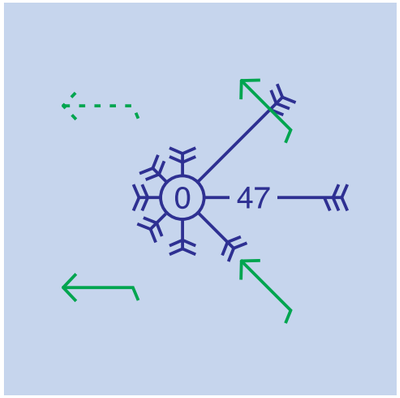
Introduction

Pilot charts, also referred to as routeing charts, have been the most important passage planning tool since the middle of the nineteenth century. The first systematic study of ships‘ sailing routes, and the weather conditions that affect them, was undertaken in the 19th century by Lieutenant Maury of the US Navy with the aid of shipmasters' logbooks. Much of the information contained in the pilot charts that are in use today is still based on those observations and, although they have been updated at regular intervals, whether due to the scarcity of reliable sources, the inaccuracy of the observations, or the climate changes that have occurred over the years, some of the information shown on those charts has now become inaccurate.



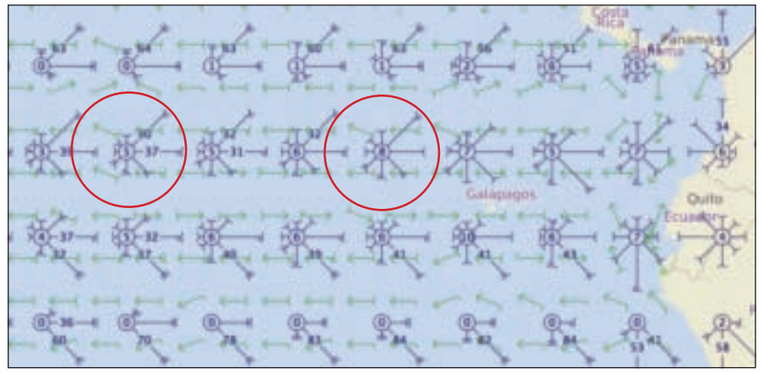
To present as true a picture as possible of the actual conditions which prevail in today's oceans, the charts used in this atlas are based on the latest weather information gathered by a network of meteorological satellites using data collected in the last twenty years. Daily samples of the average conditions measured across the globe using various remote sensing techniques are averaged and collated by a custom computer program to produce the data which is then automatically drawn directly onto the underlying maps.

To give an idea of how much sailing conditions may have changed over the years, the pilot chart for March for the area west from Panama is compared with the latest data for that same area as depicted on the chart reproduced in this atlas. The changes appear to be quite significant, both north of Galapagos, where NE winds predominate north of the equator, and south and west of Galapagos, where the proportion of E and SE winds is now markedly higher than in the past. Indeed, this may be due to a change in weather conditions but could also be explained by the fact that some of those earlier observations were not so accurate or were based on limited sources. This is particularly the case on less frequented areas of the oceans, both in the tropics and high latitudes, where there have been fewer observations over the years than from areas regularly crossed by commercial ships.

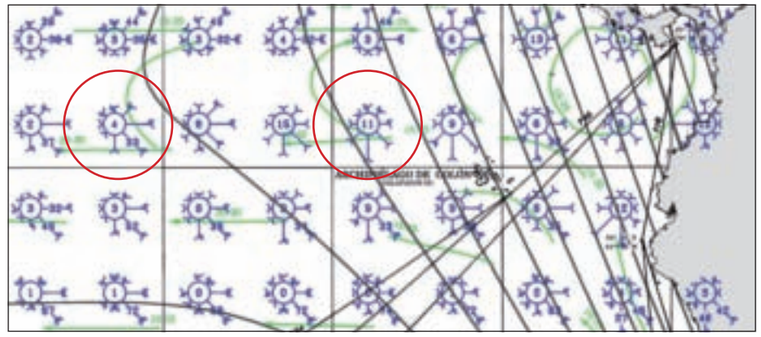
The ocean charts in this atlas show the mean wind speed and direction for every month of the year in each of the world's oceans. Each wind rose is located in the centre of either a ten or a five degrees square and shows the distribution of the winds that prevail in that area from eight cardinal points. The arrows fly with the wind and their lengths show the percentage of the total number of observations in which the wind has blown from that cardinal point. The number of feathers shows the force of the wind, which has been recorded most frequently from that sector. The wind force is measured on the Beaufort scale, with each feather being equivalent to one unit of wind force, so that four feathers represent an average force 4 winds from that direction for that particular month. In areas with prevailing winds, the resulting arrow would be too long to be shown in its entirety, in which case for percentages higher than thirty, the percentage is shown numerically on the shaft. The figure in the centre of each circle gives either the percentage of calms in blue (less than force 2), or the percentage of storms in red (more than force 7), whichever is greater. As the satellite observations of the direction and force of the wind is based on the measurement of light refraction, in areas covered by snow or ice, the results may not be accurate and should not be relied upon.

Ocean currents are shown as green arrows indicating their prevailing direction while the rate is reflected in the number of feathers, each being equivalent to 0.25 knots. Therefore, an arrow with four feathers indicates a mean rate of 1 knot during the month in question. Variable currents are shown as a dotted arrow, its direction being determined by the highest percentage of currents recorded as setting in that direction. Depending on the projection used in each particular chart, the direction and rate of the currents have been calculated for each area within a 2.5, 5 and 10 degrees square, so that the number of current arrows quadruples at every step, from four arrows in each 10 degree square, to 16 in a 5 and 64 in a 2.5 degree square. Beyond that it would have been impractical to depict more current arrows on the small scale charts, but as even 2.5 degrees cover a relatively large area, the resulting arrows may occasionally give a misleading picture. This needs to be born in mind especially in places where currents make a marked change of direction, such as in equatorial areas, flow along a narrow track, such as the Agulhas Current, or meander considerably, as in the case of the Gulf Stream.

Also shown on each monthly chart are three phenomena of particular interest to offshore navigators: the approximate extent of the Intertropical Convergence Zone, the most common tracks of tropical storms, and the mean location of high pressure cells for each hemisphere and month of the year. As there is significant movement during periods of rapid ITCZ migration, the widths of the zone is shown as a diffuse band. As the South Pacific Tropical Convergence Zone can greatly influence local weather conditions, in the South Pacific the ITCZ has been widened to show the extent of that regional phenomenon as well. The mean tracks of tropical storms are shown by red arrows. These tracks are an average of the direction taken by such storms over the years and the movement of individual storms may vary widely from the average. The letter H in each high pressure cell



Pacific Ocean / March, New



Pacific Ocean / March, Old

indicates the approximate location of the area of highest pressure, although often the axis of a high pressure ridge tends to be elongated to the west of the main centre and this ridge is also prone to light and variable winds.

To give a more detailed illustration of the prevailing direction of winds and currents along some of the most commonly sailed transocean routes, the frequency of wind roses is quadrupled by being depicted at a centre of each 2.5 degrees square so as to make it easier to plan a route that takes best advantage of the prevailing weather conditions at that time of year. Sidebars with tactical suggestions have been added to the months when most passages are undertaken. The comments and tips on tactics were contributed by meteorologists and routers specialising in those oceanic areas.

This atlas is aimed primarily at cruising sailors planning or undertaking an ocean passage. Our main objective has been to create the kind of publication we would have greatly appreciated if it had been available when we sailed on any of the five circumnavigations of the globe which we share between us.

Jimmy and Ivan Cornell