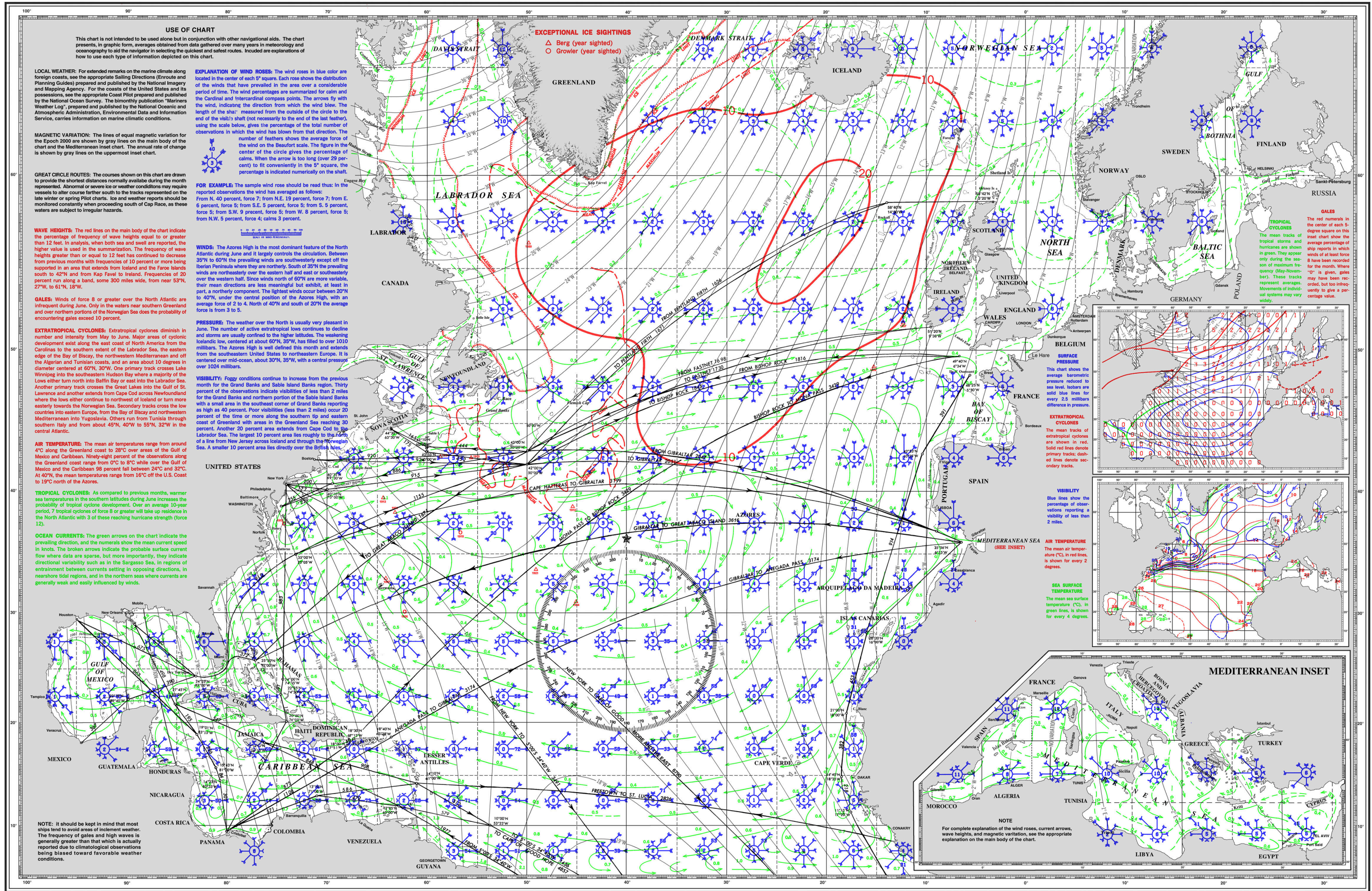
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - MAY



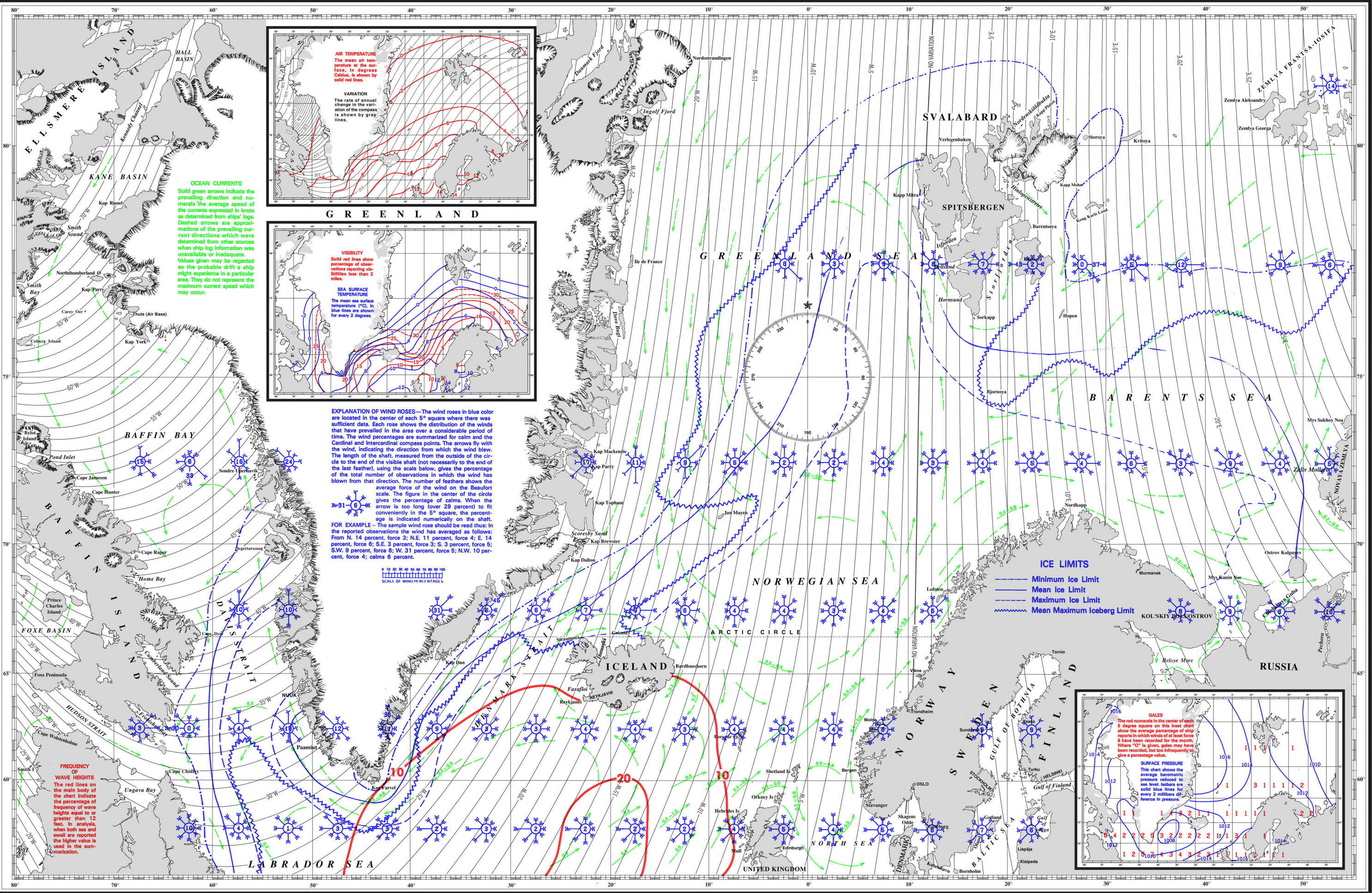
PILOT CHART OF THE NORTH ATLANTIC OCEAN

SEC. I - JUNE

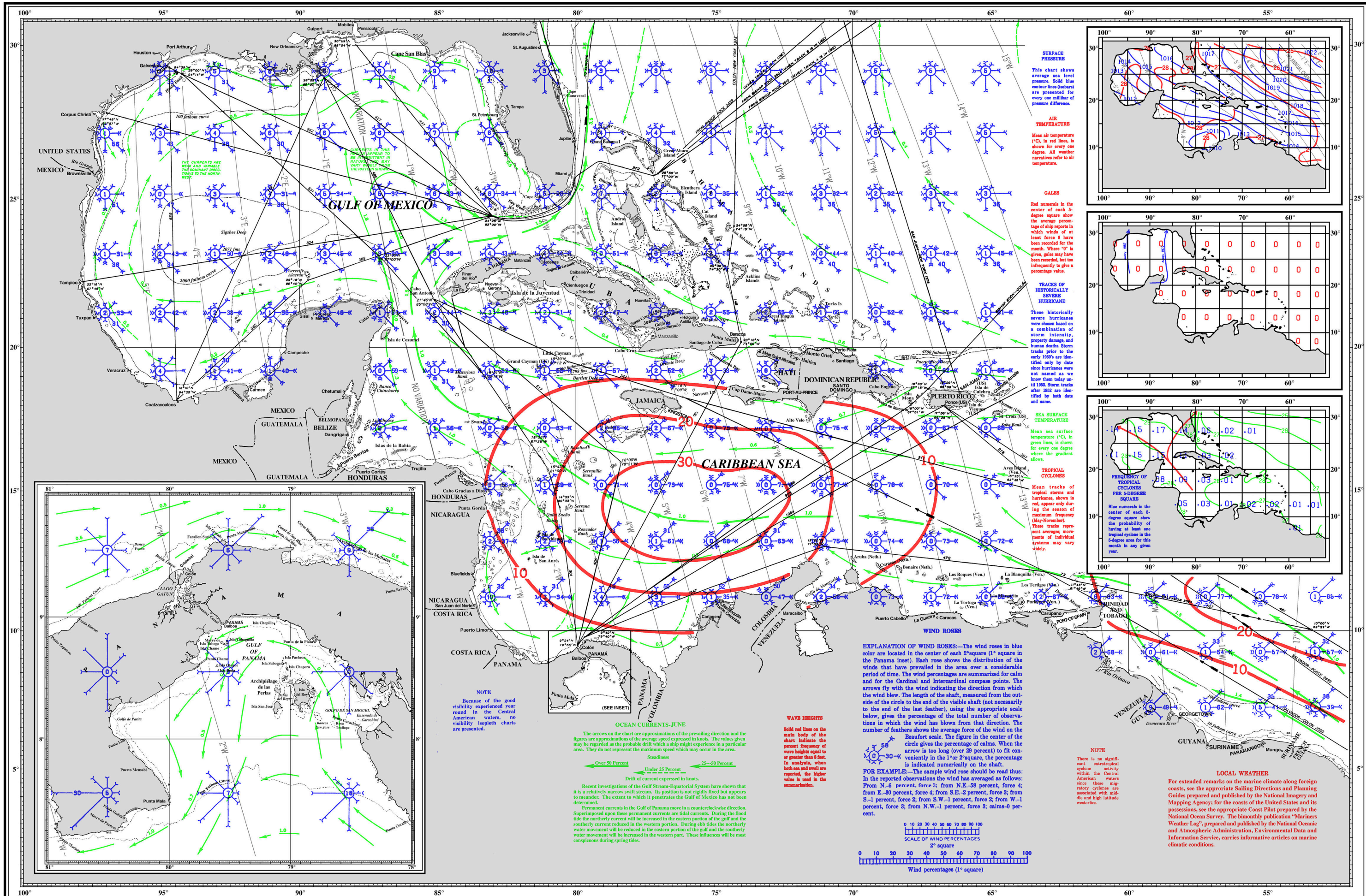


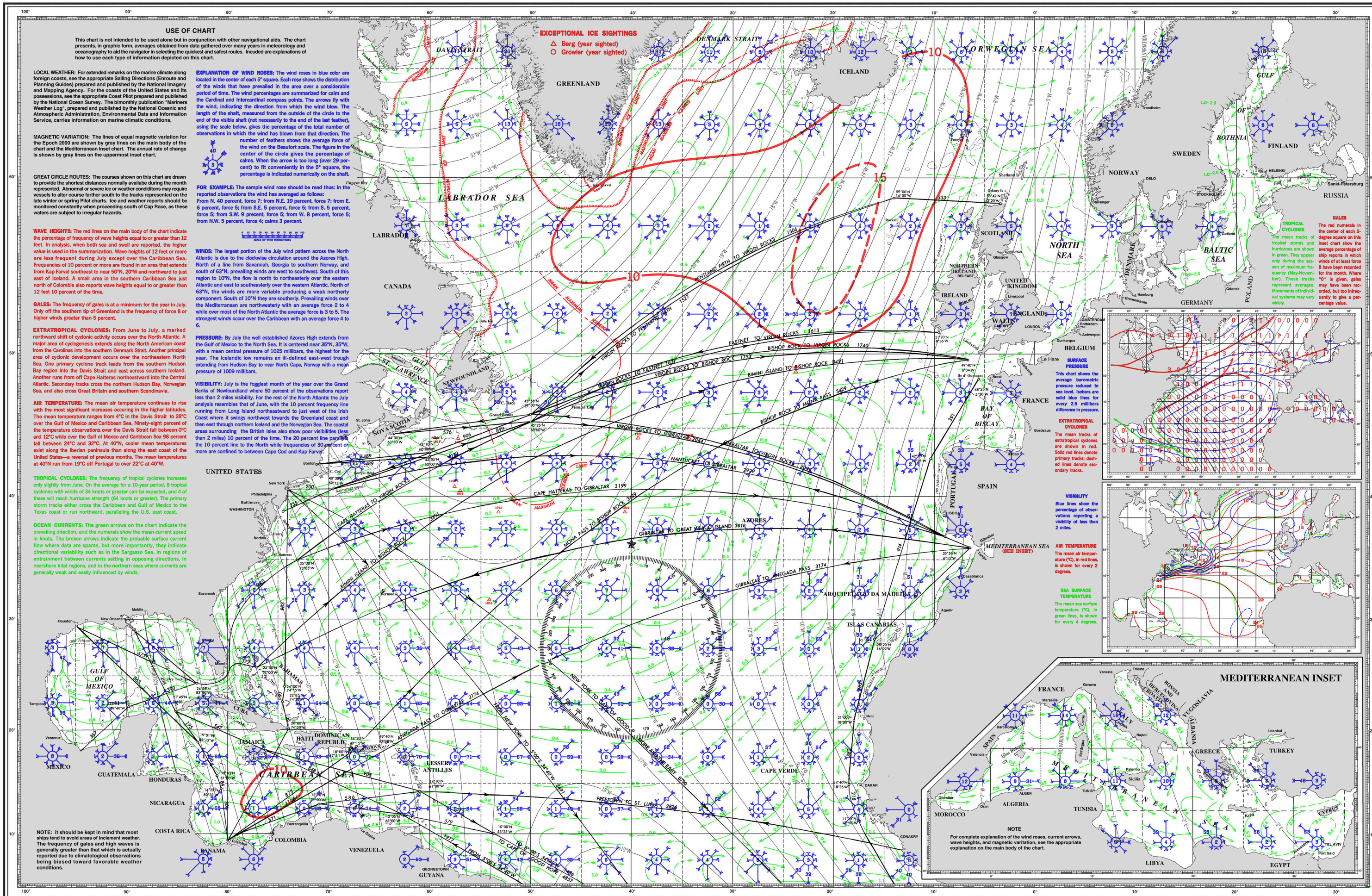
PILOT CHART OF THE NORTH ATLANTIC OCEAN

(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)



PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

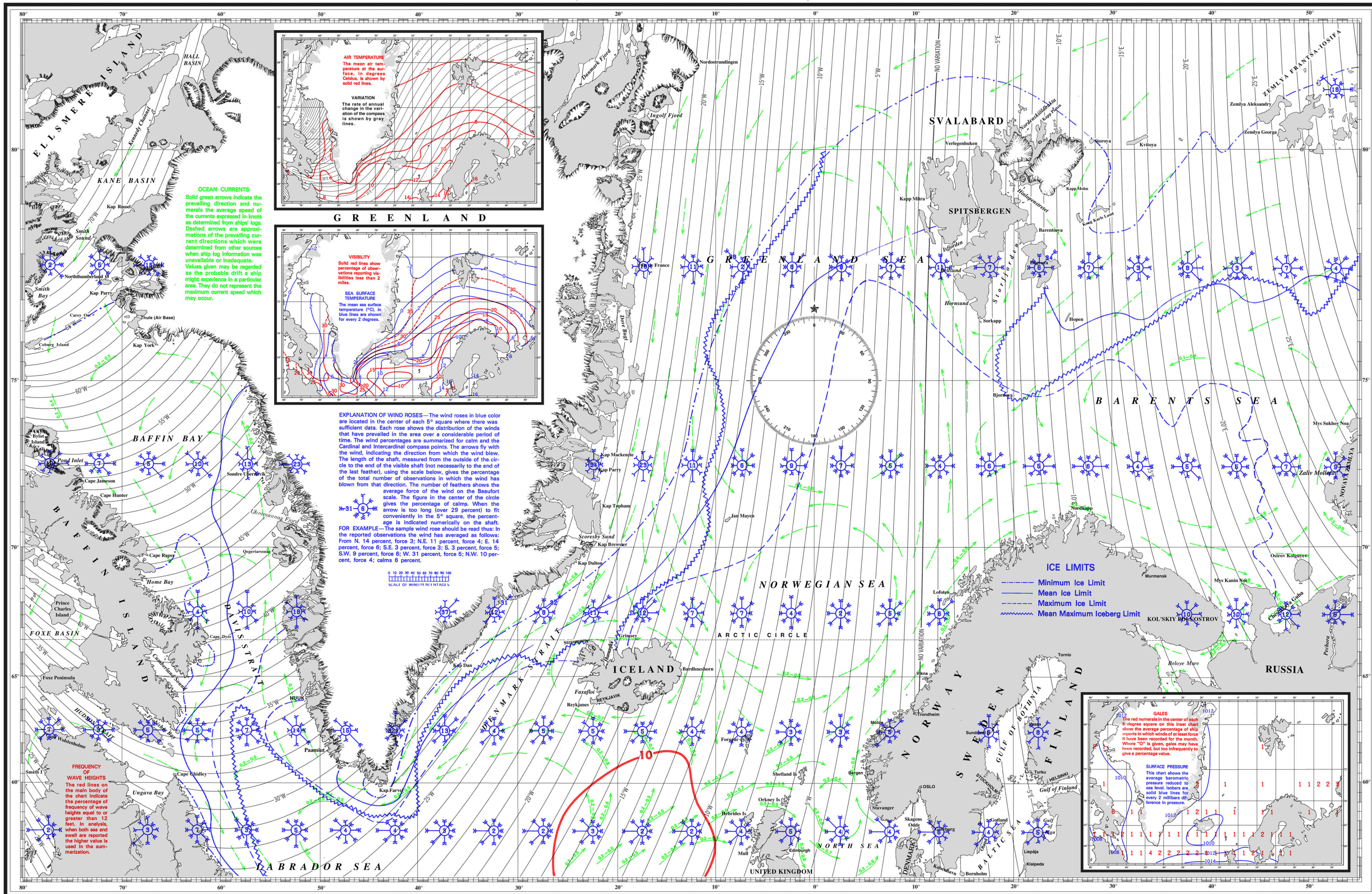




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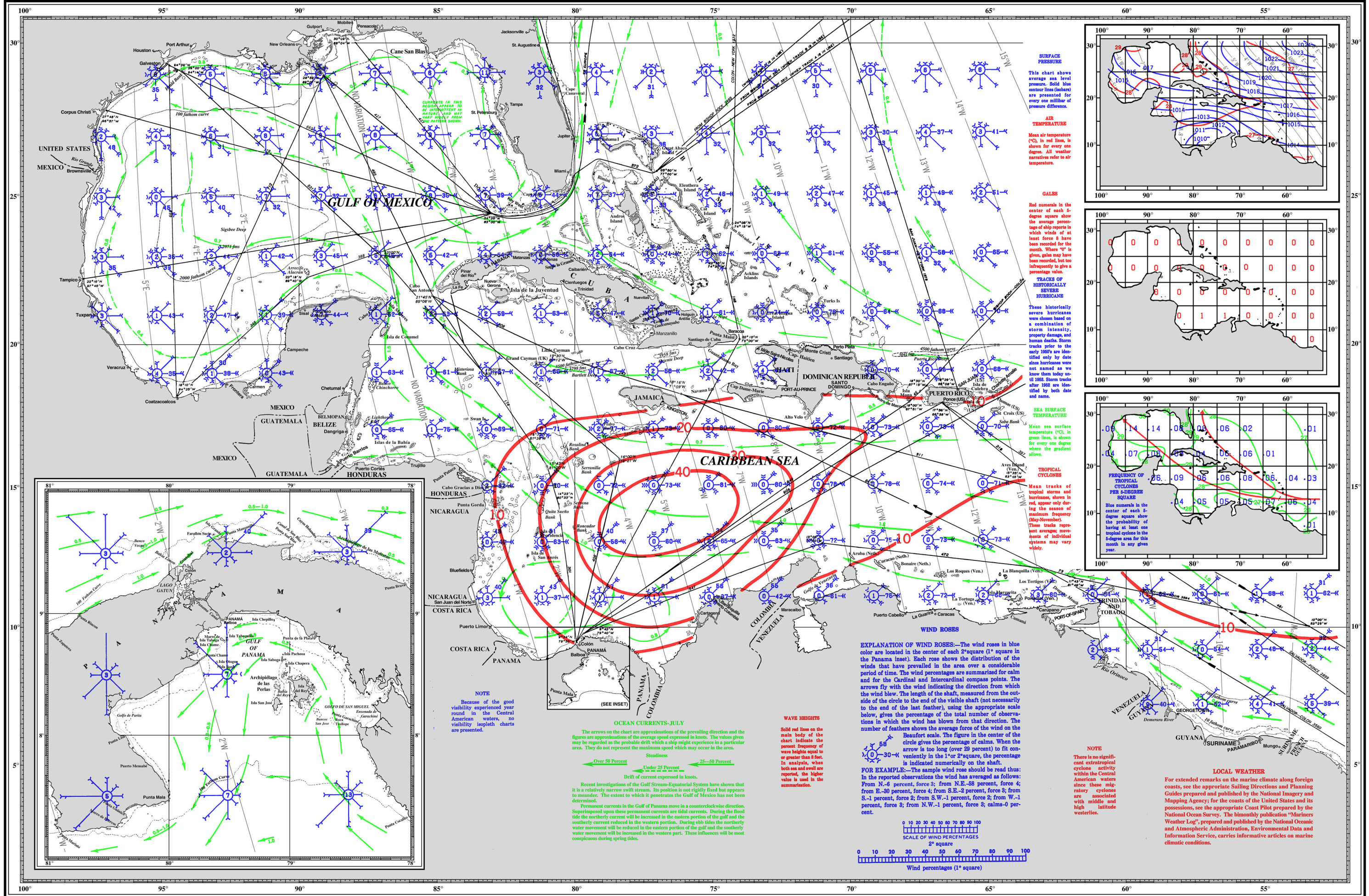
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SEC. II - JULY



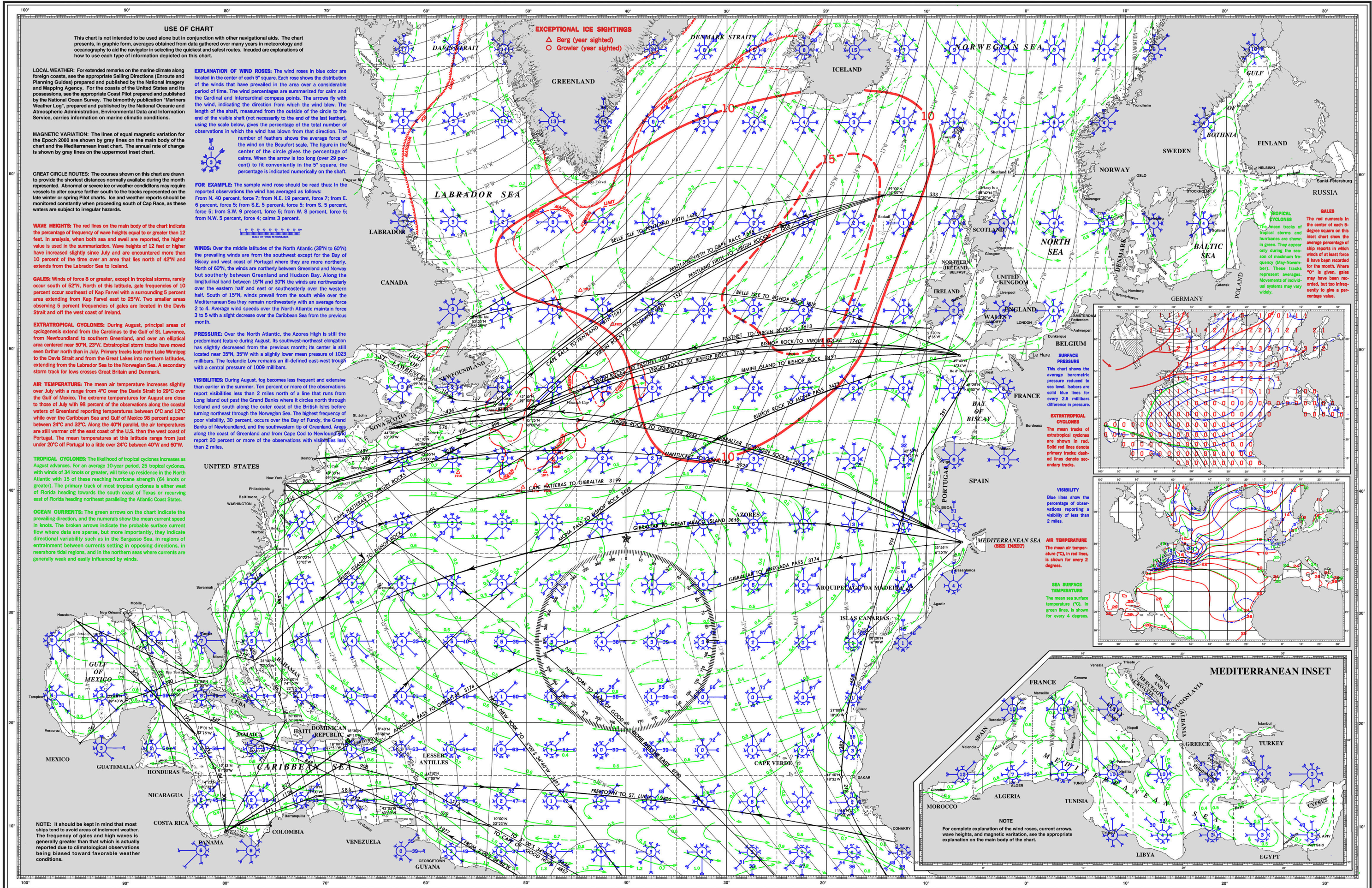
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - JULY



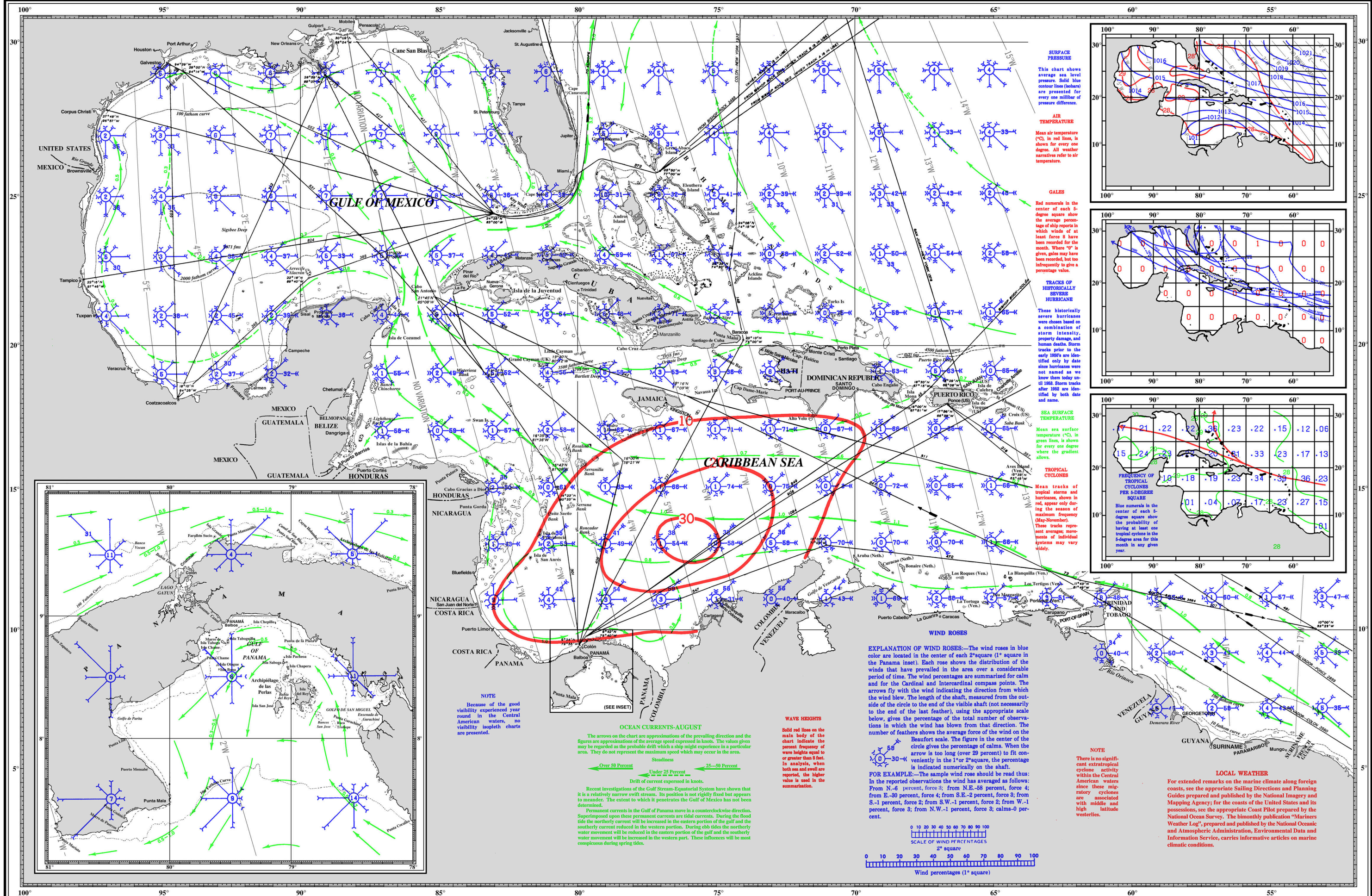
PILOT CHART OF THE NORTH ATLANTIC OCEAN

SEC. I - AUGUST





PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

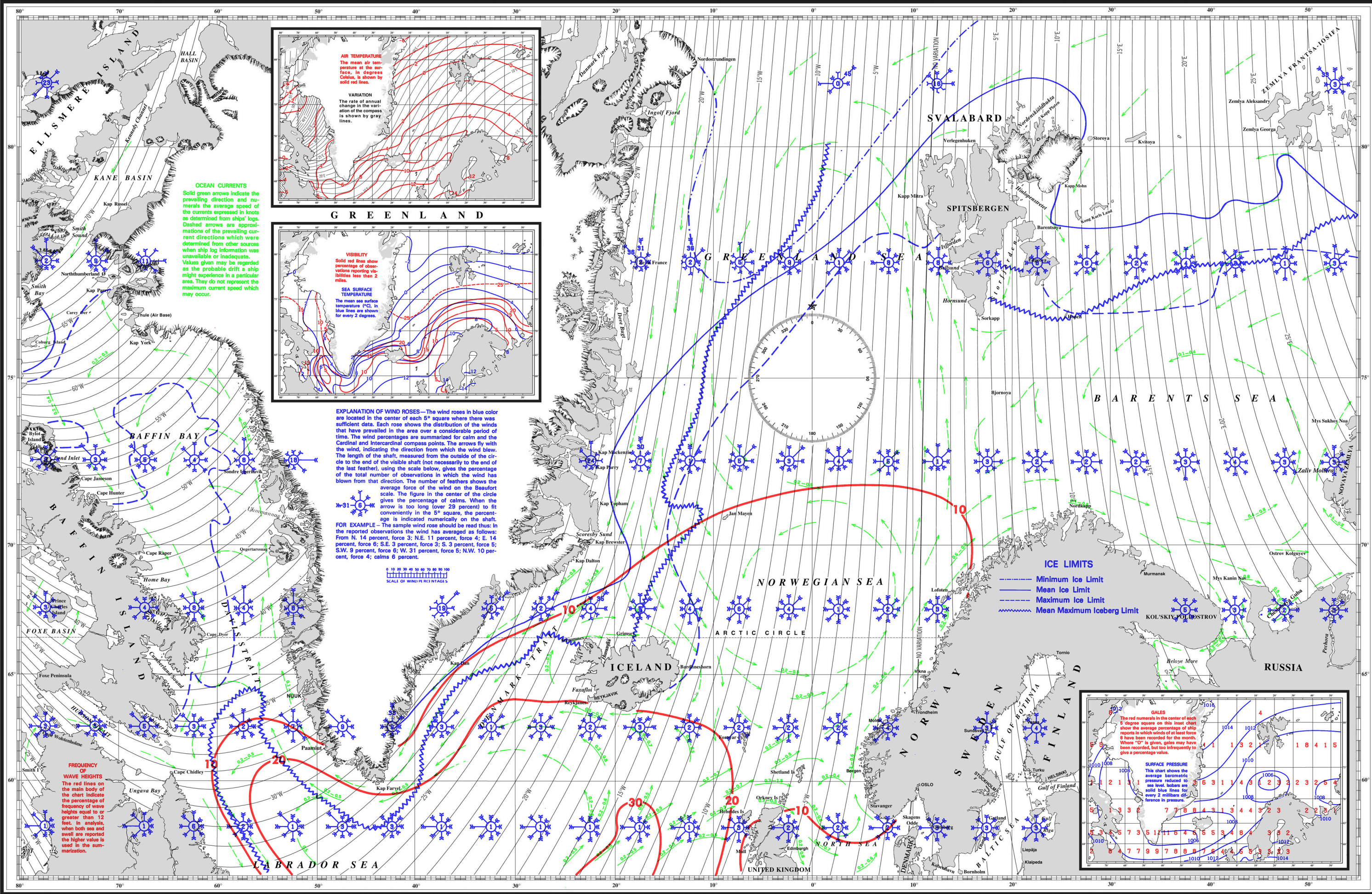




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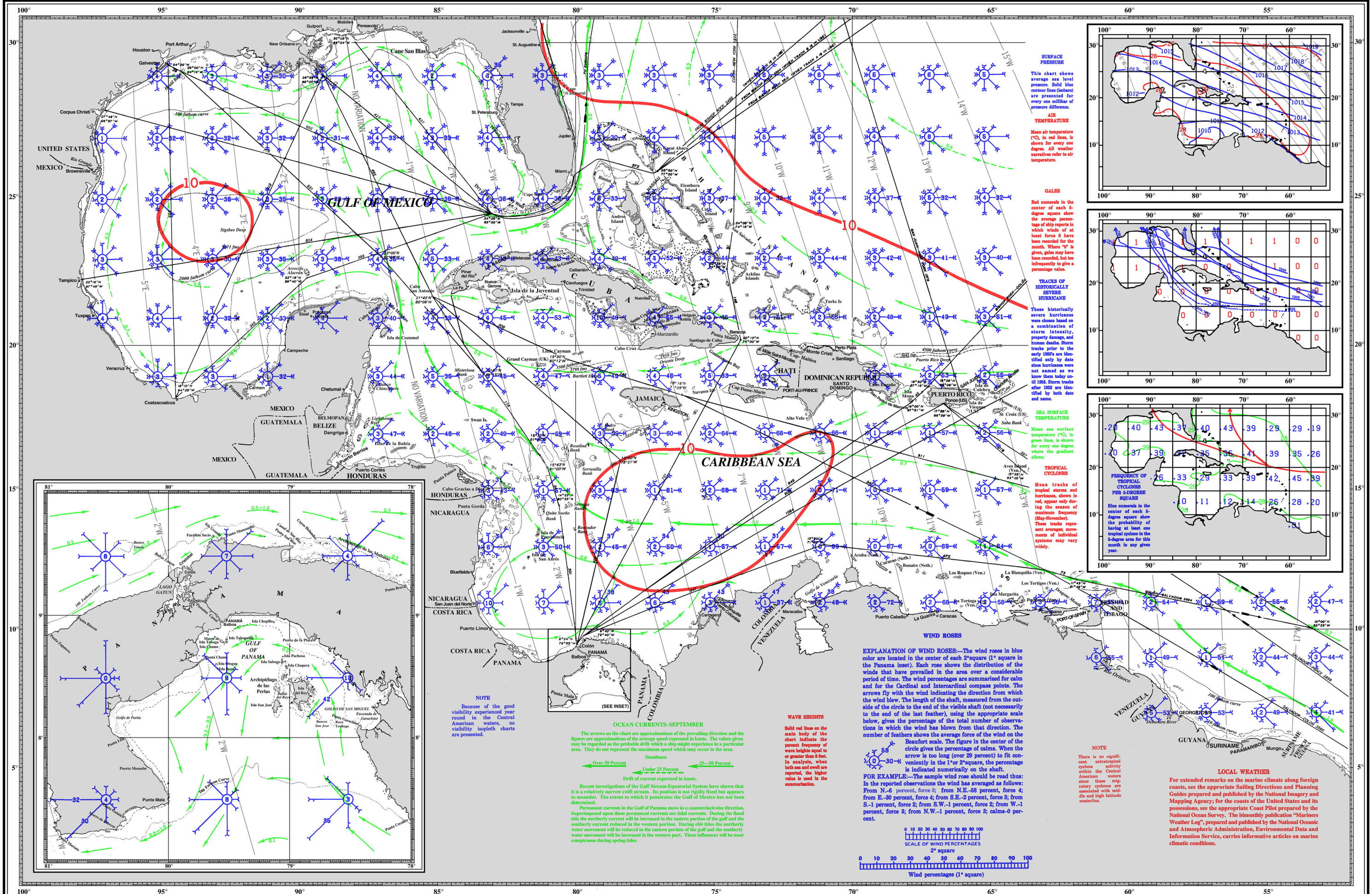
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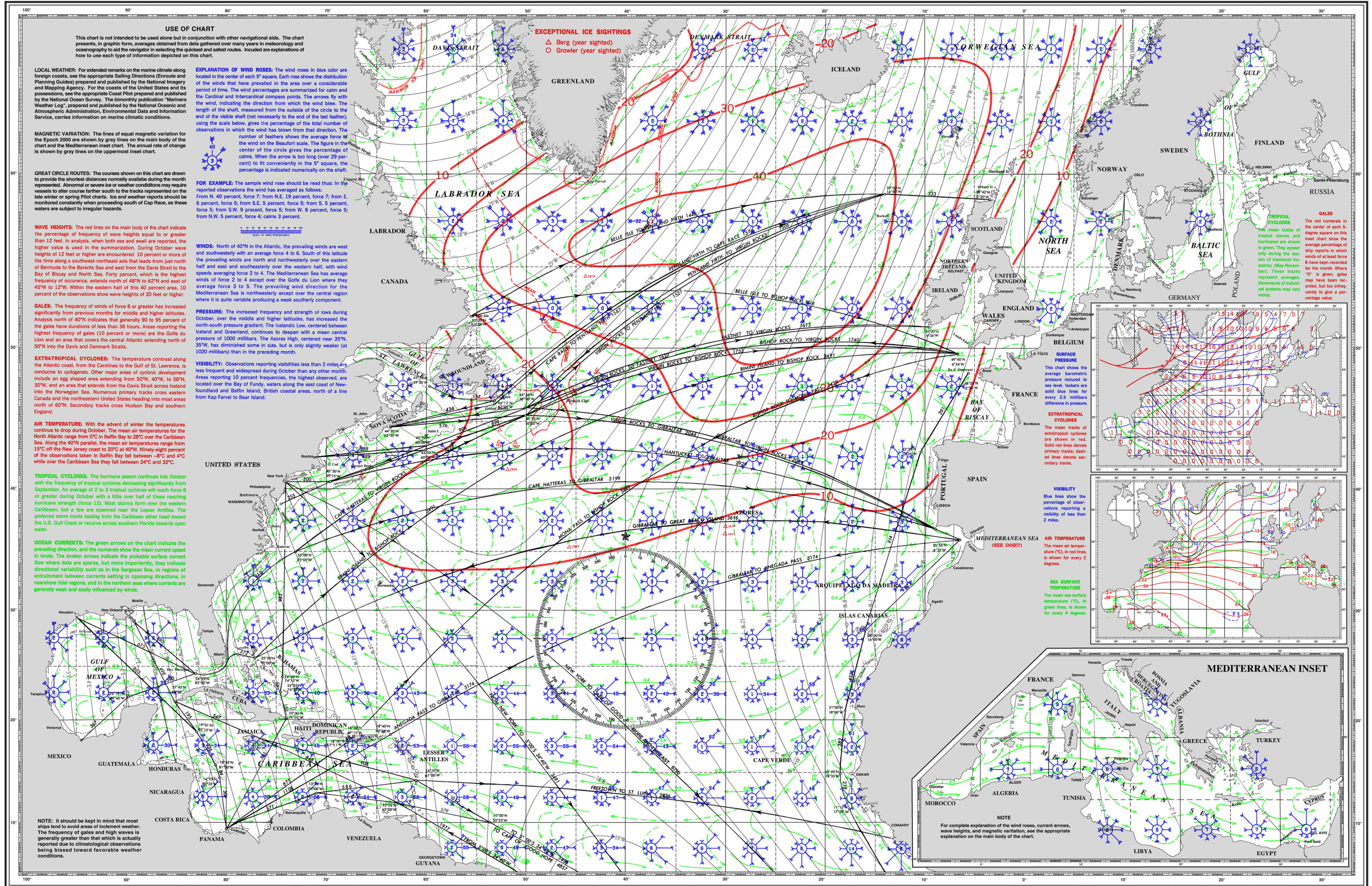
SEC. II - SEPTEMBER



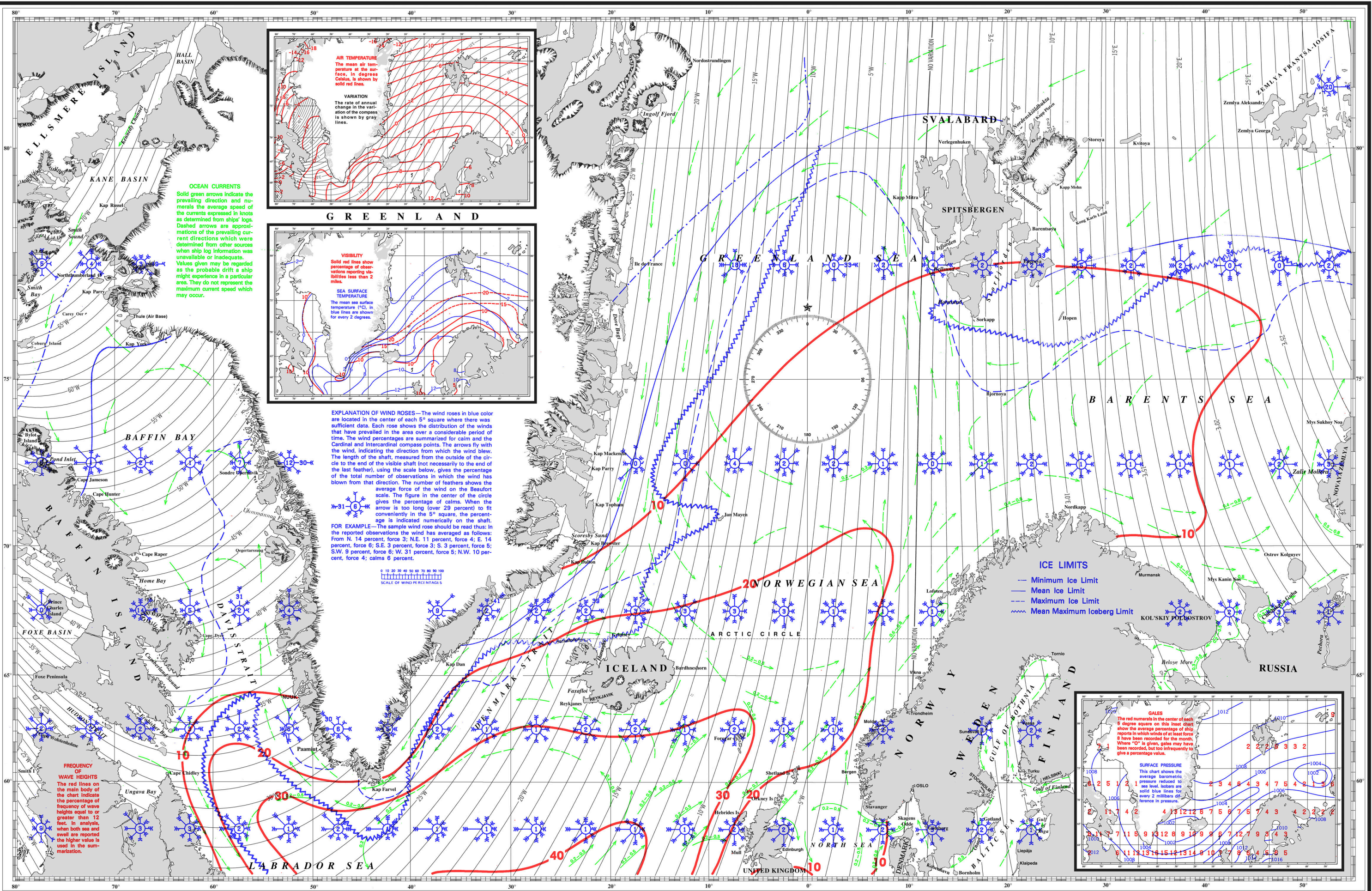
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - SEPTEMBER

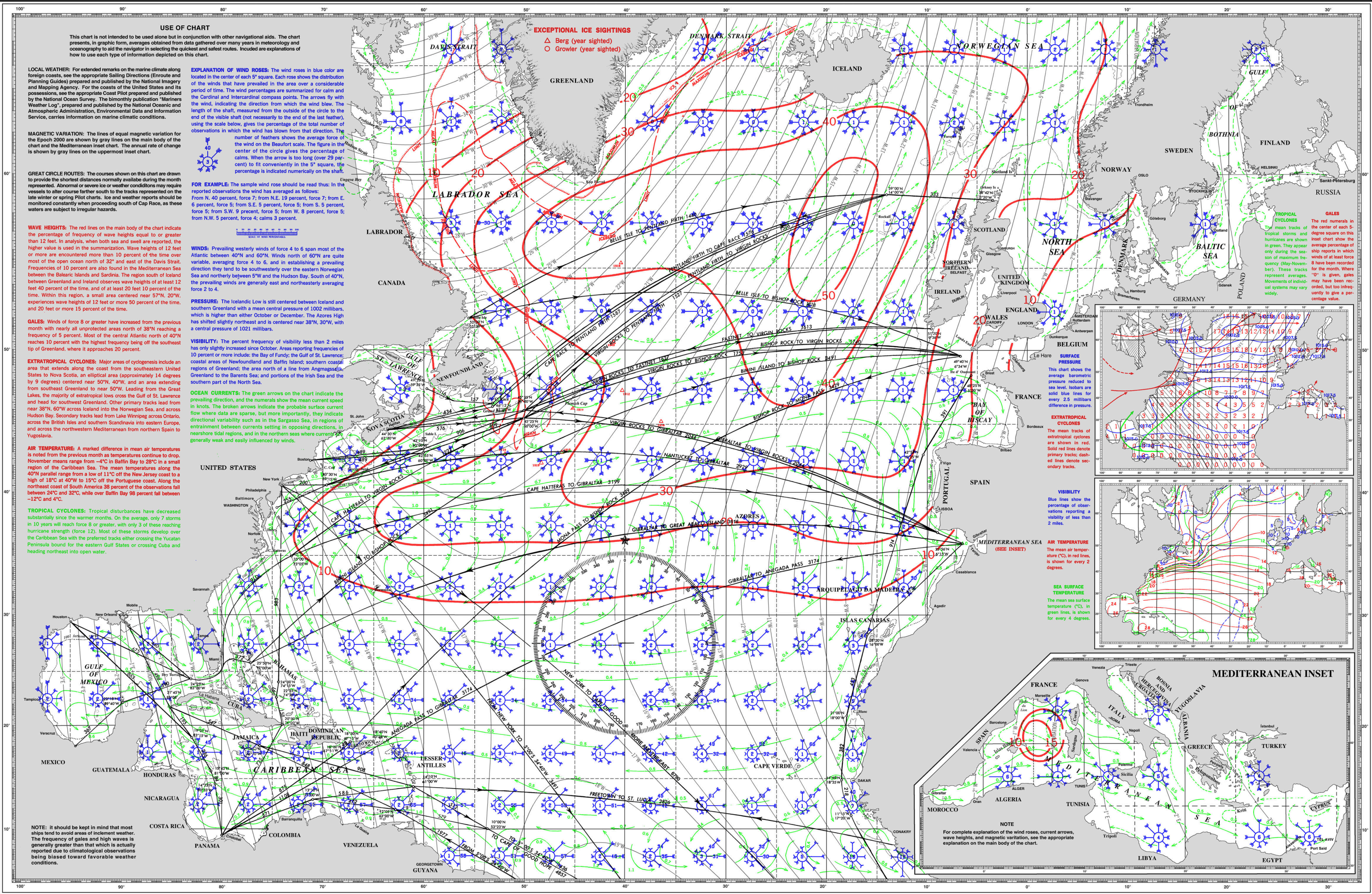




PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN
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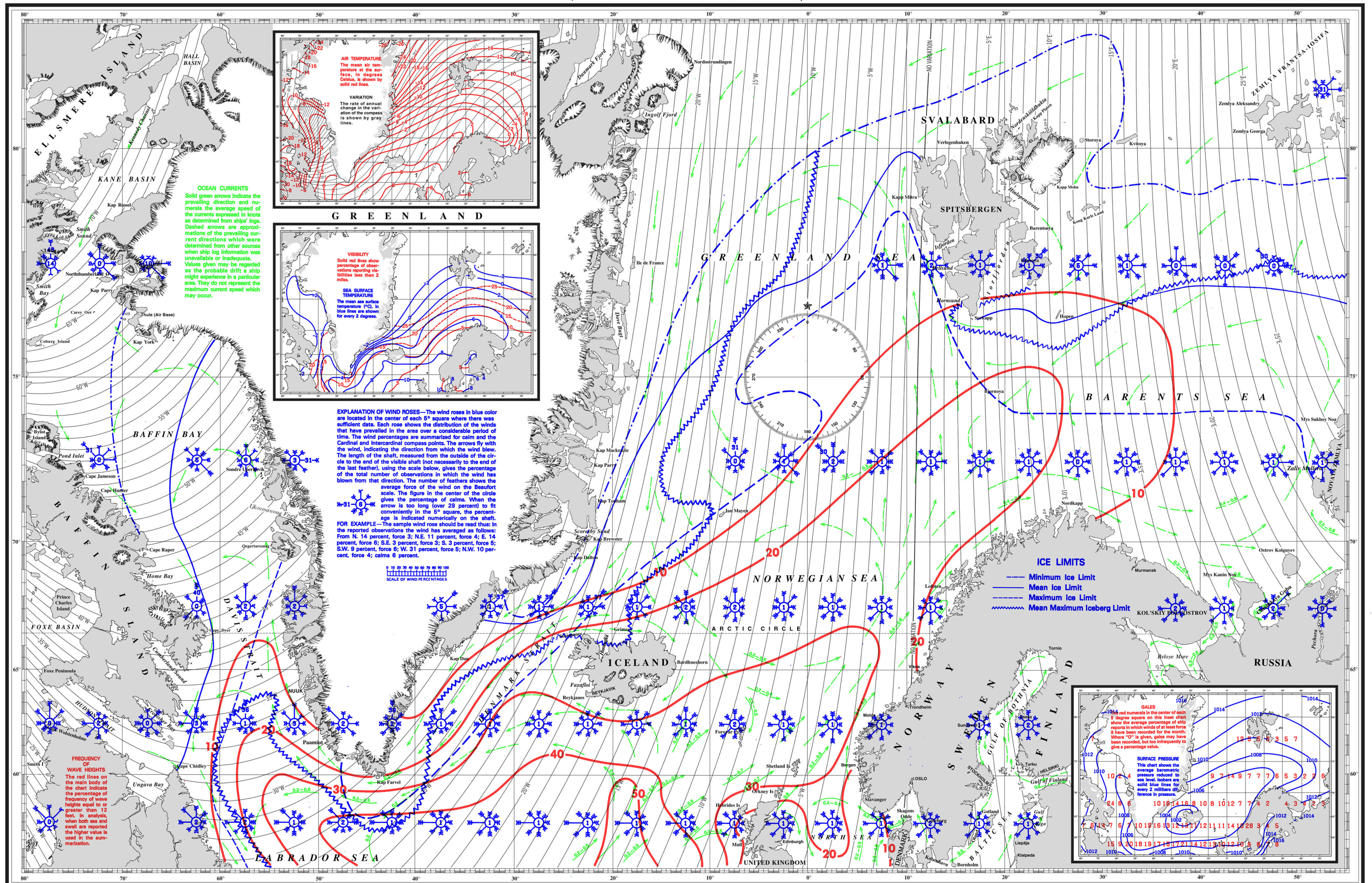




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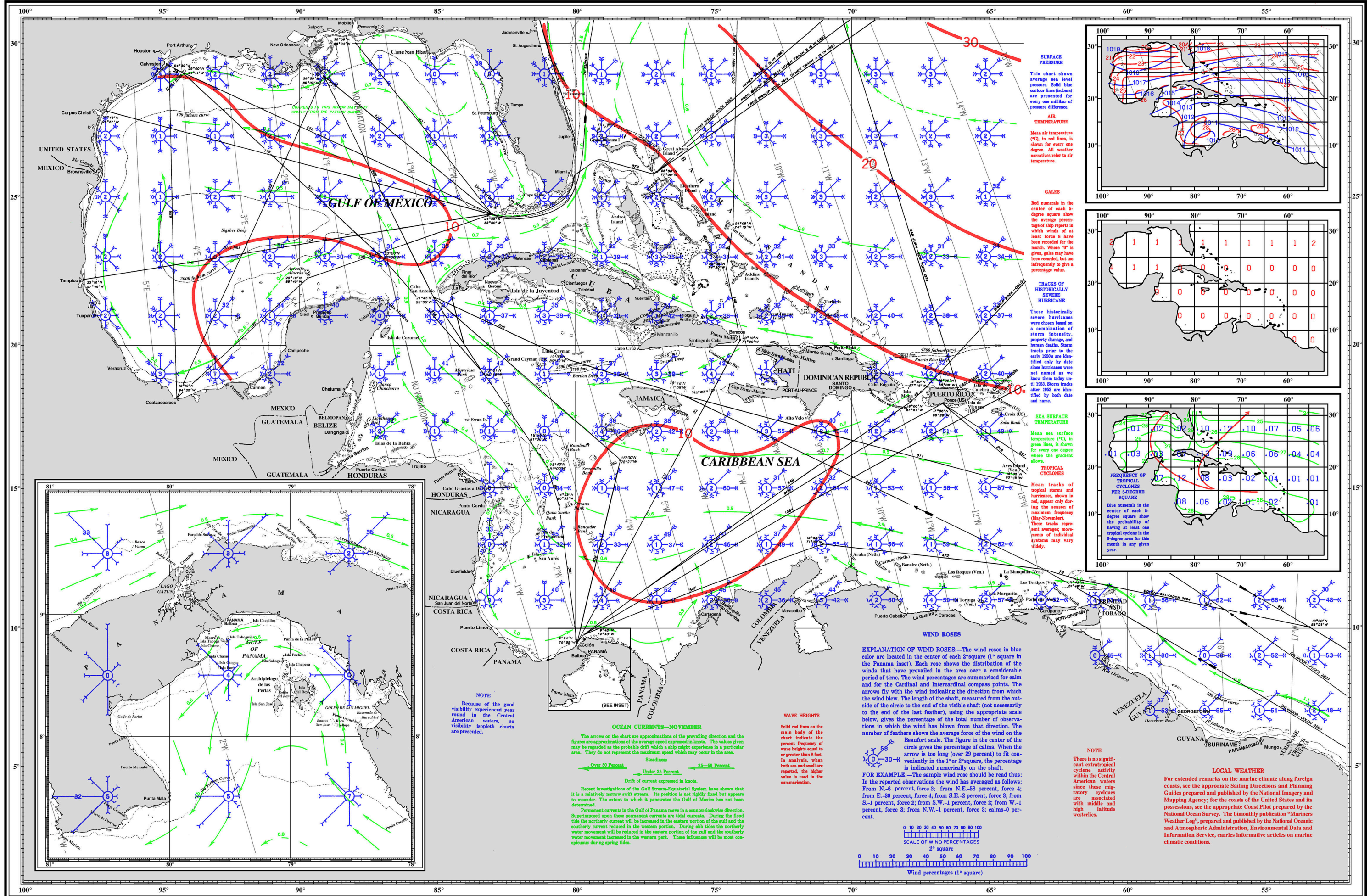
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SEC. II - NOVEMBER



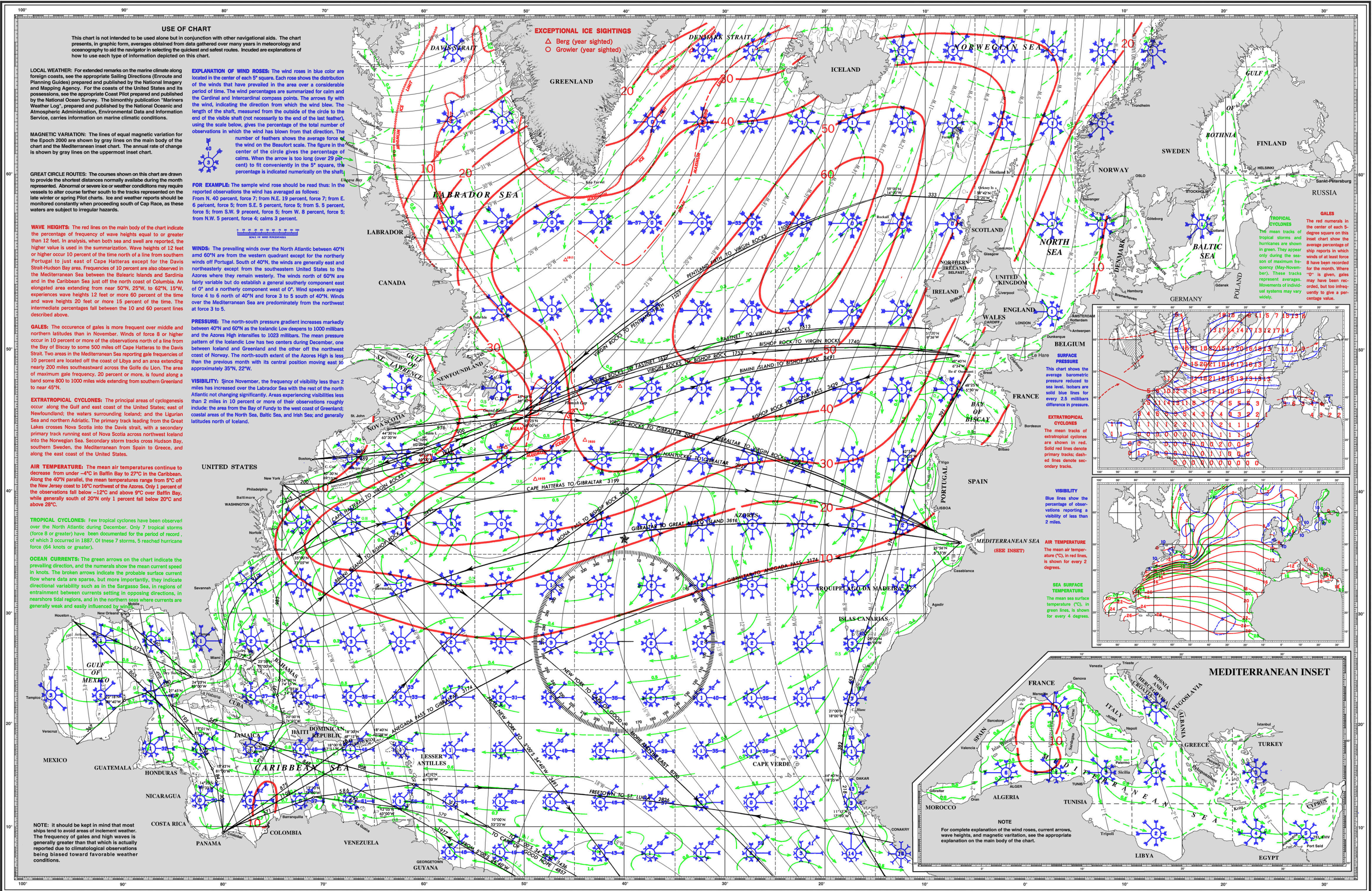
PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

SEC. III - NOVEMBER

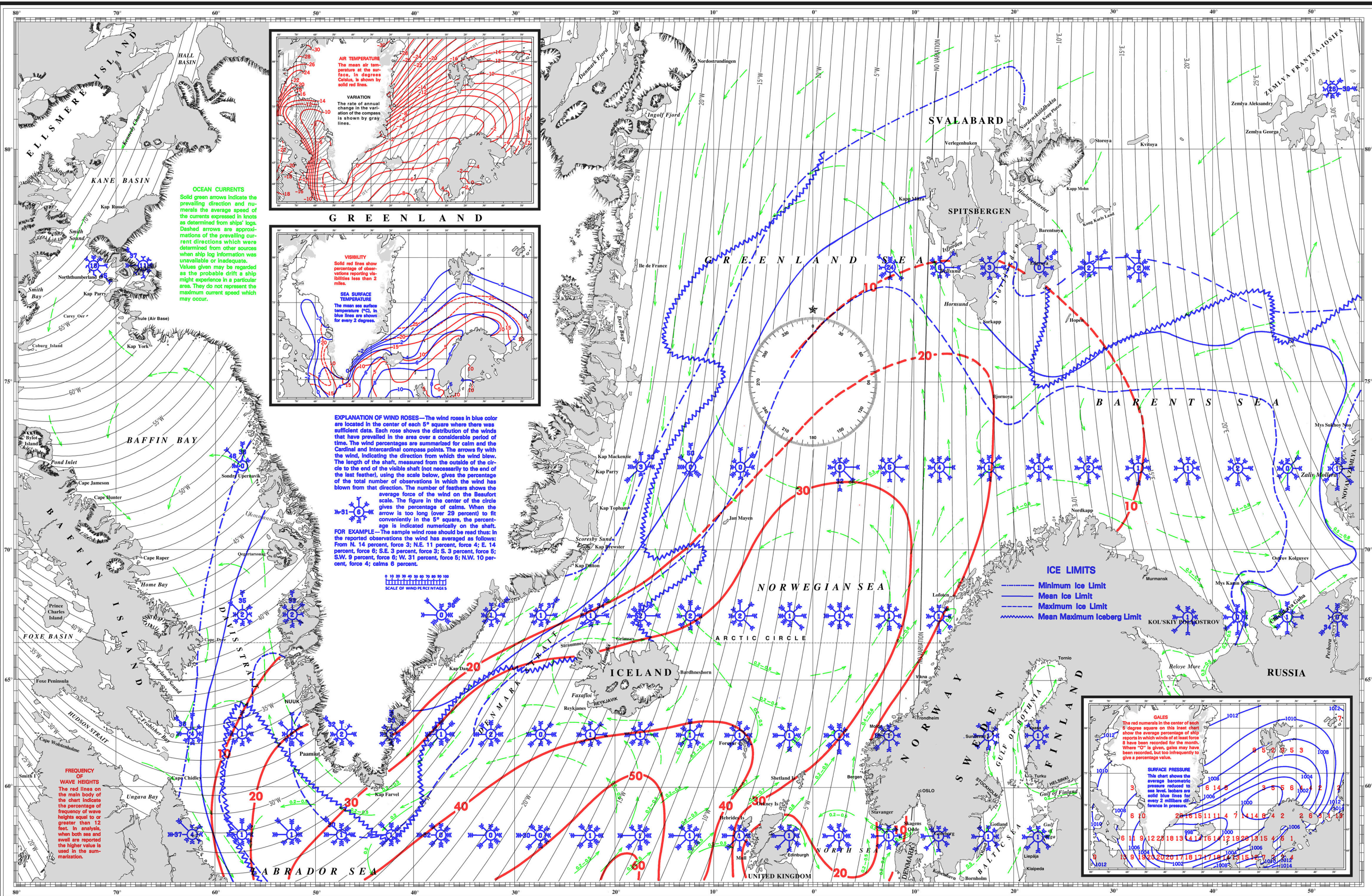


PILOT CHART OF THE NORTH ATLANTIC OCEAN

SEC. I - DECEMBER



PILOT CHART OF THE NORTHERN NORTH ATLANTIC OCEAN
(THIS CHART SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES)



PILOT CHART OF CARIBBEAN SEA AND GULF OF MEXICO

