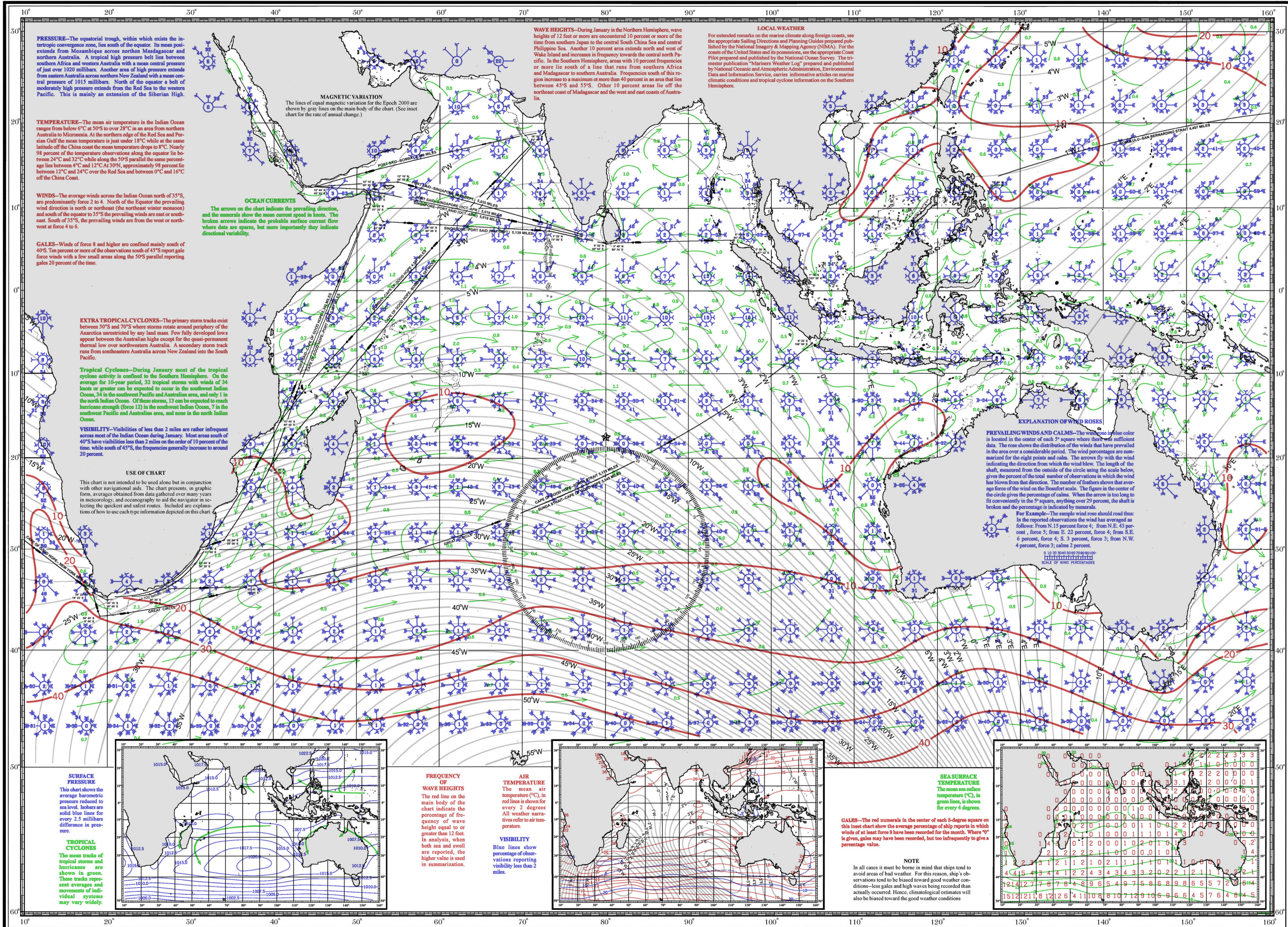




PILOT CHART OF THE INDIAN OCEAN

JANUARY



PRESSURE—The equatorial trough, within which exists the inter-tropical convergence zone, lies south of the equator. Its mean position extends from Mozambique across northern Madagascar and northern Australia. A tropical high pressure belt lies between southern Africa and western Australia with a mean central pressure of just over 1020 millibars. Another area of high pressure extends from eastern Australia across northern New Zealand with a mean central pressure of 1015 millibars. North of the equator a belt of moderately high pressure extends from the Red Sea to the western Pacific. This is mainly an extension of the Siberian High.

TEMPERATURE—The mean air temperature in the Indian Ocean ranges from below 6°C at 50°S to over 28°C in an area from northern Australia to Micronesia. At the northern edge of the Red Sea and Persian Gulf the mean temperature is just under 18°C while at the same latitude off the China coast the mean temperature drops to 8°C. Nearly 98 percent of the temperature observations along the equator lie between 24°C and 32°C while along the 50°S parallel the same percentage lies between 4°C and 12°C. At 10°N, approximately 98 percent lie between 12°C and 24°C over the Red Sea and between 0°C and 16°C off the China Coast.

WINDS—The average winds across the Indian Ocean north of 35°S, are predominantly force 2 to 4. North of the Equator the prevailing wind direction is north or northeast (the northeast winter monsoon) and south of the equator to 35°S the prevailing winds are east or southeast. South of 35°S, the prevailing winds are from the west or northwest at force 4 to 6.

GALES—Winds of force 8 and higher are confined mainly south of 40°S. Ten percent or more of the observations south of 45°S report gale force winds with a few small areas along the 50°S parallel reporting gales 20 percent of the time.

EXTRA-TROPICAL CYCLONES—The primary storm tracks exist between 50°S and 70°S where storms rotate around periphery of the Antarctica unrestricted by any land mass. Few fully developed lows appear between the Australian high except for the quasi-permanent thermal low over northwestern Australia. A secondary storm track runs from southeastern Australia across New Zealand into the South Pacific.

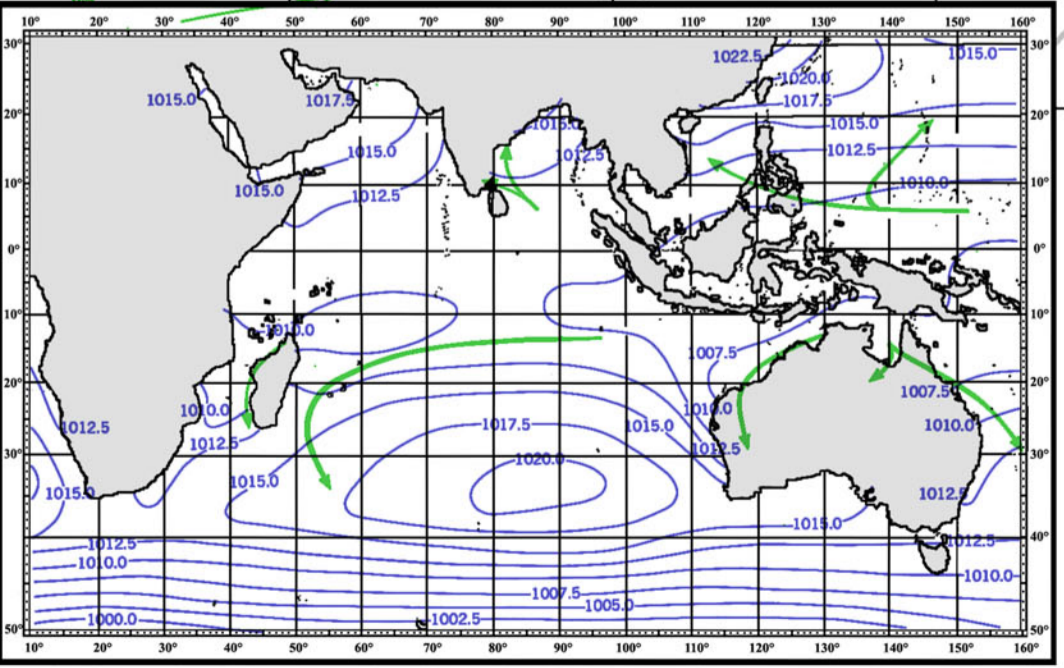
Tropical Cyclones—During January most of the tropical cyclone activity is confined to the Southern Hemisphere. On the average for 10-year period, 32 tropical storms with winds of 34 knots or greater can be expected to occur in the southwest Indian Ocean, 34 in the southwest Pacific and Australian area, and only 1 in the north Indian Ocean. Of these storms, 13 can be expected to reach hurricane strength (force 12) in the southwest Indian Ocean, 7 in the southwest Pacific and Australian area, and none in the north Indian Ocean.

VISIBILITY—Visibilities of less than 2 miles are rather infrequent across most of the Indian Ocean during January. Most areas south of 40°S have visibilities less than 2 miles on the order of 10 percent of the time, while south of 45°S, the frequencies generally increase to around 20 percent.

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.

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

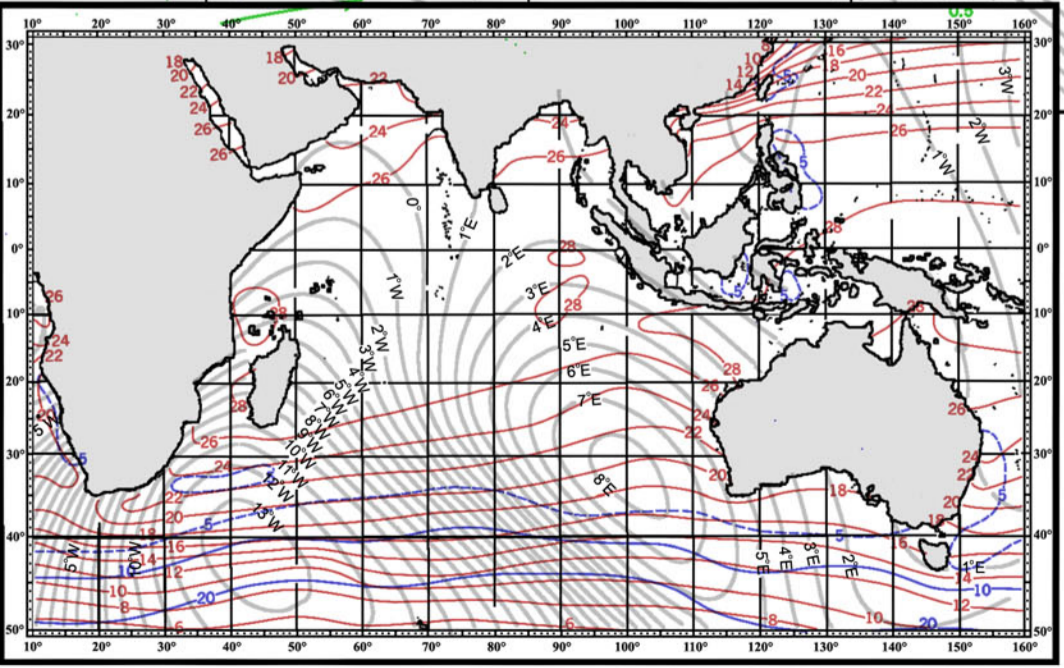
TROPICAL CYCLONES
The mean tracks of tropical storms and hurricanes are shown in green. These tracks represent averages and movements of individual systems may vary widely.



FREQUENCY OF WAVE HEIGHTS
The red line on the main body of the chart indicates the percentage of frequency of wave height equal to or greater than 12 feet. In analysis, when both sea and swell are reported, the higher value is used in summarization.

AIR TEMPERATURE
The mean air temperature (°C), in red lines is shown for every 2 degrees. All weather narratives refer to air temperature.

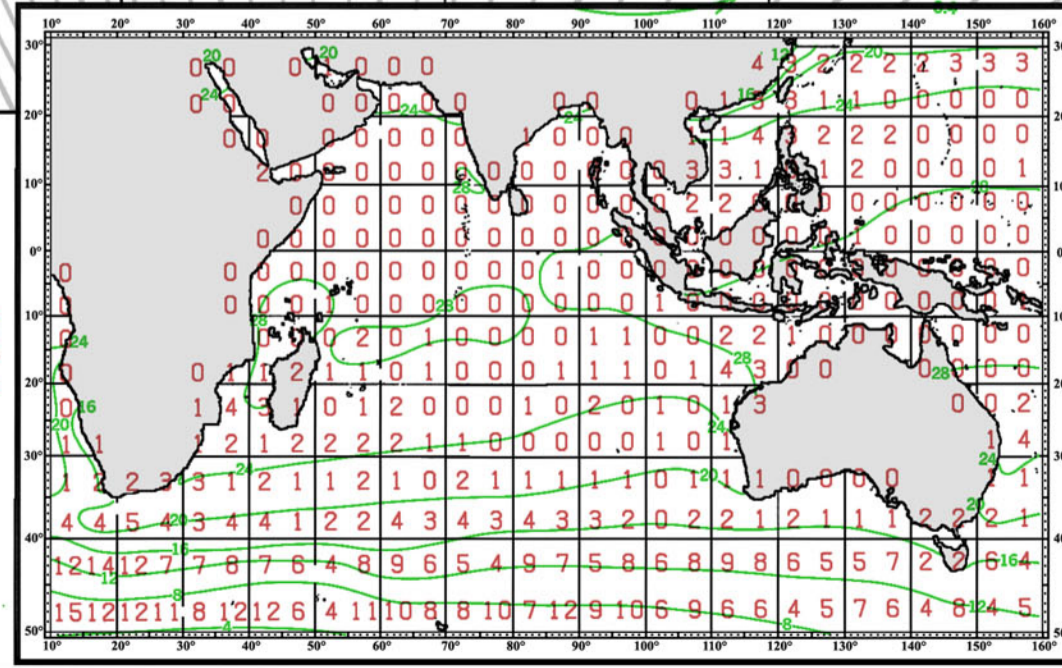
VISIBILITY
Blue lines show percentage of observations reporting visibility less than 2 miles.



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

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
In all cases it must be borne in mind that ships tend to avoid areas of bad weather. For this reason, ship's observations tend to be biased toward good weather conditions—less gales and high waves being recorded than actually occurred. Hence, climatological estimates will also be biased toward the good weather conditions.



WAVE HEIGHTS—During January in the Northern Hemisphere, wave heights of 12 feet or more are encountered 10 percent or more of the time from southern Japan to the central South China Sea and central Philippine Sea. Another 10 percent area extends north and west of Wake Island and increases in frequency towards the central north Pacific. In the Southern Hemisphere, areas with 10 percent frequencies or more lie south of a line that runs from southern Africa and Madagascar to southern Australia. Frequencies south of this report increase to a maximum of more than 40 percent in an area that lies between 4°S and 55°S. Other 10 percent areas lie off the northeast coast of Madagascar and the west and east coasts of Australia.

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

MAGNETIC VARIATION
The lines of equal magnetic variation for the Epoch 2000 are shown by gray lines on the main body of the chart. (See inset chart for the rate of annual change.)

OCEAN CURRENTS
The 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.

EXPLANATION OF WIND ROSES
PREVAILING WINDS AND CALMS—The wind rose in blue color is located in the center of each 5° square where there was sufficient data. The rose shows the distribution of the winds that have prevailed in the area over a considerable period. The wind percentages are summarized for the eight points and calms. 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 using the scale below, gives the percent of the total number of observations in which the wind has blown from that direction. The number of feathers shows that 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 to fit conveniently in the 5° square, anything over 29 percent, the shaft is broken and the percentage is indicated by numerals.

For Example—The sample wind rose should read thus:
In the reported observations the wind has averaged as follows: From N. 15 percent force 4; from N.E. 43 percent, force 5; from E. 22 percent, force 4; from S.E. 6 percent, force 4; S. 3 percent, force 3; from S.W. 4 percent, force 3; calms 2 percent.

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