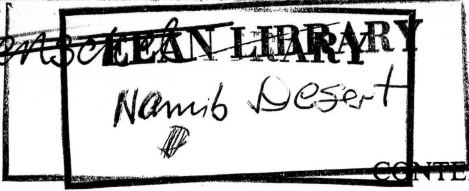


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J.P. Hansen



Climate of the central Namib Desert

CONTENTS

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Received: 19 April 1983
Accepted: 5 January 1984

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1 INTRODUCTION

The Namib Desert is a long, narrow desert situated in south-western Africa between the Atlantic Ocean and the Great Western Escarpment. In the central Namib the desert extends for approximately 140 km inland, becoming narrower at its northern and southern extremities. The central Namib is more accessible than elsewhere in the desert and two major towns, Walvis Bay and Swakopmund, are located on the coast. Consequently, the climate of the coastal Namib has received attention for a longer period of time than the inland areas (Gulland 1907, Logan 1960).

Partly because the central Namib is one of the more accessible and also one of the drier parts of the desert, Dr. Charles Koch, entomologist of the Transvaal Museum, established a research station at Gobabeb on the Kuiseb River in 1962. Since that time the Desert Ecological Research Unit has operated a series of autographic meteorological stations from west to east across the central Namib (Fig. 1 and Table 1). These complement the data obtained from the First Order weather stations at Pelican Point and Gobabeb.

In the last two decades biological and geomorphological research in the central Namib has accelerated and extensive use has been made of the climatological data available (e.g. Besler 1972, Sharon 1981). Moreover, a number of studies have been carried out using climatological data to expand and support micro-meteorological measurements (e.g. Hamilton 1971,

ABSTRACT

Data from eight meteorological stations in the central Namib Desert have been summarised for the period 1976 to 1981. Figures for temperature, humidity, rainfall, fog precipitation and hourly wind speed and direction are given for all stations. Data on evaporation, sunshine, solar radiation and soil temperature are included for Gobabeb only.

Using these data a brief description of the climate of the region and examples of some typical weather conditions are presented.

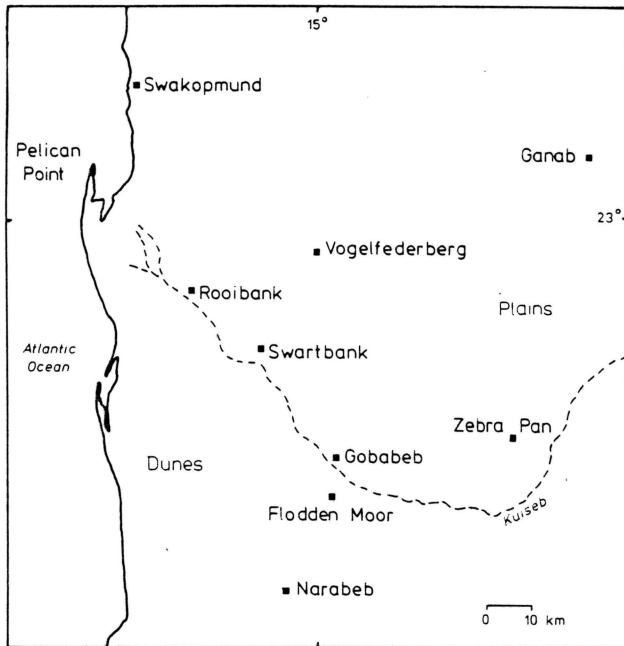


FIGURE 1: Location of meteorological stations used in this study.

TABLE 1: Position of meteorological stations

	Latitude	Longitude	Altitude
Flodden Moor	23°37'	15°00'	470 m
Ganab	23°09'	15°33'	1 000 m
Gobabeb	23°34'	15°03'	407 m
Narabeb	23°47'	14°47'	407 m
Pelican Point	22°59'	14°31'	2 m
Rooibank	23°11'	14°38'	63 m
Swakopmund	22°40'	14°34'	20 m
Swartbank	23°20'	14°50'	340 m
Vogelfederberg	23°05'	15°00'	500 m
Zebra Pan	23°30'	15°31'	780 m

Henwood 1975a, 1975b). The only published summaries available, however, are for Pelican Point (Weather Bureau Monthly Weather Report) and Gobabeb (Schulze 1969, Seely and Stuart 1976).

The purpose of this paper is to provide a preliminary description of the climate of the central Namib Desert. This, in turn, can be used as background formation for research projects carried out in this area, particularly those of a geomorphological or ecological nature. Where available, data for the five years July 1976 to June 1981 are used. Because of the overriding importance of precipitation, however, all precipitation data collected to date have been included. Further data are stored and are available for use at the Desert Ecological Research Unit at Gobabeb.

2 INSTRUMENTATION AND METHODS

Pelican Point and Gobabeb are First Order weather stations where readings are made and reported three times daily at 08h00, 14h00 and 20h00. South African Standard Time is used throughout and is two hours ahead of Greenwich Mean Time. Instrumentation at Gobabeb consists of: an autographic rain recorder;

wind totaliser and direction indicator; sunshine recorder; barograph; barometer; class A evaporation pan; thermometers at soil depths of 0, 10, 20, 30, 60 and 120 cm and a grass minimum thermometer. Pelican Point has no soil thermometers or evaporation pan but otherwise has the same instrumentation as Gobabeb.

Autographic meteorological stations in the central Namib are operated by the Desert Ecological Research Unit with the assistance of the Department of Agriculture and Nature Conservation. Figure 1 shows the position of these stations, which are attended at one or two weekly intervals. The First Order station at Gobabeb has been supplemented with an autographic wind speed and direction recorder and a recording rain gauge with fog screen, to make it comparable with the autographic network in the central Namib. Also sited at Gobabeb are a Fuess-Robitzsch radiation recorder and a Piché evaporation tube.

Instrumentation consists of Hellman type rain recorders with weekly or monthly clocks. Precipitation values of rain and fog were read directly from the rain gauge charts (Fig. 2). Precipitation on fog-water was induced by placing a cylindrical wire mesh screen (height 22 cm, diameter 10 cm, Fig. 3) vertically over the funnel of the rain gauge. Investigation of the effect of this upon the recording of rainfall indicated that no predictable differences occurred between two recording instruments at one location, one with fog screen and one without. Differences in rainfall amounts recorded depended upon the type and intensity of rain and the associated wind speed. With the exception of Pelican Point all rain gauges are fitted with a fog screen. The recording rain gauge proved to be the least reliable autographic instrument and all stations therefore have some months where no rainfall or fog record was available, as shown by Table 4 in Appendix A.

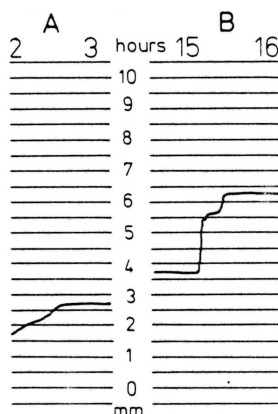


FIGURE 2: Rain gauge chart showing difference in trace between fog (A) and rain (B).

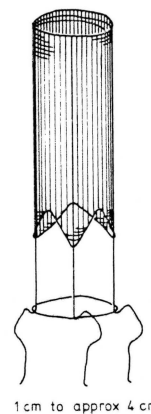


FIGURE 3: Wire mesh cylindrical fog screen.

For calculation of rainfall values the year commencing 1 July and ending 30 June was used. Mean monthly rainfall was calculated by summing monthly data for all years and dividing by the number of months used. This varied for each station as a result of incomplete records. The mean annual rainfall was obtained by summing mean monthly values.

Temperature and humidity were recorded using Lambrecht thermohygrographs fitted with a monthly clockwork drum recorder. Values were derived from the charts (Fig. 4), and corrected temperature values were obtained by using the values from the maximum and minimum thermometers situated in the same Stevenson screen. Humidity values were corrected using values calculated from the wet and dry bulb thermometers. When temperature or humidity data were missing the month was considered to have fewer days than usual and means calculated from the number of days of data available. When more than 20 days were missing, the month was excluded from consideration.

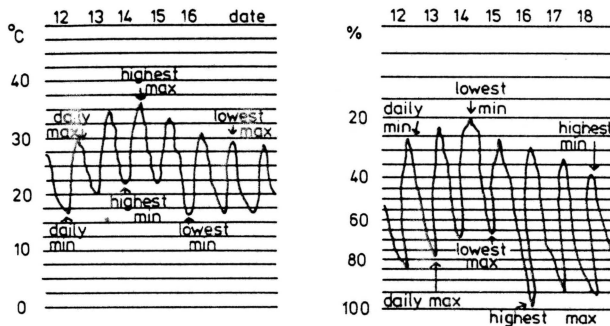


FIGURE 4: Thermohygrograph chart showing derivation of terms used.

Evaporation was measured at Gobabeb only, using a Piché evaporation tube which was housed in the Stevenson screen, and a Class A evaporation pan. The A pan reading was taken at 08h00 only, but the Piché tube was read at 08h00, 14h00 and 20h00. All readings were direct, hence none of the errors were systematic and all reasonable data points were included in these analyses.

Sunshine was measured at Pelican Point and Gobabeb using Campbell-Stokes recorders. All data were extracted from monthly summary sheets. As with evaporation, the readings were direct.

Solar radiation was measured at Gobabeb only, using a Fuess-Robitzsch bimetallic actinograph. Data for the year 1973 were analysed; these records were complete. Mean daily solar radiation values were calculated by using a planimeter to measure the area under the daily curve. The values, recorded in $\text{cal min}^{-1}\text{cm}^{-2}$, were converted to MJ m^{-2} .

Soil temperature at depths of 0, 10, 20, 30, 60 and 120 cm was measured at Gobabeb. Data from Seely and Stuart (1976) covering the ten year period 1962 — 1972 were used.

Wind speed and direction were recorded using Woelfle type autographic recorders situated at a height of 3 m above ground level. They may be considered the most reliable of the mechanical instruments used. On the few occasions when data were missing, the month in question was considered to have had fewer days than normal.

Each hour of wind was transcribed on a chart attributed to one of the sixteen major direction categories and

a velocity class. For drawing wind roses the velocity classes were combined to make five classes only. Wind stars illustrate the results of combining all velocity classes into the eight major directions.

3 RESULTS AND DISCUSSION

3.1 Rainfall

Table 4 in Appendix A gives mean monthly and mean annual rainfall for all stations. Data from Pelican Point were only used from September 1962 onward to be directly comparable with data from Gobabeb.

The central Namib is situated on the south-western edge of the summer rainfall zone and most rain falls during the months January to April (Schulze 1969), although rain may occur in any month. In common with most desert areas, rainfall is variable and highly localised (Besler 1972, Gamble 1980, Sharon 1981) and occurs mostly as convective showers of high intensity and short duration, especially towards the east of the area. Sharon (1981) provides an analysis of rainfall patterns in the central Namib.

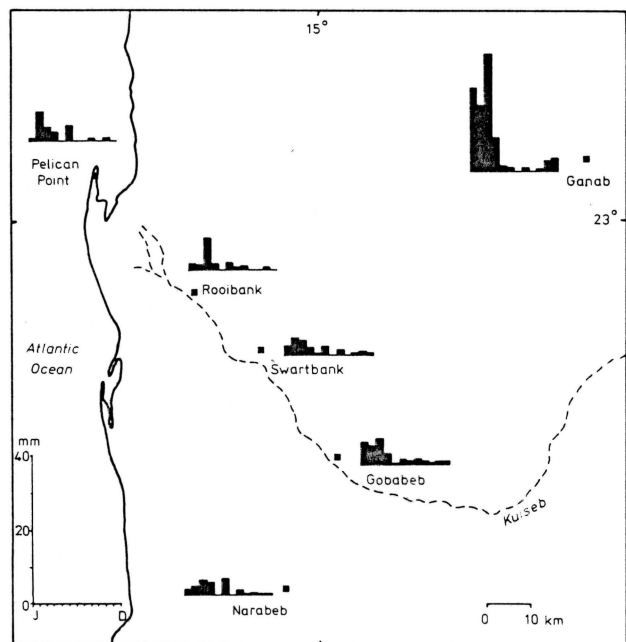


FIGURE 5: Mean monthly rainfall for longer term stations.

Although it is difficult to make comparisons between rainfall data over the entire area, a very striking difference between the coast and inland is clear (Fig. 5). For the duration of our records, Ganab, 113 km inland from Pelican Point, had slightly less than four times as much rain as the coast (Fig. 6). The coastal aridity results from strong, widespread subsidence in the high pressure belt and may be enhanced by the advective temperature inversion maintained by the onshore winds of the strong Atlantic anticyclone (Logan 1968). These conditions penetrate varying distances inland, depending on the relative strengths of the Atlantic and mid-continent high pressure cells. Ganab and Zebra

Pan are affected by the westward movement of storms over the escarpment. Less frequently, such storms bring heavy rain to the central part of the area. The mean annual number of days with rain decreased from 1,24 at Ganab to 1,02 at Gobabeb to 0,49 at Pelican Point on the coast. Sharon (1981) identified two kinds of rain in the Namib, localised storms and less frequent but more general rain events, during which light rain is recorded at all stations.

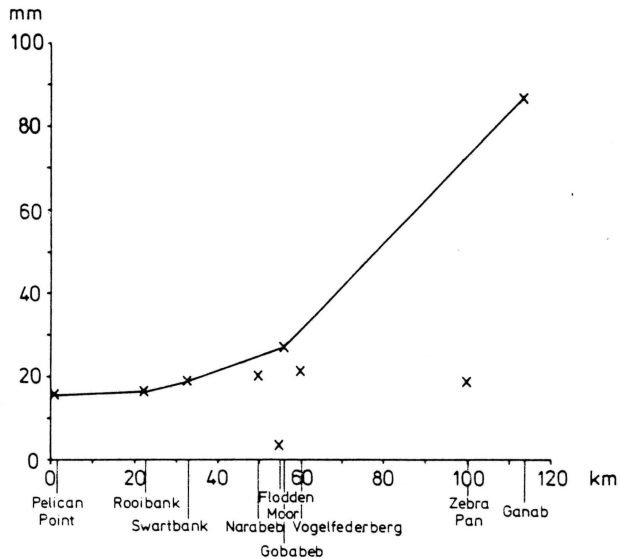


FIGURE 6: Mean annual rainfall in the central Namib plotted against distance from coast. Values for longer term stations are connected while those for shorter term stations are indicated by (x) only.

Only Pelican Point, Rooibank, Swartbank, Narabeb, Gobabeb and Ganab have records of sufficient length for calculation of mean rainfall values. It has been estimated by De Queiroz (1955) that 10 years of precipitation data are necessary for such calculations, even in areas of little rainfall variability. Longer periods have been recommended for desert areas (McDonald 1956, UNESCO-FAO 1963).

The three recently established stations, Flodden Moor, Vogelfederberg and Zebra Pan were not in existence during the major summer rainfall events of 1976 and 1978 and show their highest rainfall in June, due to the June rain of 1979. In view of this distortion of rainfall patterns, these three stations were omitted from Figs. 5 and 7.

The highest rainfall in a day was recorded at Ganab on 23 January 1976 when 80,00 mm fell between 15h30 and 16h30. Gobabeb, 75 km to the south-west received 18,55 mm of rain from the same storm, between 17h00 and 21h00. Rooibank recorded no rain at all.

TABLE 2: Longest periods without rainfall and without effective rainfall

	days without rain		months without effective rain	
	no.	dates	no.	dates
Ganab	306	10 March 1975 to 11 January 1976	22	March 1969 to February 1971
Gobabeb	278	28 April 1978 to 1 February 1979	82	March 1969 to January 1976
Narabeb	301	3 June 1979 to 1 April 1980	40	March 1976 to June 1979
Pelican Point	485	2 March 1980 to 30 June 1981	84	March 1969 to March 1976
Rooibank	351	17 January 1972 to 4 January 1973	84	March 1969 to March 1976
Swartbank	272	3 June 1979 to 3 March 1980	48	February 1974 to March 1978

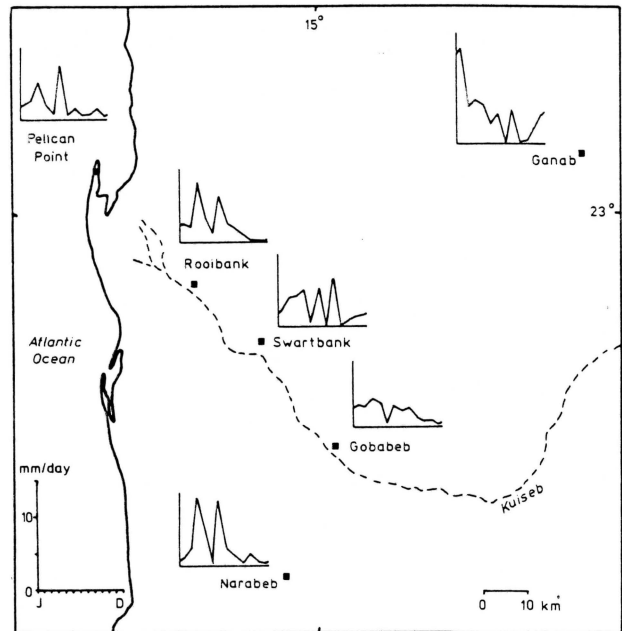


FIGURE 7: Mean rainfall per rain day calculated by month for longer term stations.

The most recent rainfall events to be recorded at all stations, although only as drops of rain at Pelican Point, were the storms of 1 to 4 August 1980. During the night of 2/3 August seven storms passed over Gobabeb (Lancaster, pers. obs.), but produced only 3,15 mm of rain. Figure 7 shows mean rainfall per rain day and indicates the great variability between stations.

Pelican Point recorded the largest number of consecutive days without rain, and with Rooibank, the largest number of consecutive months without effective rainfall, in this case regarded as 20 mm a month. Lengths of time involved and dates are shown in Table 2.

All stations shared in varying degrees the general lack of effective rainfall around the end of the 1960s and early 1970s (Fig. 8). More recently, Ganab was the only station at which any effective rainfall since June 1979 had been recorded.

3.2 Fog

Tables 5 and 6 in Appendix A show mean monthly and mean annual amounts of fog precipitation and number of days on which a precipitating fog occurred. Data from Swakopmund were used as Pelican Point did not have a fog screen.

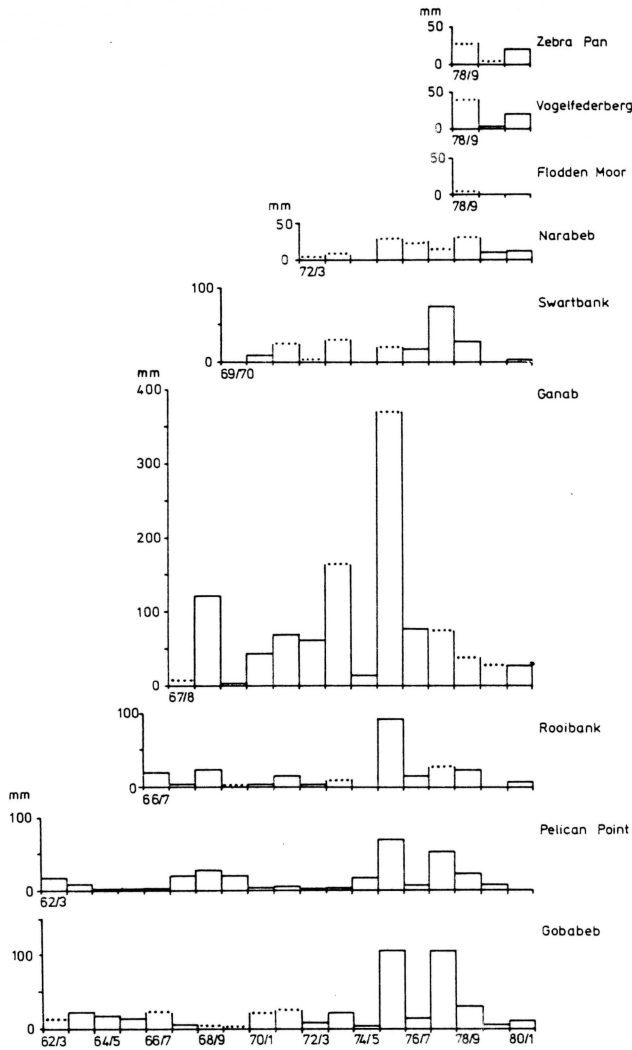


FIGURE 8: Total annual rainfall for all stations using rainfall year starting on 1 July and finishing on 30 June in the following calendar year. Where top line of histogram is replaced by . . . data are missing for that year.

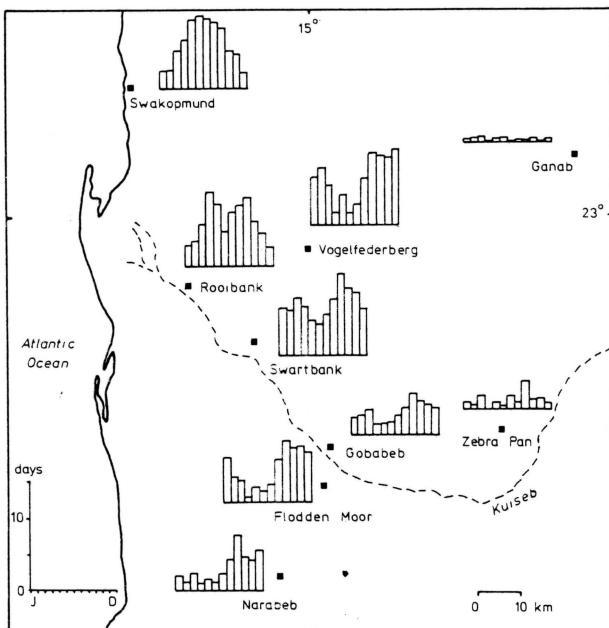


FIGURE 9: Mean monthly number of days with fog-water precipitation.

Fog is perhaps the most distinctive diagnostic characteristic of the climate of the central Namib. A result of moist oceanic air flowing over the upwelled cold water of the Benguela Current, the effects of fog are felt more than 100 km inland. The fauna and flora of the Namib show a number of adaptations related to uptake of fog-water. Nagel (1962), Nieman *et al.* (1978) and Estié (unpublished) have studied climatological aspects of Namib fog.

Fog occurs more regularly than rain, hence the analysis of fog data may be considered more reliable with shorter term records. At the coast e.g. Swakopmund (Fig. 9) fog was found to be most common in the winter months while further inland, e.g. Swartbank and Vogelfederberg, it was recorded more often in the latter half of the year. The recorded monthly fog-water precipitation values showed a similar pattern (Fig 10). However, when the mean intensity of the fog-water precipitation was calculated (Fig. 11) it was found that the greatest amount of precipitation per day was recorded at almost all stations in winter in June or July.

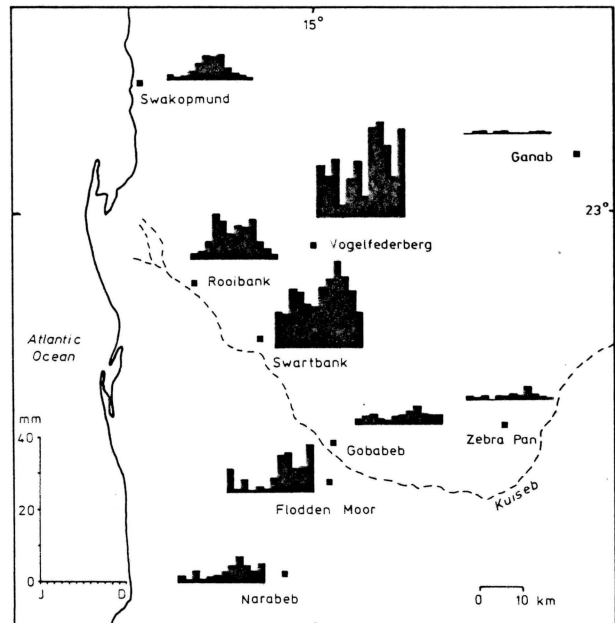


FIGURE 10: Mean monthly fog-water precipitation values.

The explanation for these patterns may lie in the frequent occurrence of the continental high pressure area which affects the Namib in winter.

These observations are in contradiction to the statement by Schulze and McGee (1978) that on the South African subcontinent summer fog predominates in summer rainfall areas.

Fog-water precipitation (Fig. 12) increased from the coast inland to a distance of about 35 — 60 km from the sea and then decreased further inland. Elevation and location of fog gauges were thought to play a part in this pattern. The number of fog days per year (Fig. 9) decreased gradually from the coast inland.

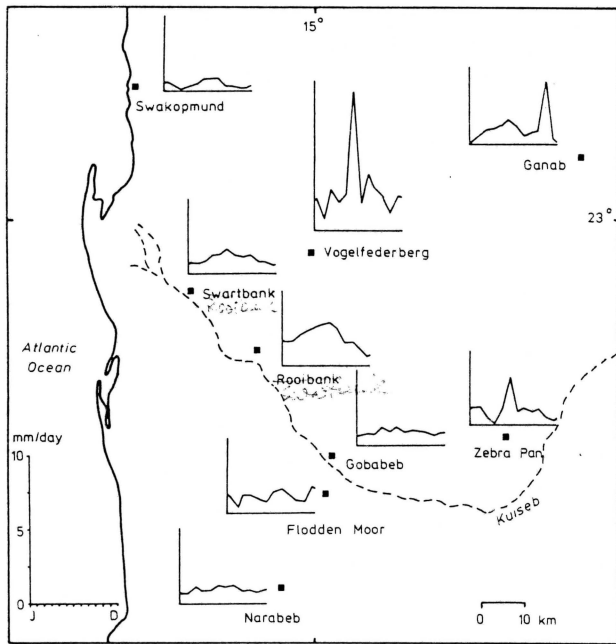


FIGURE 11: Mean amount of fog-water precipitation calculated per fog day.

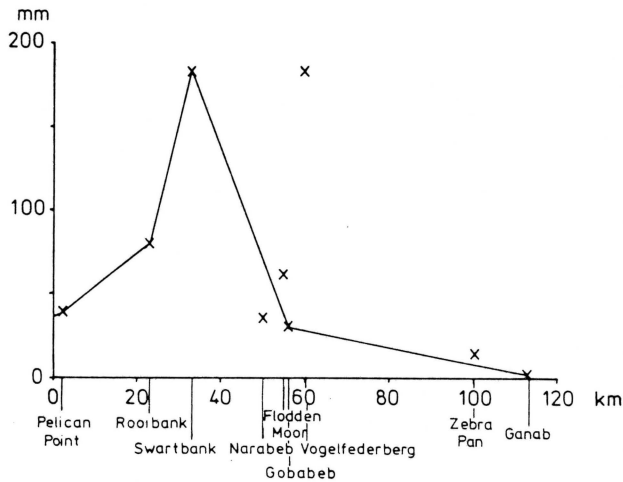


FIGURE 12: Mean annual fog-water precipitation in the central Namib plotted against distance from coast. Values for longer term stations are connected while shorter term stations are indicated by (x) only.

The greatest amount of fog-water precipitation over 24 hours was recorded at Vogelfederberg on 14 September 1979, 9,40 mm between 00h35 and 07h00. The greatest monthly fog-water precipitation recorded was also at Vogelfederberg, 48,50 mm in September 1980. The longest period between precipitating fogs for the various stations is shown in Table 3.

The between-year variation in fog-water precipitation did not appear to be very great (Fig. 13). However, the record is too incomplete for a firm conclusion to be drawn.

3.3 Temperature

Tables 7 to 23 inclusive in Appendix A show: mean daily temperatures; mean daily maximum tempera-

tures; mean daily minimum temperatures; mean monthly maximum temperatures; mean monthly minimum temperatures; absolute highest maximum, lowest minimum, lowest maximum and highest minimum temperatures; mean days with maximum temperature greater than 35 and 30°C and less than 17,5 and 10°C; mean days with minimum temperature less than 0 and 5°C and greater than 20°C; mean annual, mean annual maximum, mean annual minimum and mean annual temperature amplitude.

As can be expected in a coastal desert (Schulze 1972) the minimum temperatures varied much less than the maximum temperatures across the central Namib Desert. Minimum temperatures below 0°C were rare, and only four were recorded during the five year period, two in 1979 and two in 1981. Apart from Pelican Point, which has a different temperature regime to the inland stations, highest minima were generally not more than 25°C, occasionally as high as 30°C.

As a result of its coastal location and the proximity of the Benguela Current, Pelican Point was the coldest station, and had by far the least range in temperature

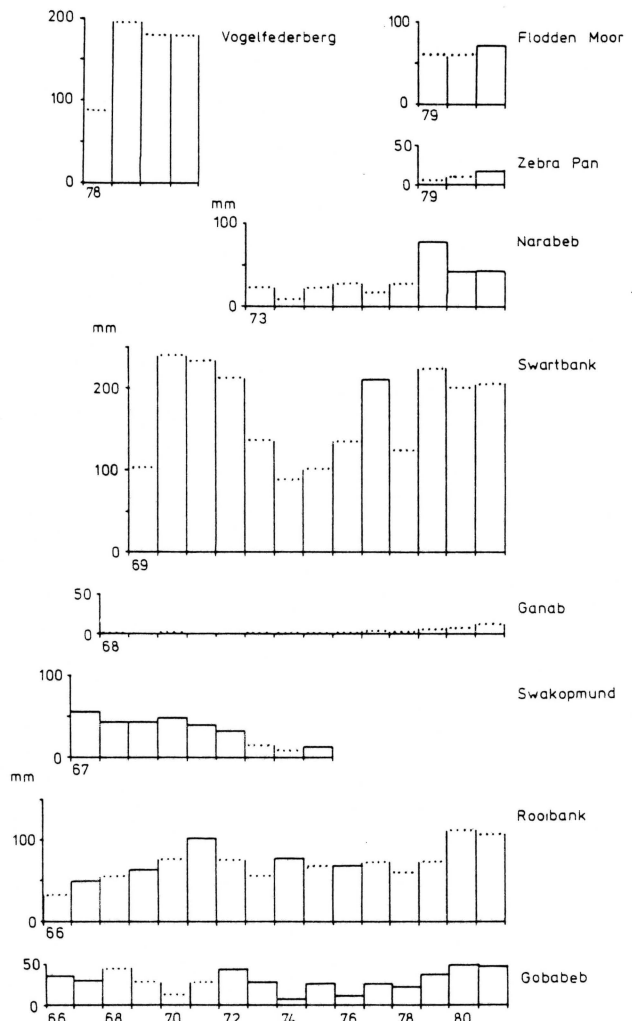


FIGURE 13: Annual total of fog-water precipitation per year. Where the top line of the histogram has been replaced by . . . data are missing for that year.

TABLE 3: Longest period between precipitating fogs

Flodden Moor	72 days	from 25 February	to 6 May	1980
Ganab	772 days	from 18 October 1970	to 30 November	1972
Gobabeb	63 days	from 29 April	to 30 June	1978
Narabeb	77 days	from 3 April	to 18 June	1980
Rooibank	46 days	from 1 November	to 16 December	1968
Swakopmund	134 days	from 4 August	to 17 December	1972
Swartbank	40 days	from 31 July	to 8 September	1969
Vogelfederberg	33 days	from 8 March	to 10 April	1980
Zebra Pan	118 days	from 22 April	to 28 July	1980

as can be seen by a comparison of the graphs in Fig. 14. These graphs also show a winter peak in maximum temperatures recorded at Pelican Point, whereas all the other stations show the expected summer peak. Hot, dry air brought to the coast under berg wind conditions caused higher temperatures than were experienced during the summer months. There was a steep rise in maximum temperatures between Pelican Point and Rooibank (Fig. 15) almost mirrored by the fall in minima. Once away from the coast there was surprisingly little difference between temperatures at most stations.

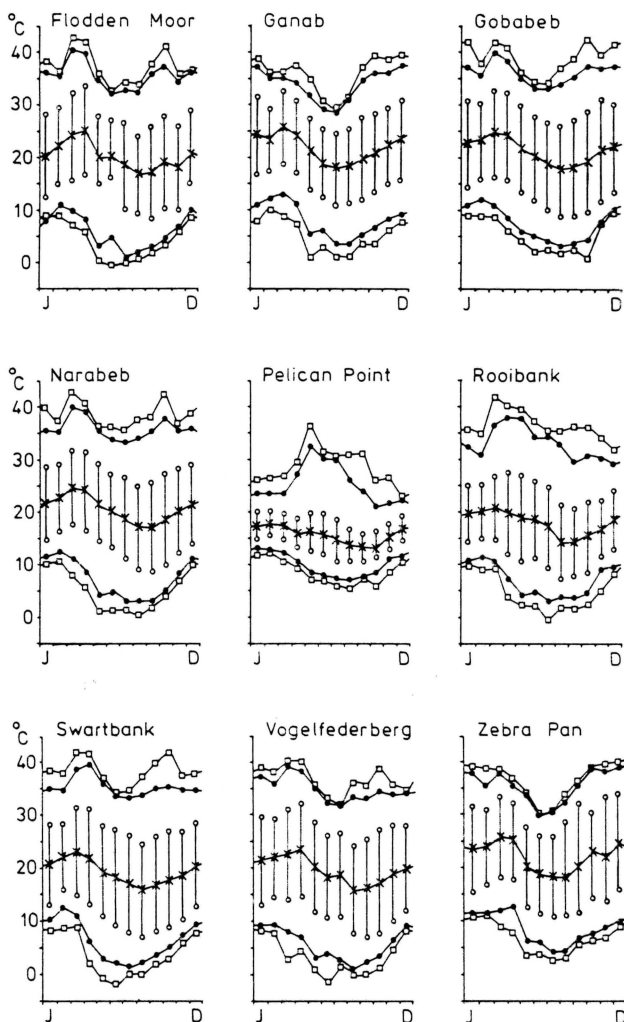


FIGURE 14: Annual march of temperature for all stations. Included are absolute maximum and minimum (\square - \square), mean monthly maximum and minimum (\bullet - \bullet), mean daily maximum and minimum connected by vertical bar (\circ - \circ) and mean daily temperature (\times - \times).

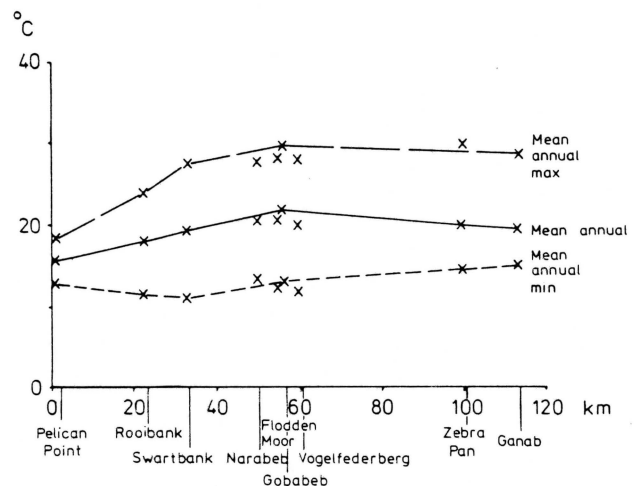


FIGURE 15: Mean annual, mean annual maximum and mean annual minimum temperature for all stations in relation to their distance from the coast. Values for longer term stations are connected while shorter term stations are indicated by (x) only.

Temperatures over 40°C occurred at the inland stations in most years, generally in March or April, but not for more than a day or two at a time. The highest recorded temperature during the five year period was $42,8^{\circ}\text{C}$ which occurred at Gobabeb in October 1977 and at Narabeb in March 1980. Some years were more extreme than others, for example, three stations recorded their highest temperatures in 1979 and three their lowest.

3.4 Relative humidity

Tables 24 to 35 inclusive in Appendix A show: mean daily humidity; mean daily maximum humidity; mean daily minimum humidity; mean monthly maximum humidity; mean monthly minimum humidity; absolute highest maximum, lowest minimum, lowest maximum and highest minimum humidity; mean days with maximum humidity greater than 90%; mean days with minimum humidity less than 10%; mean annual, mean annual maximum, mean annual minimum and mean annual humidity amplitude. Values approximating maximum and minimum humidities for Pelican Point have been taken from readings at 08h00 and 14h00 respectively. For all other stations data were obtained from hygrograph recordings.

In the Namib conditions of very low humidity were relatively uncommon, and although they occurred in all months, they were normally associated with berg

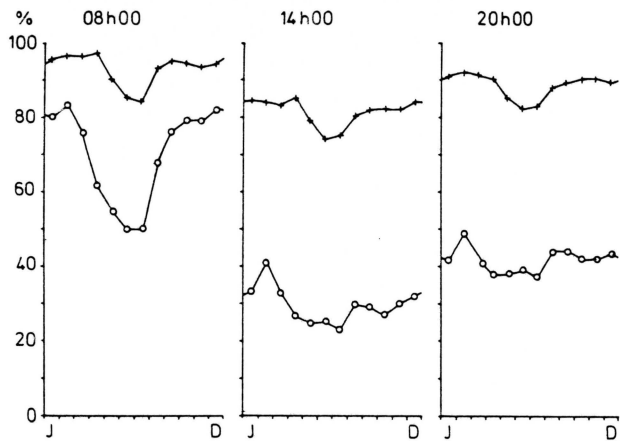


FIGURE 16: Comparison of calculated relative humidity between Pelican Point (+—+) and Gobabeb (○—○) on thrice daily readings from Weather Bureau records.

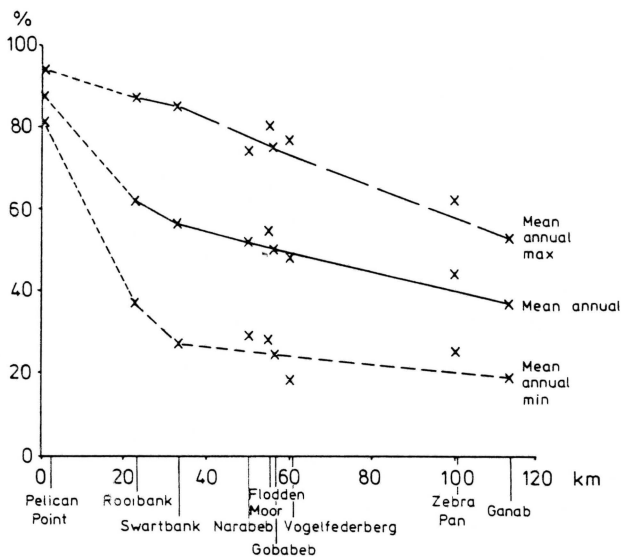


FIGURE 17: Mean annual, mean annual maximum and mean annual minimum relative humidity for all stations in relation to their distance from the coast. Data for Pelican Point were taken from Weather Bureau readings at 08h00 and 14h00 only and are thus connected by a dotted line.

winds during the winter. Although this easterly wind did not always reach the coast, conditions there at such times were often clear, dry and hot. Data from Pelican Point consisted of calculated humidity at 08h00, 14h00 and 20h00. Similar data for Gobabeb were used to make comparisons between the coast and inland (Fig. 16). Both stations showed a similar pattern of high humidity at 08h00 and low humidity at 14h00. Mean annual humidity was 50% at Gobabeb contrasted with 87% at Pelican Point. January and February showed the highest mean humidity at all reading times at both stations, June and July the lowest. Pelican Point recorded no humidity lower than 10% over the five year period, whilst a total of 242 days with values of 10% or lower occurred at Gobabeb.

There was a marked relationship between distance from the coast and humidity (Figs. 17 and 18). Mean annual humidity at Ganab was 37% and 62% at Rooi-

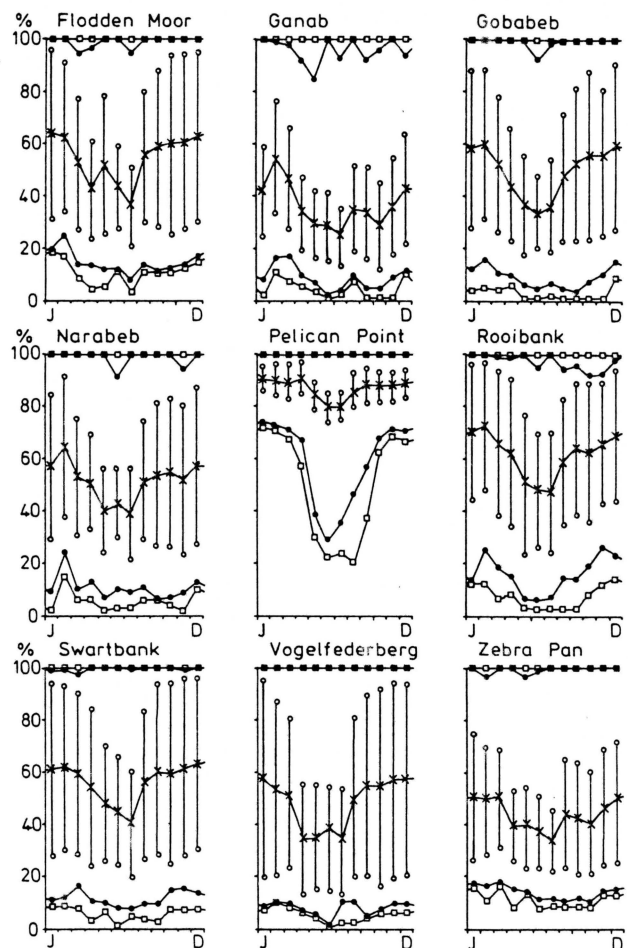


FIGURE 18: Annual march of relative humidity for all stations. Included are absolute maximum and minimum (□—□), mean monthly maximum and minimum (●—●), mean daily maximum and minimum connected by vertical bar (○—○) and mean daily humidity (x—x).

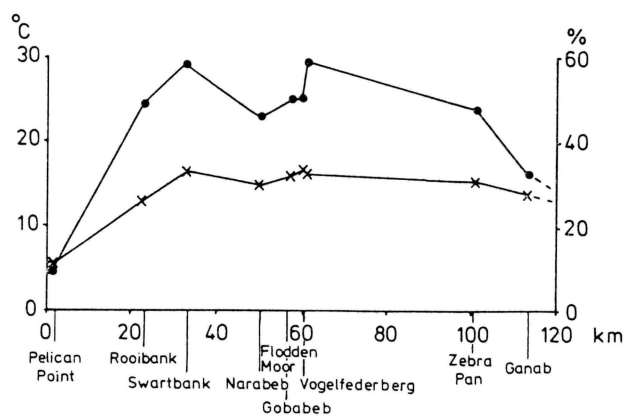


FIGURE 19: Mean annual amplitude of temperature (x—x) and relative humidity (●—●) plotted against distance from the coast.

bank. Figure 19 contrasts mean annual amplitude of temperature and humidity.

3.5 Evaporation

Tables 36 and 37 in Appendix A show mean monthly evaporation from a Piché tube and a class A pan. Both readings were only taken at Gobabeb.

The Class A pan measures evaporation from an open water surface, whilst the Piché tube measures the saturation deficit of the air (Barry 1969). There was a peak in evaporation from the A pan in December and January (Fig. 20A) and January 1979 had the highest monthly figure of 381 mm. Winter readings were generally lower, although periods of an easterly wind with associated low humidity resulted in higher monthly totals.

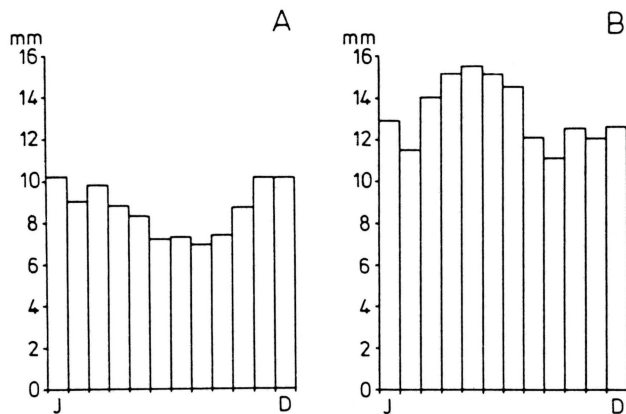


FIGURE 20: A) Mean daily evaporation at Gobabeb measured from a Class A pan. B) Mean daily evaporation at Gobabeb measured by a Piché tube.

The Piché tube showed a peak of evaporation in May (Fig. 20B) reflecting the influx of dry air associated with berg wind conditions. The month with the least evaporation was September.

3.6 Sunshine

Table 38 in Appendix A shows mean monthly sunshine at Gobabeb and Pelican Point, percentage of possible sunshine and mean number of days with: no sun, 1 — 10% of possible sun, 11 — 49%, 50 — 89% and 90 — 100% of possible sun.

Pelican Point with its frequent fog and stratus cloud had much less sunshine than Gobabeb (Fig. 21). During the five years under consideration, Gobabeb experienced only four days when no sunshine was recorded whilst Pelican Point had 143 days of complete cloud or fog cover, 0.2% and 39% of the possible sunshine respectively. At Gobabeb the greatest number of hours of mean monthly sunshine was recorded in December 1980 when 11.6 hours representing 85% of possible sunshine occurred. The highest percentage (95%) of the possible 11 hours of sunshine a day was recorded in May 1980. By comparison, at Pelican Point the highest mean monthly record occurred in June 1981 which had 8.9 hours and also the highest percentage of possible sunshine, 83%. Seasonal variability in sunshine at Gobabeb was not great (Fig. 21); it was far more variable, however, at Pelican Point which showed maximum sunshine hours in May, June and July.

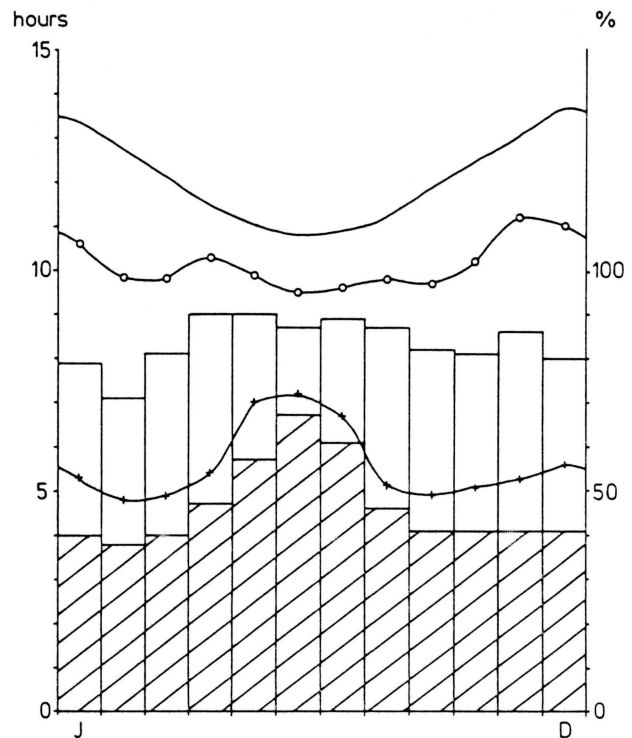


FIGURE 21: Comparison between mean monthly hours of sunshine at Gobabeb (O—O) and Pelican Point (+—+). The top-most curve represents the total number of possible hours sunshine. The histogram indicates percentage of possible sunshine recorded, with Pelican Point shaded.

In many cases it was fog and not cloud which was responsible for the loss of sunshine hours, although the lowest percentage of possible sunshine for Gobabeb occurred in February 1977 with 62%, a month when there was not much rain or fog but some high cloud. February 1977 also had the lowest mean monthly maximum temperature at Gobabeb (28.3°C) of the five February months which were included in the study.

3.7 Solar radiation

Table 39 in Appendix A shows mean daily, absolute maximum and minimum solar radiation per month at Gobabeb. The values for 1973 showed the expected pattern (Fig. 22) with minimum values in June and July. The high coefficients of variation recorded in some months usually reflected cloudiness in January and March, and fog in the latter half of the year.

3.8 Soil temperatures

Table 40 in Appendix A was taken from Seely and Stuart (1976) and shows soil temperatures at Gobabeb at depths of 0, 10, 20, 30, 60 and 120 cm taken at 08h00, 14h00 and 20h00.

Temperature at 120 cm depth stayed almost constant throughout the day in every month, whilst the temperatures closer to the surface varied considerably.

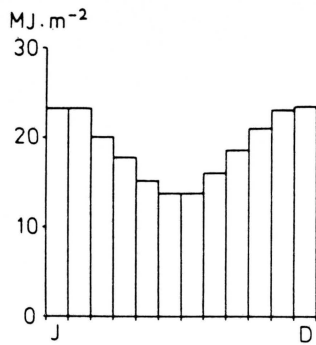


FIGURE 22: Mean daily solar radiation for Gobabeb in 1973.

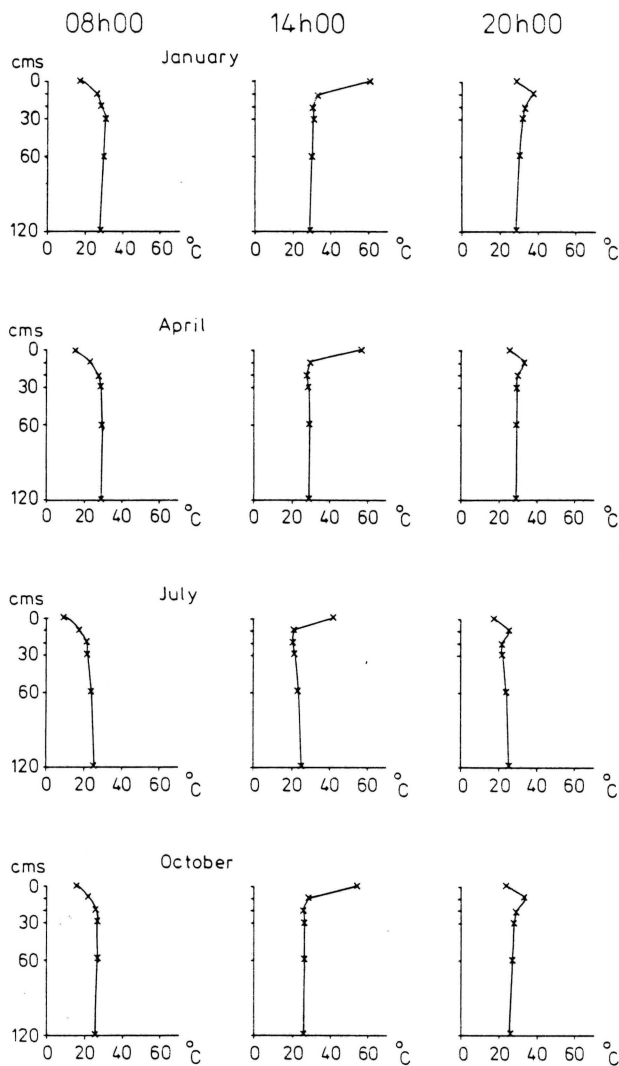


FIGURE 23: Soil temperatures between the surface and 120 cm depth at Gobabeb for January, April, July and October.

Although maximum air temperatures were recorded at 14h00, maximum soil temperatures at 10, 20 and 30 cm depth were recorded at 20h00, the 10 cm depth giving the highest readings.

Daily range in temperature was greatest in the summer months with the highest mean surface temperature (61,6°C) occurring in February (Fig. 23).

3.9 Surface winds

All stations in the central Namib Desert recorded dominant winds from two and often three directional sectors: W — SSW, NW — NNE and NE — E. Seasonal variations in wind speed and direction at each station are shown by the wind roses in Figs. 24 — 31 and by Tables 1 — 8 in Appendix B. Diurnal variations in wind direction are shown by the wind vectors in Figs. 32 — 35, calculated for three hourly periods using the formula in Weather Bureau (1960).

Data for the five year period of this study broadly supported the model put forward by Tyson and Seely (1980). In this model, the surface winds of the region were described in terms of thermally and topographically induced circulations which consisted of day-time sea breezes, up-valley winds and plain-to-mountain winds, which dominated in summer months, and night-time and early-morning land breezes, down-valley winds and mountain-to-plain winds, which were most common in winter months.

The wind stars in Figures 36 and 37 show the seasonal pattern of changes in wind direction. Winds tended to be northerly to westerly in December to February, easterly to north-easterly in May to August and southerly to south-westerly in September to November. The calmest months, and coincidentally those with the most variability in wind directions, were April or August at most stations.

Winds from westerly to south-south-westerly directions represented 16 — 40% of all winds recorded, with a peak in early summer (September — November) when 30 — 40% of winds were from these directions, and a minimum frequency of 7 — 30% during July. Winds from this sector corresponded to the sea breeze, which penetrated the central Namib from late morning onwards (Figs. 32 — 35). The duration and strength of this circulation was greatest during the period September to November. At this time of the year the South Atlantic anticyclone was at its strongest and most persistent and surface heating effects inland were marked. In these months the thermal contrast between the cold ocean and the warmer land was at its greatest. Thus thermal effects were intensified by regional pressure gradients. In winter, the penetration of the sea breeze occurs much later in the day, and is of relatively short duration.

North-west to north-north-east winds formed a second group, with annual frequencies of 14 — 34%. These winds corresponded to the summer early-to-late morning, plain-to-mountain winds of Tyson and Seely (1980), which were often reinforced by the passage of low pressure cells down the coast, particularly in December to February, when these winds reached their maximum frequency. At this time of year 40 — 60% of all winds at Vogelfederberg, Swartbank and Rooibank were from this sector (Figs. 36 and 37). As Figure 24 shows there was some topographic funneling of northerly winds up the Kuiseb valley from 09h00 —

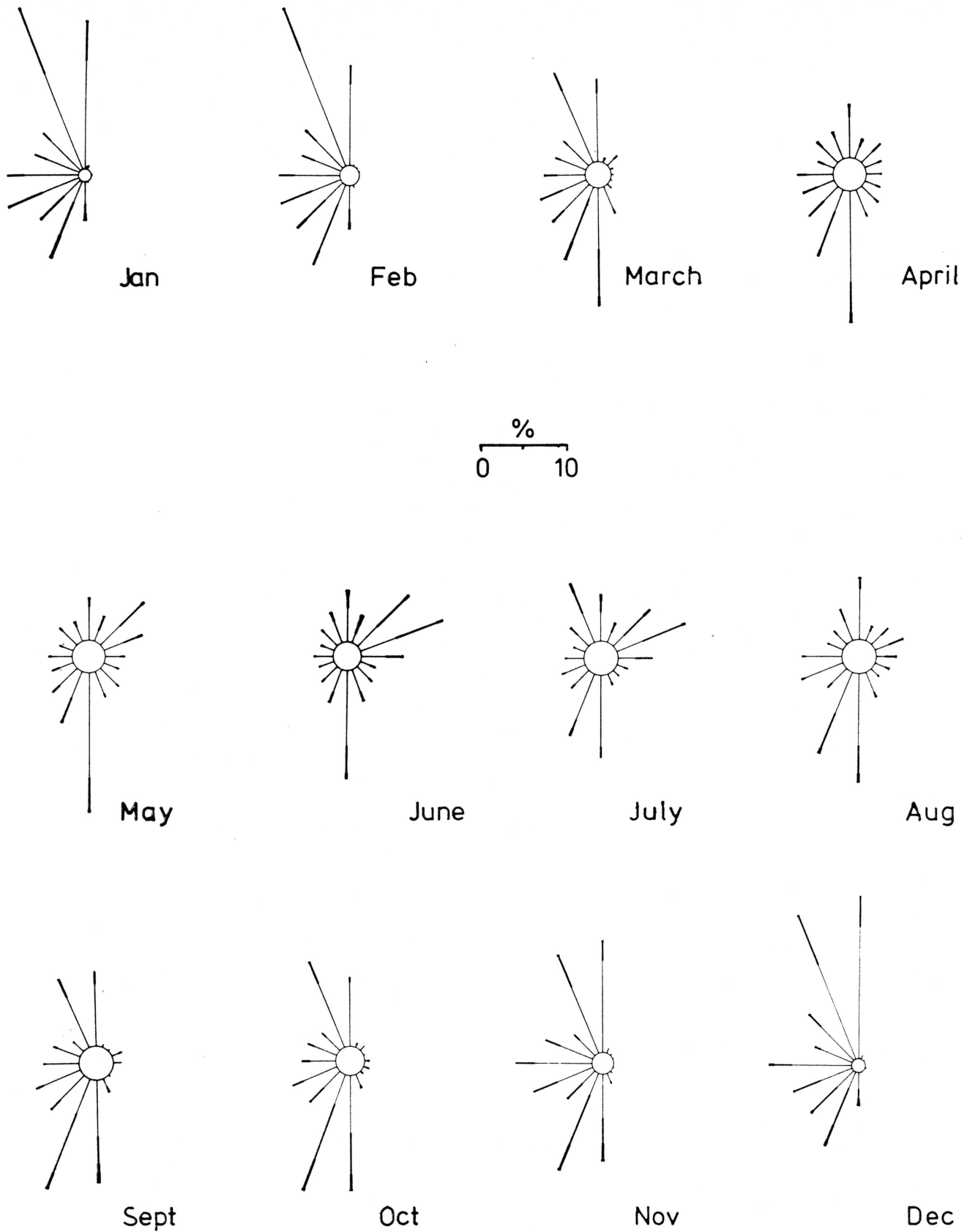
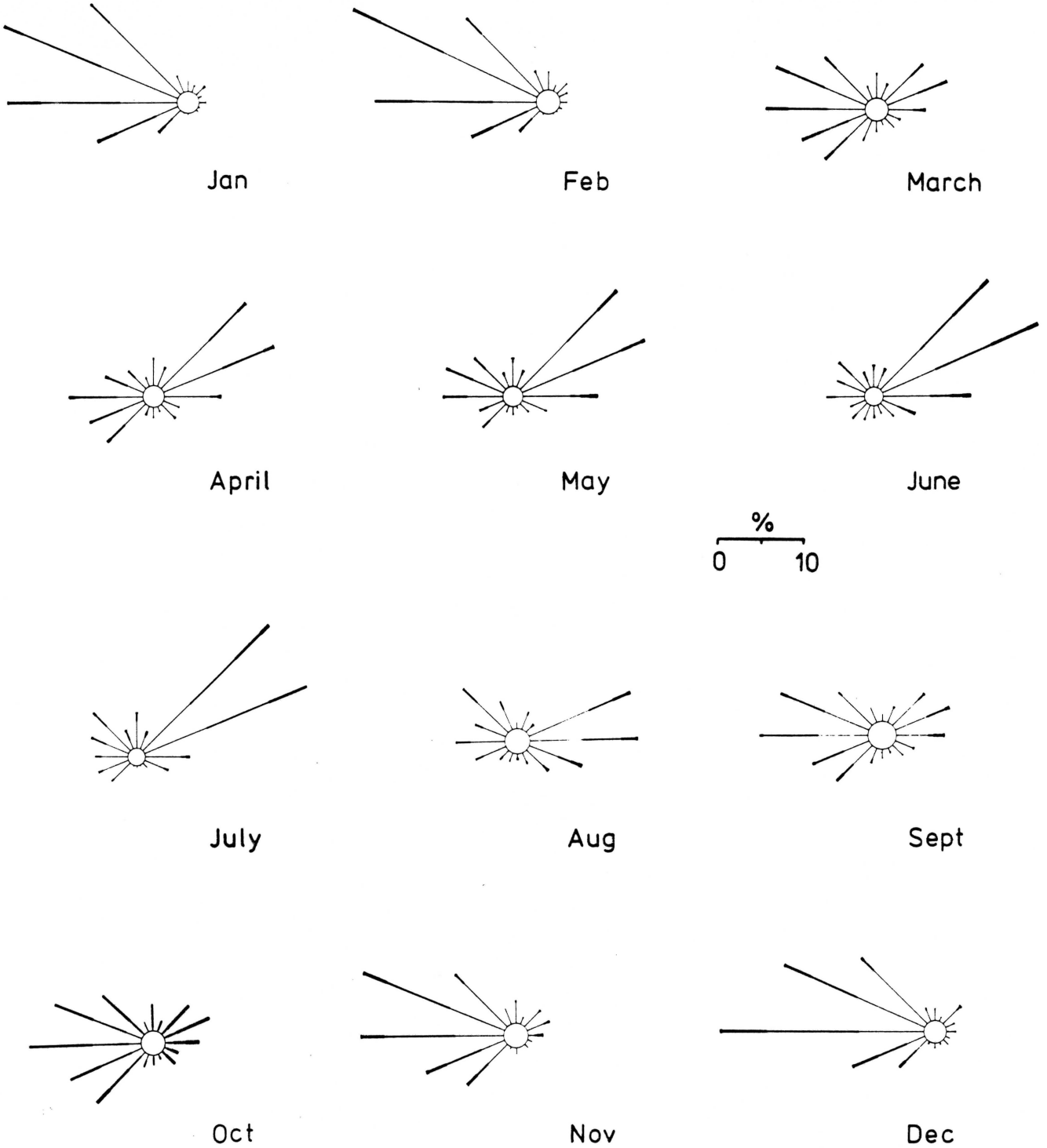


FIGURE 24: Monthly wind roses for Flodden Moor. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.



Zebra fan
FIGURE 25: Monthly wind roses for ~~Canab~~ Lancaster. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6-15, 16-25, 26-35 and more than 36 km/h⁻¹.

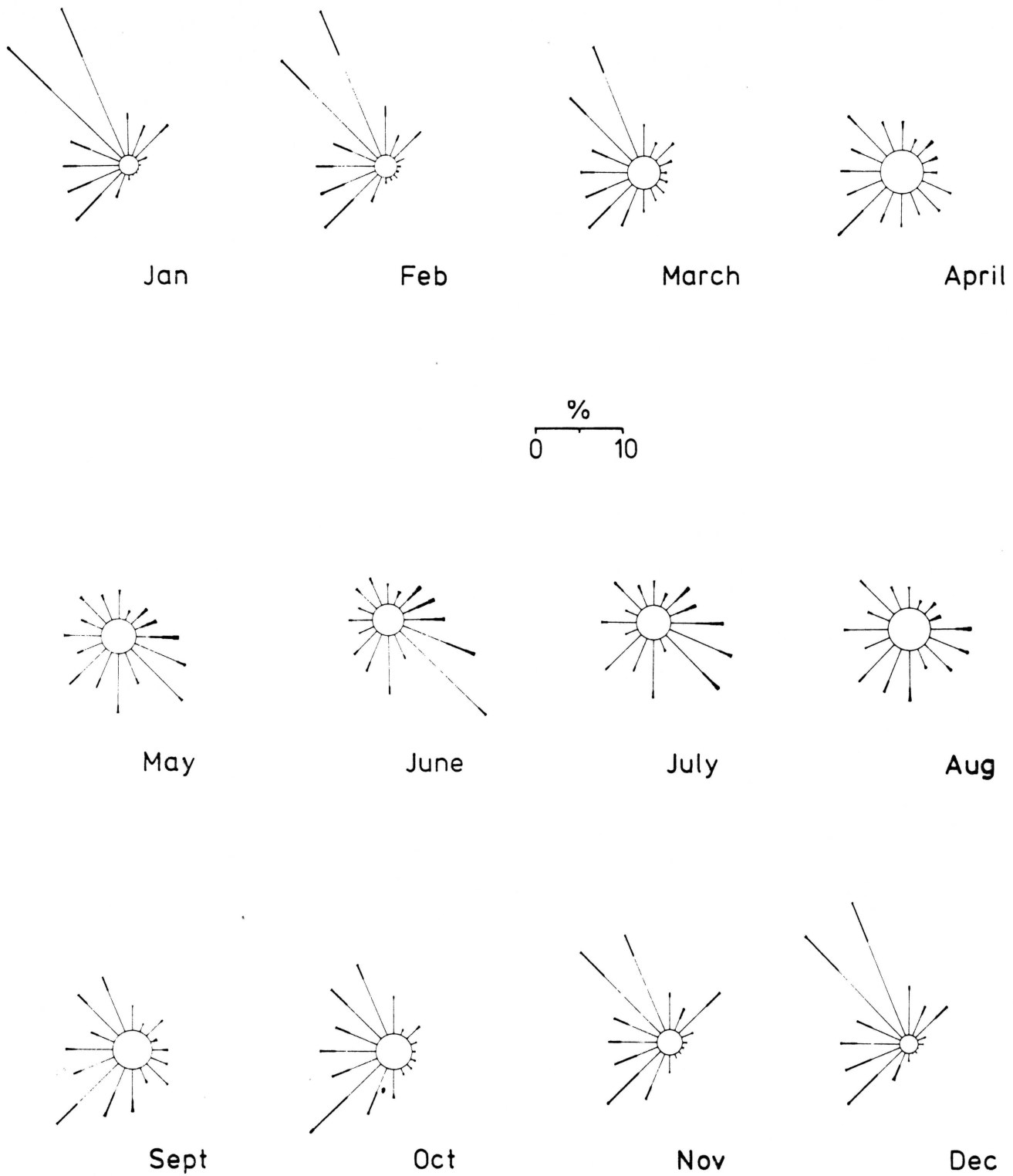


FIGURE 26: Monthly wind roses for Gobabeb. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6–15, 16–25, 26–35 and more than 36 km/h⁻¹.

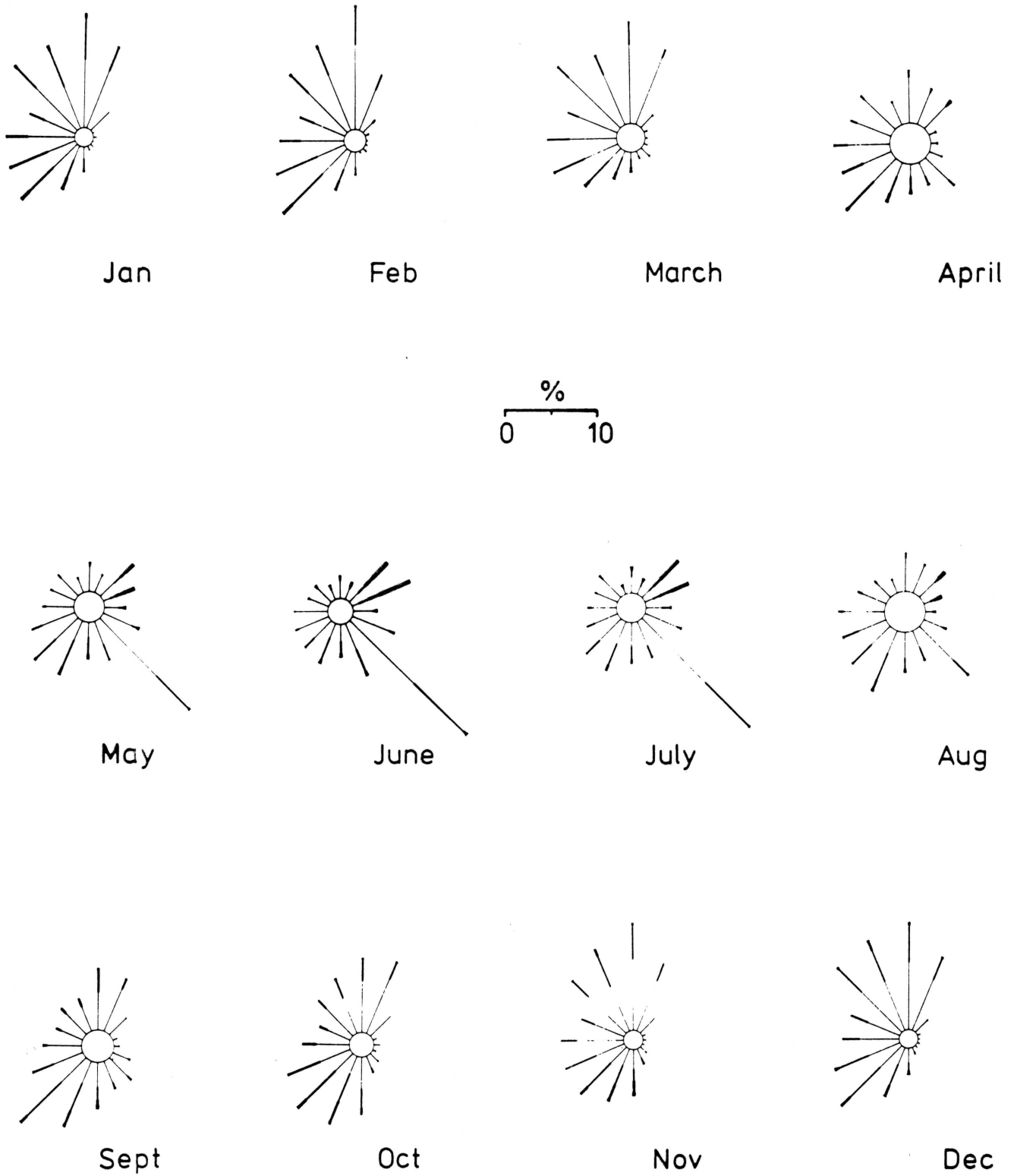


FIGURE 27: Monthly wind roses for ^{Rooibank} ~~Narabeb~~. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.

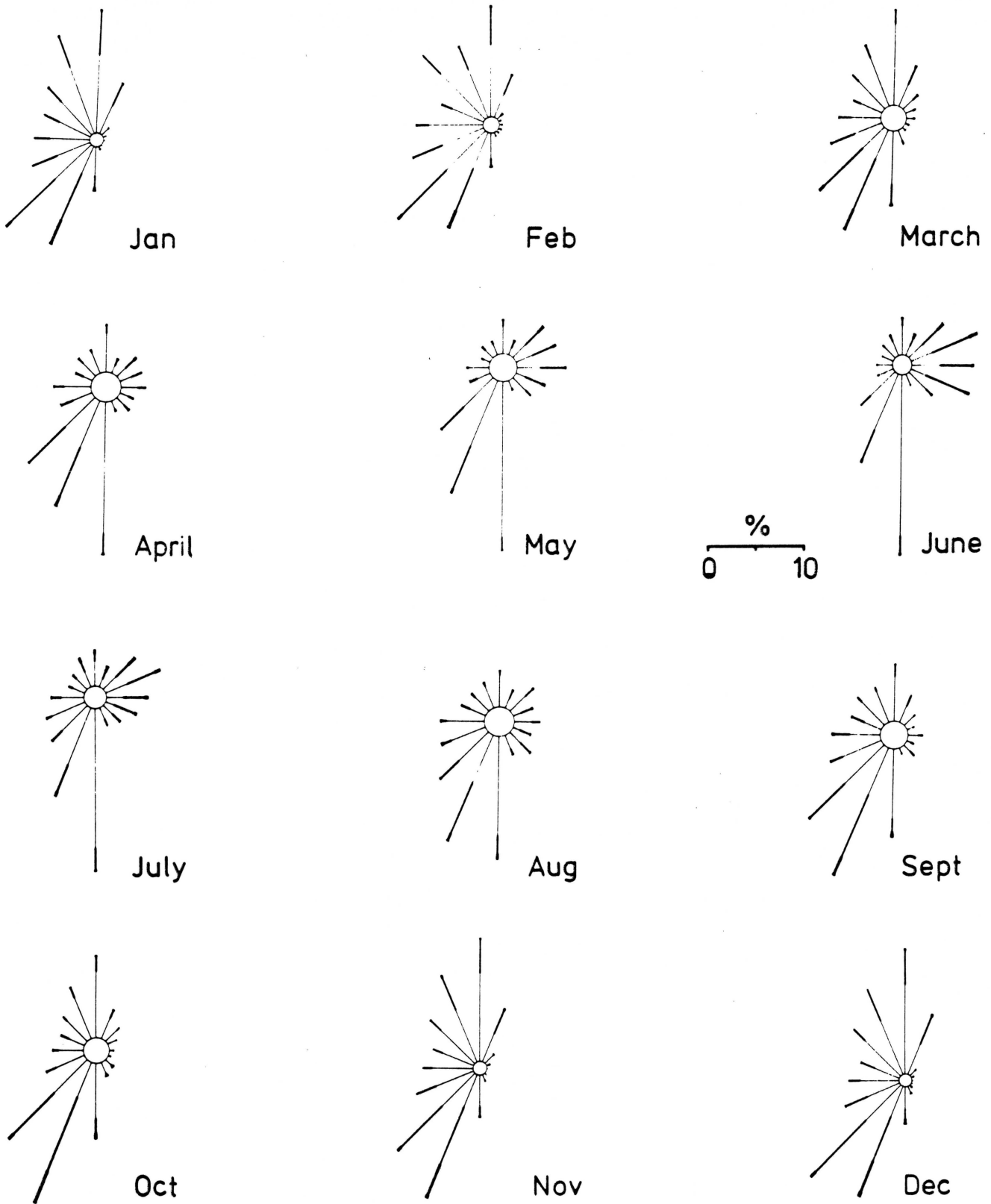


FIGURE 28: Monthly wind roses for ^{Narabeh} ~~Rooibank~~. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.

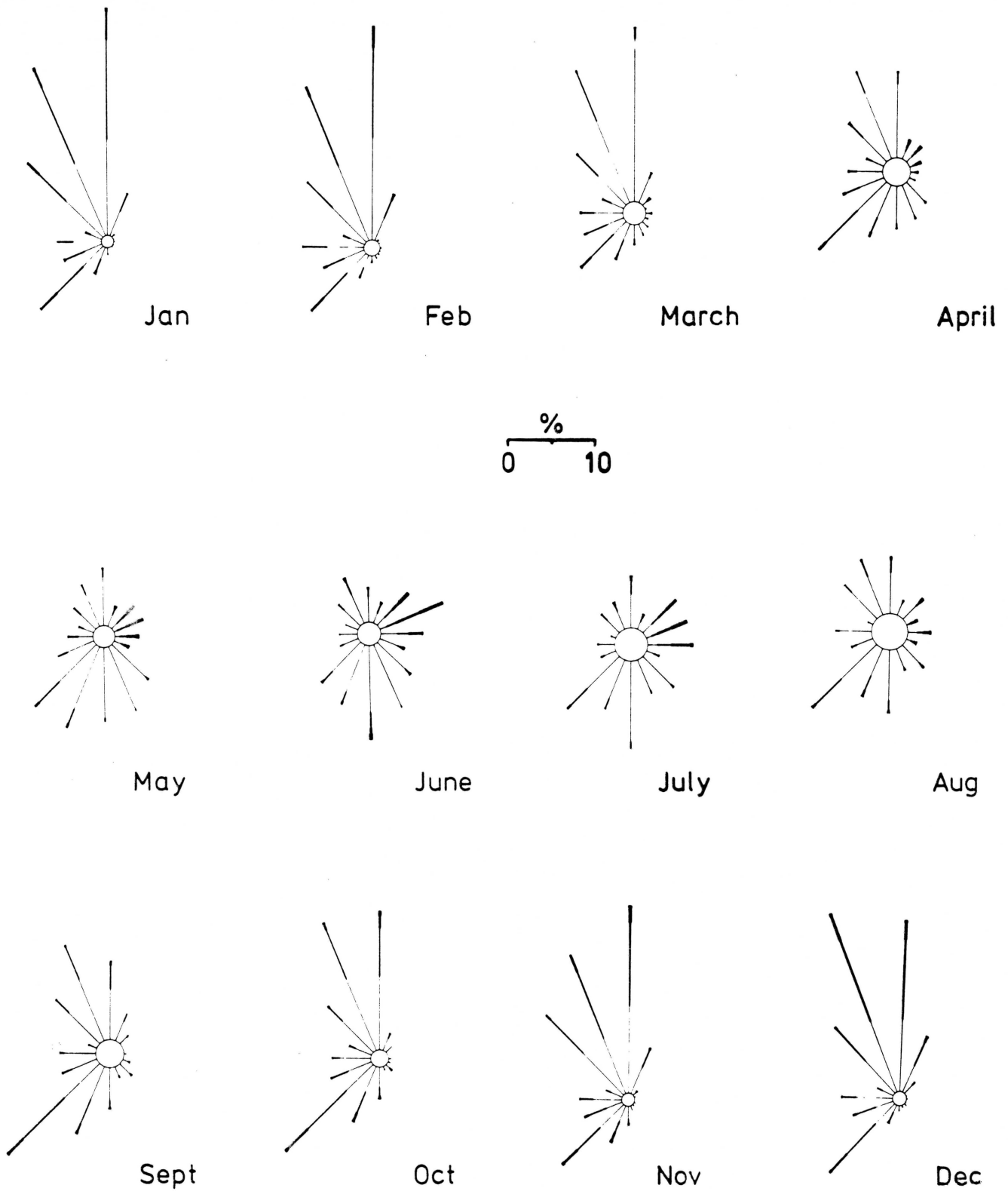


FIGURE 29: Monthly wind roses for Swartbank. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.

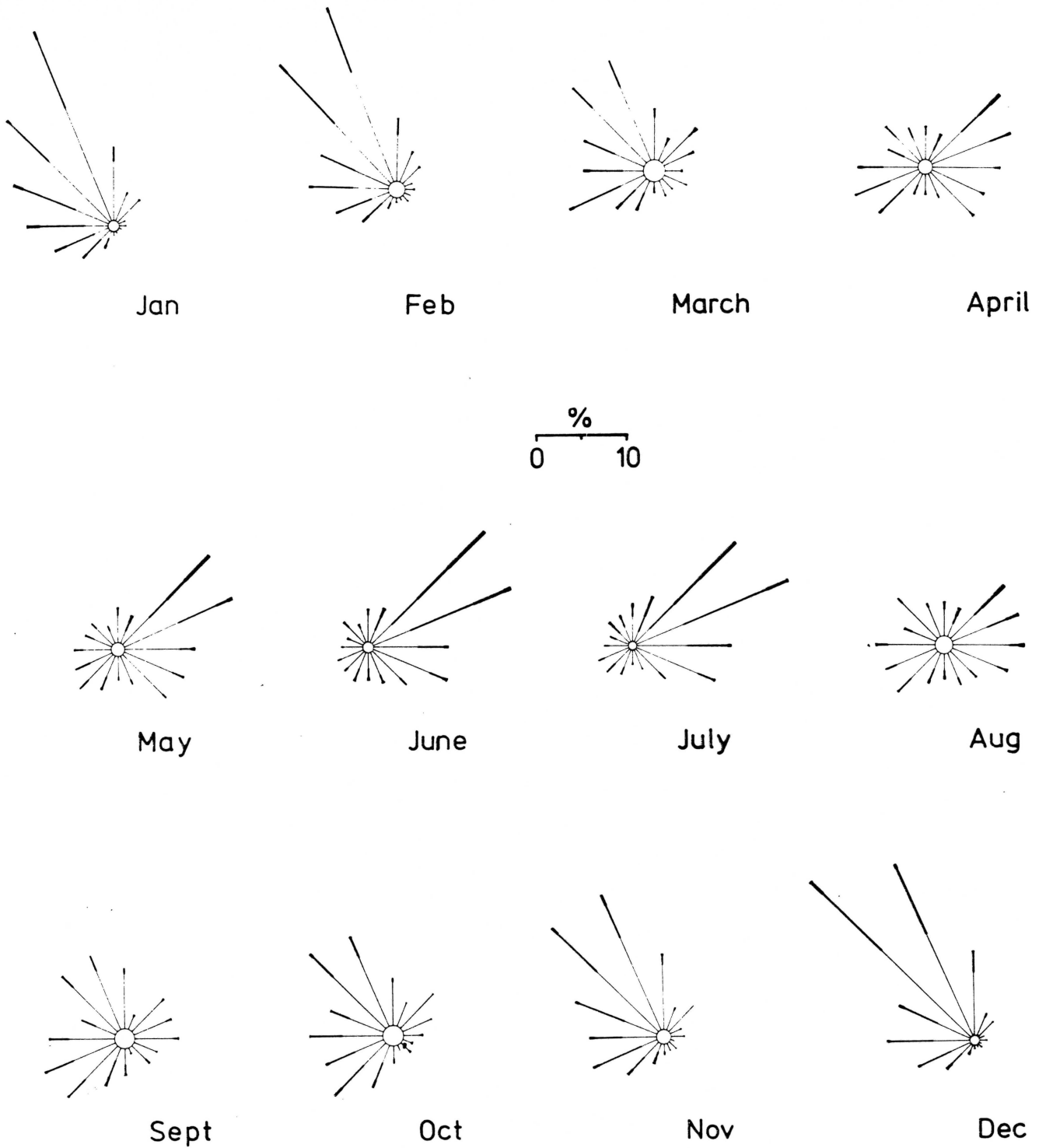


FIGURE 30: Monthly wind roses for Vogelfederberg. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.

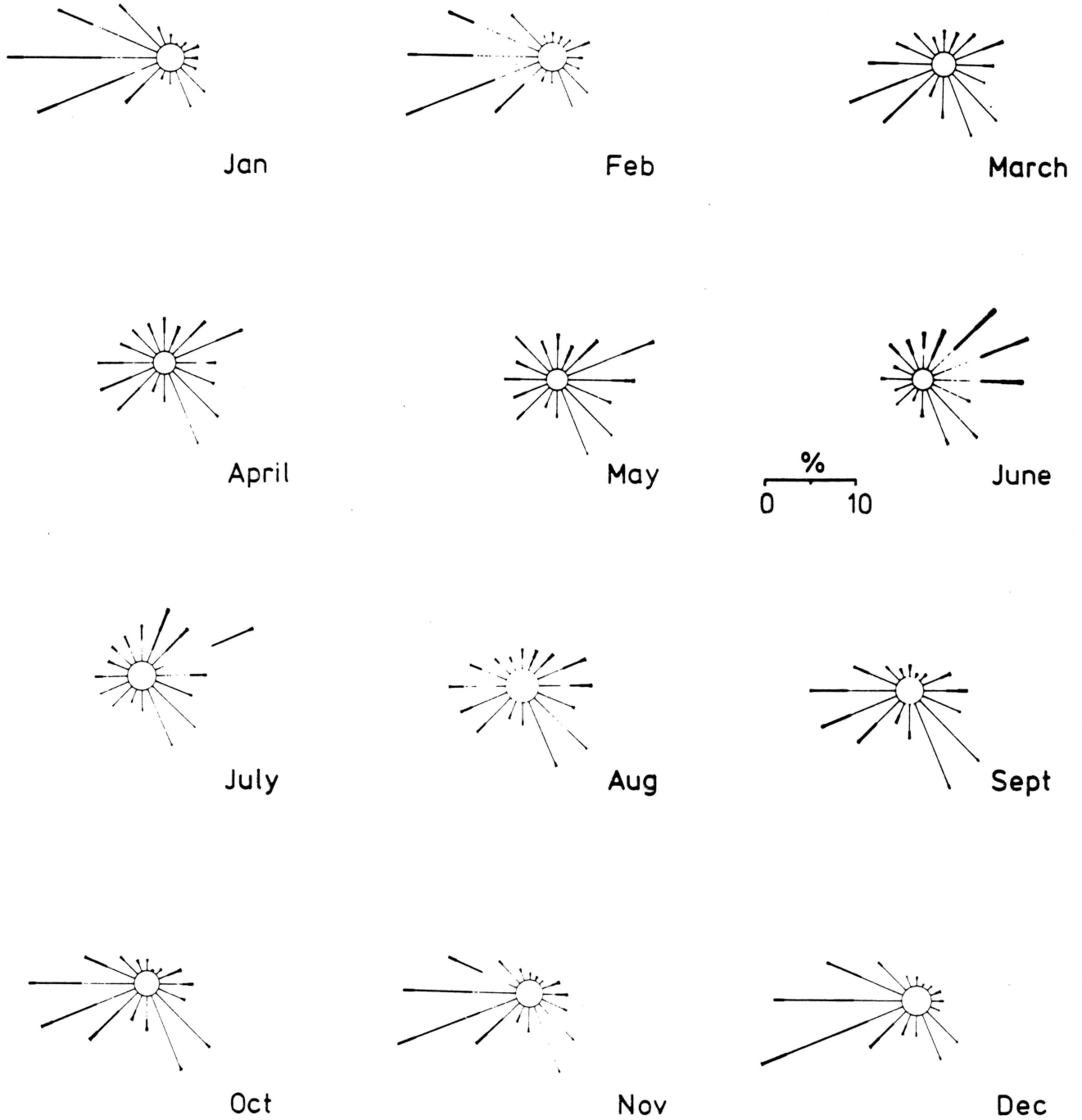


FIGURE 31: Monthly wind roses for ^{Ganab}~~Zebra Pen~~. Length of arms is proportional to the percentage frequency of winds from each direction, divided into the following velocity classes: 6—15, 16—25, 26—35 and more than 36 km/h⁻¹.

15h00, so creating a local up-valley wind on summer mornings. Winds from this sector were responsible for bringing advective fogs inland.

Winds from easterly to north-easterly directions were mainly a winter phenomenon. They were also most frequently recorded at stations towards the west. Thus 40 — 60% of all winds recorded during the period April — August at Ganab and Zebra Pan were from directions between east and north-east. Such winds corresponded with a katabatic, or mountain-to-plain wind, and were common on winter mornings. Funneling of this circulation down the Kuiseb valley was responsible for the frequent south-easterly winds recorded on winter mornings at Gobabeb and, to a lesser extent, also at Swartbank and Rooibank (Fig. 34).

From time to time during the period April to September, when regional pressure gradients were normal to the coast, the central Namib experienced high velocity 'berg' winds. These frequently reached velocities of 50 — 60 km/h⁻¹ in the late morning. Such winds were responsible for the highest hourly wind speeds recorded in the region, the record being 61 km/h⁻¹ between 11h00 and 12h00 at Rooibank on 17 July 1981.

3.10 Other characteristics

To illustrate some characteristics of the climate of the central Namib, four weather conditions at three stations in the central Namib have been presented: fog (Figs. 38 — 40), rain (Figs. 41 — 43), south-westerly wind (Figs. 44 — 46), and berg wind (Figs. 47 — 49). Although a narrow desert, the climate in the central Namib varies from the cool, foggy coast to the base of the escarpment with its summer rainfall. Some events affected the entire area, but most varied in intensity and/or duration between west and east.

During the five year period 1976 to 1981 the central Namib experienced years when high rainfall was recorded, for example 1975/76 and 1977/78, and very dry years, 1979/80 and 1980/81. Rainfall data from three stations were presented for the year 1977/78 and 1979/80 (Fig. 50). The difference between mean monthly maximum temperature in the wet year and the dry year is shown in Fig. 51. All three stations experienced a warmer summer in the dry year and a warmer winter in the wet year.

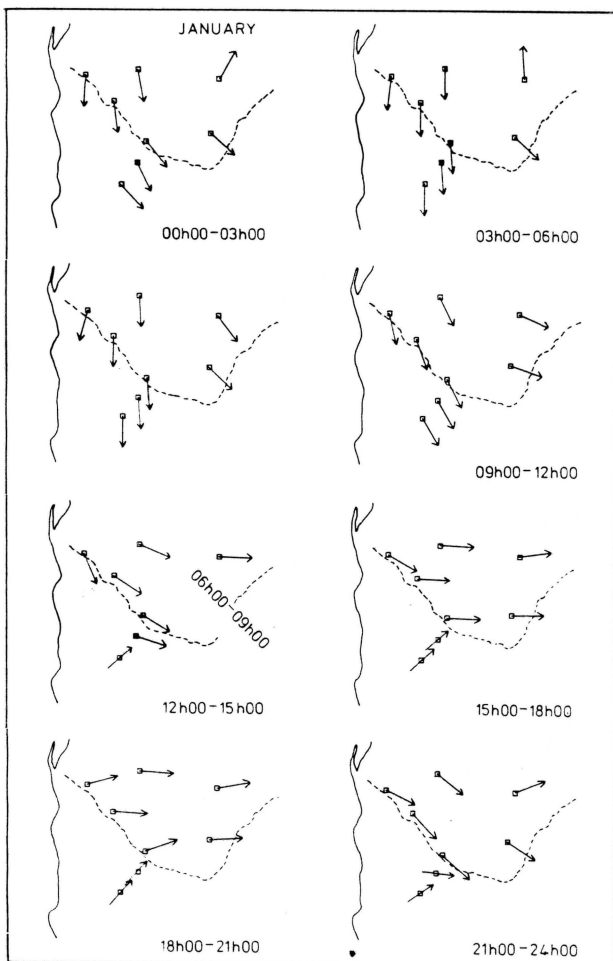


FIGURE 32: Diurnal variation in wind direction for January, as shown by three hourly wind vector directions for Flodden Moor, Ganab, Gobabeb, Narabeb, Swartbank, Rooibank, Vogelfederberg and Zebra Pan.

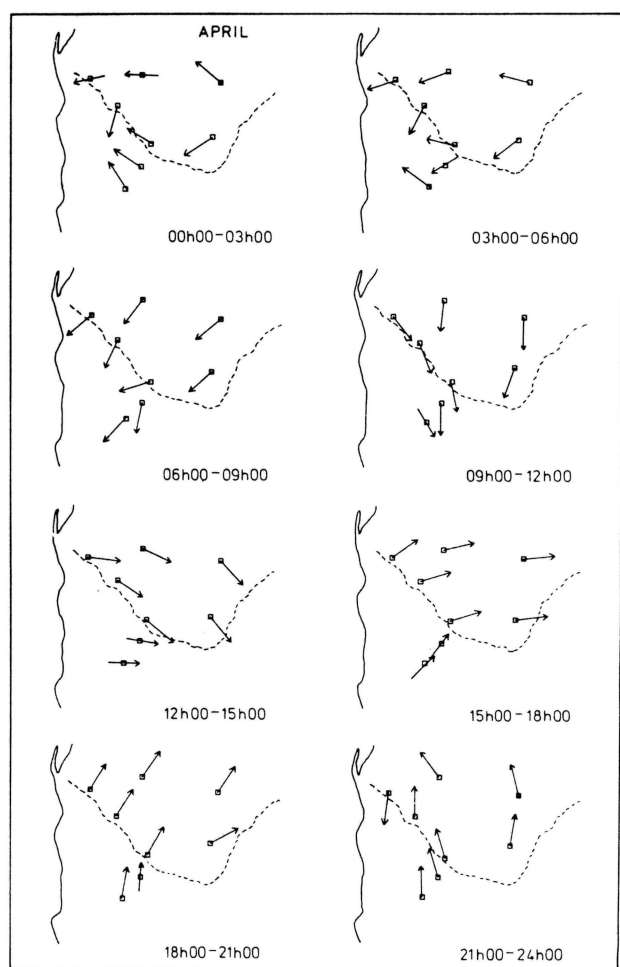


FIGURE 33: Diurnal variation in wind direction for April, as shown by three hourly wind vector directions for Flodden Moor, Ganab, Gobabeb, Narabeb, Swartbank, Rooibank, Vogelfederberg and Zebra Pan.

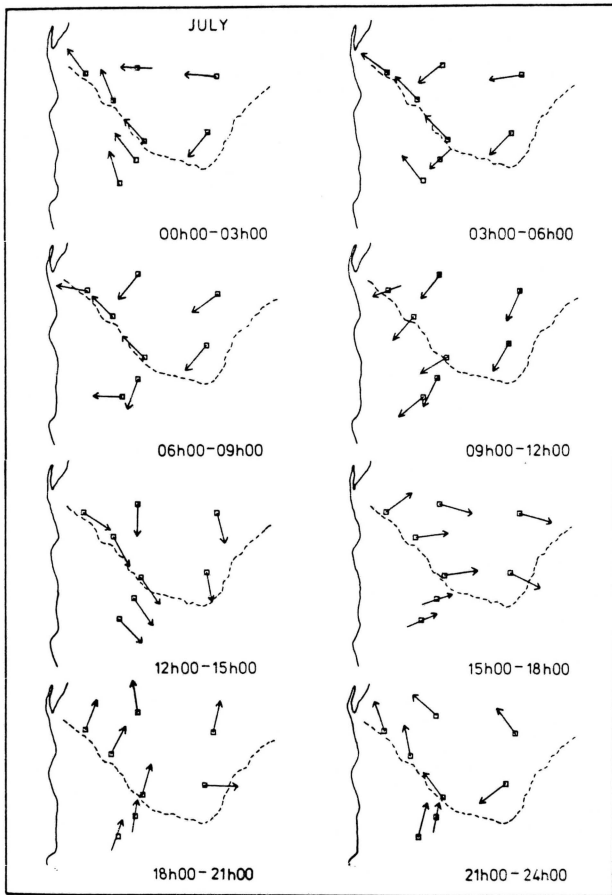


FIGURE 34: Diurnal variation in wind direction for July, as shown by three hourly wind vector directions for Flodden Moor, Ganab, Gobabeb, Narabeb, Swartbank, Rooibank, Vogelfederberg and Zebra Pan.

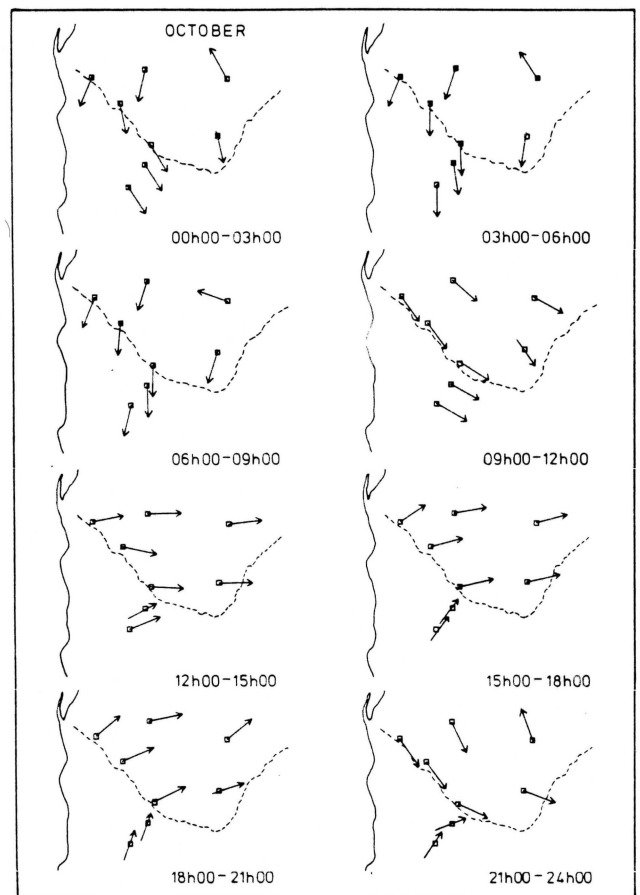


FIGURE 35: Diurnal variation in wind direction for October, as shown by three hourly wind vector directions for Flodden Moor, Ganab, Gobabeb, Narabeb, Swartbank, Rooibank, Vogelfederberg and Zebra Pan.

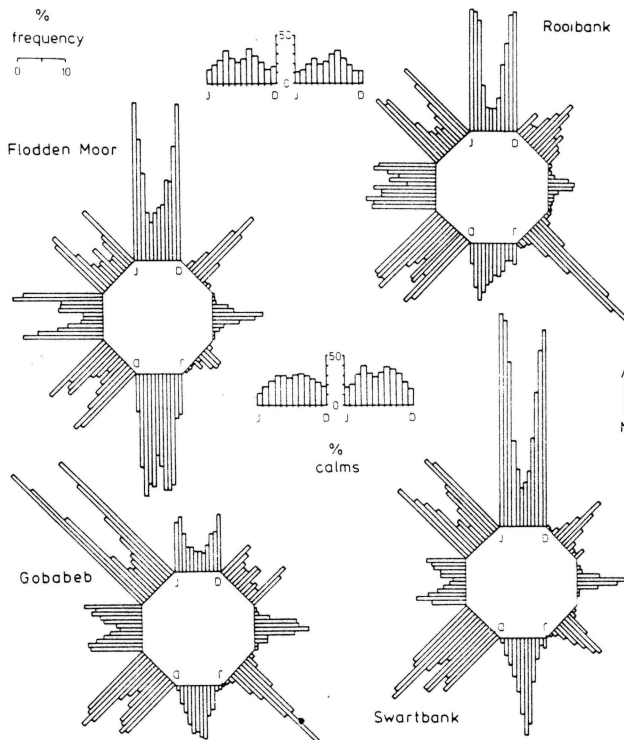


FIGURE 36: Monthly variation in the percentage frequency of winds from prime directions for Flodden Moor, Gobabeb, Rooibank and Swartbank. Months run consecutively in a clockwise direction. Frequency scale is for wind star histograms. Monthly percentage frequency of calms shown by separate histogram.

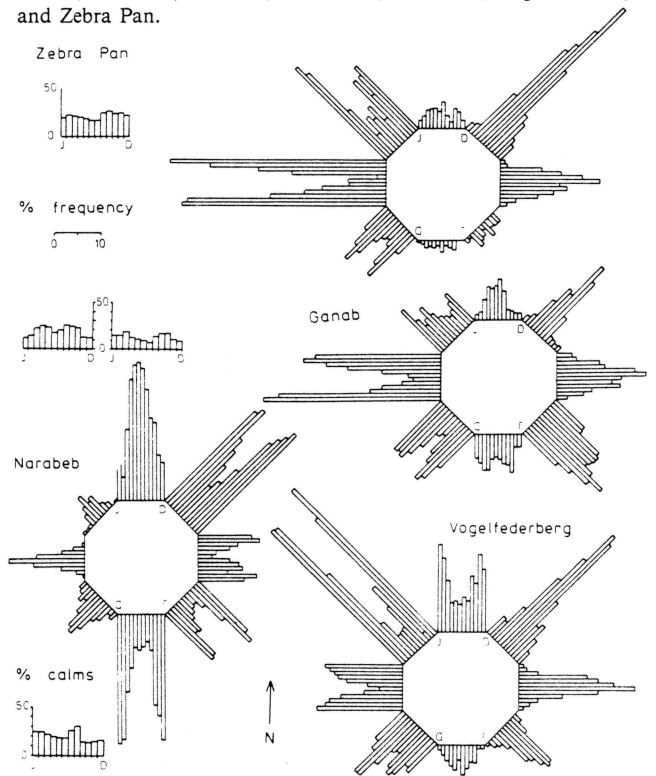


FIGURE 37: Monthly variation in the percentage frequency of winds from prime directions for Ganab, Narabeb, Vogelfederberg and Zebra Pan. Months run consecutively in a clockwise direction. Frequency scale is for wind star histograms. Monthly percentage frequency of calms shown by separate histogram.

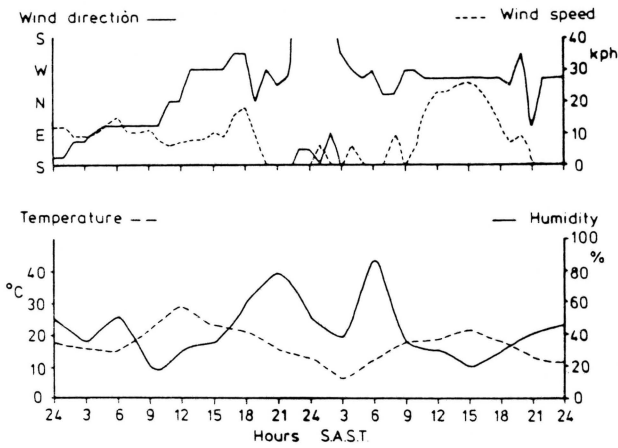


FIGURE 38: Climatic conditions on 13 and 14 September 1979 at Ganab during a fog event in the central Namib. No fog-water precipitation occurred so far inland on these days.

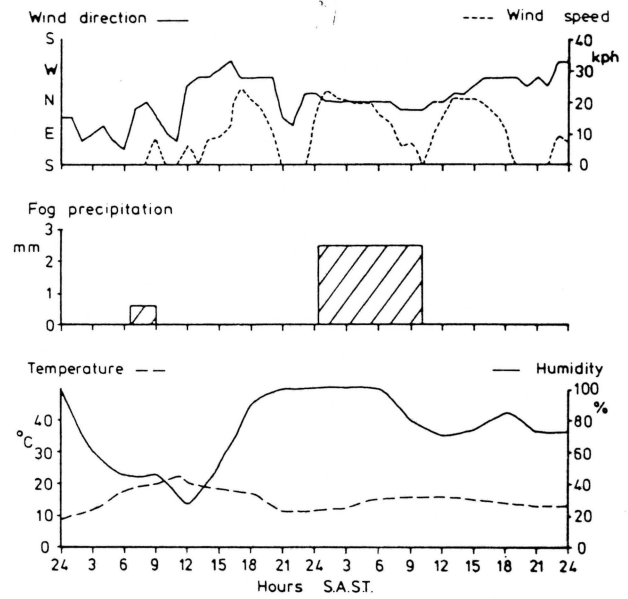


FIGURE 40: Climatic conditions at Rooibank on 13 and 14 September 1979 during a fog event in the central Namib.

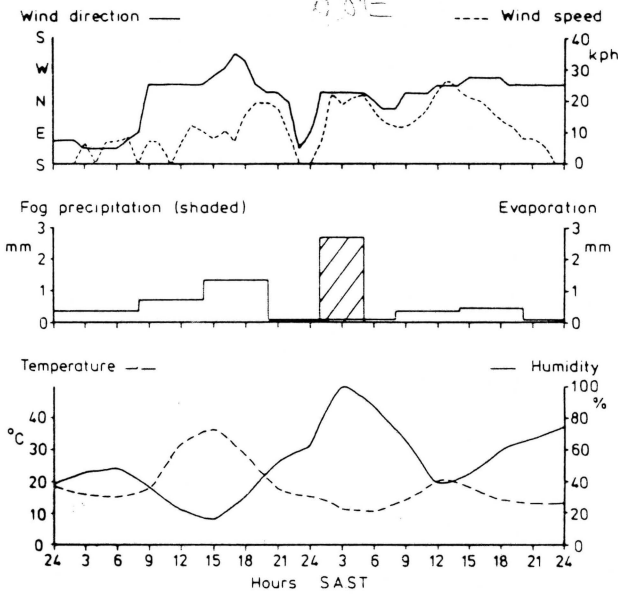


FIGURE 39: Climatic conditions on 13 and 14 September 1979 at Gobabeb during a fog event in the central Namib. Evaporation from a Piché tube was measured at Gobabeb and indicated by open bars.

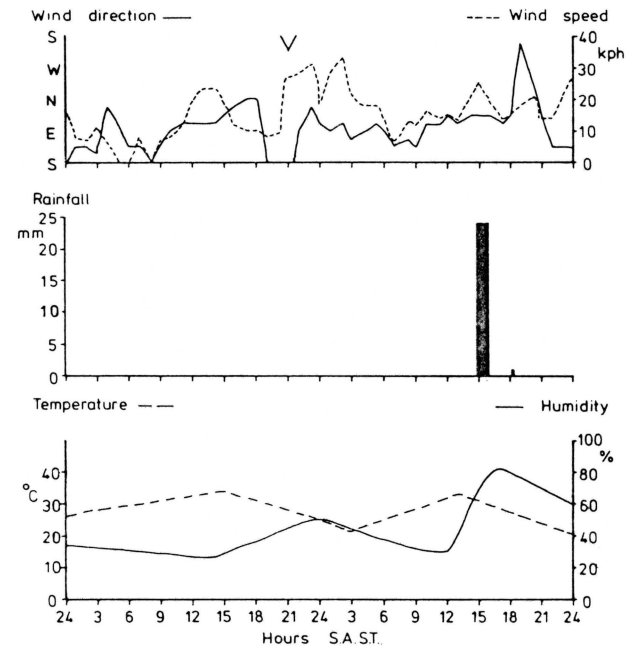


FIGURE 41: Climatic conditions at Ganab during 31 March and 1 April 1980 during a rainfall event in the central Namib.

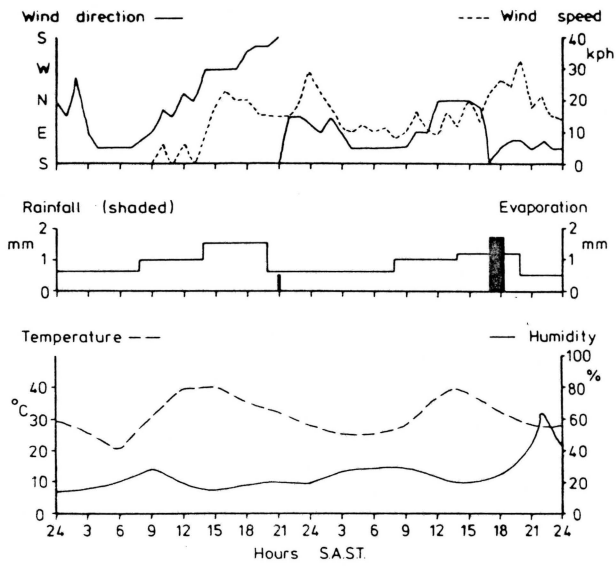


FIGURE 42: Climatic conditions at Gobabeb on 31 March and 1 April 1980 during a rainfall event in the central Namib. Evaporation from a Piché tube was measured at Gobabeb and indicated by open bars.

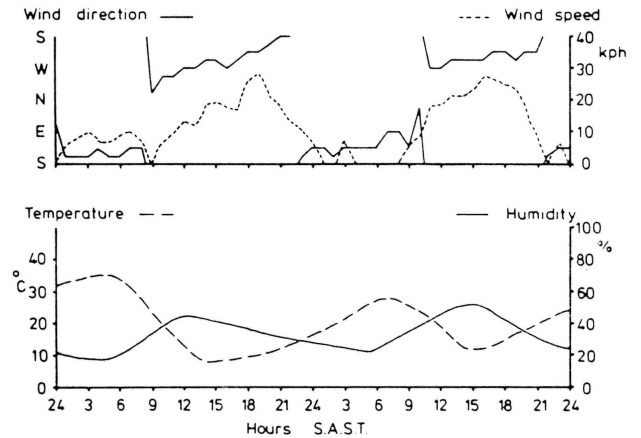


FIGURE 44: Climatic conditions at Ganab during 1 and 2 December 1980 with south-westerly wind in the central Namib.

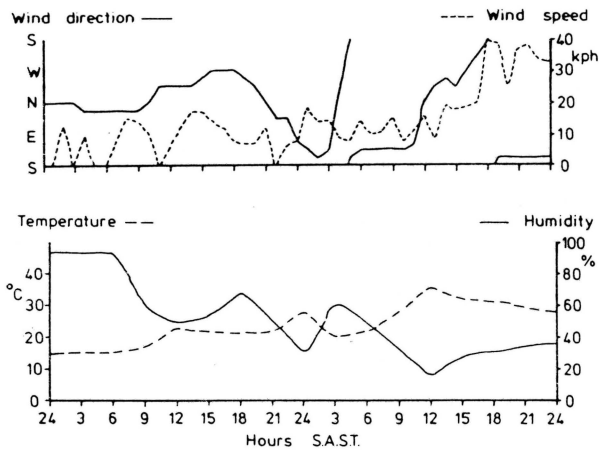


FIGURE 43: Climatic conditions at Rooibank on 31 March and 1 April 1980 during a rainfall event in the central Namib. No rainfall occurred so far toward the coast on these days.

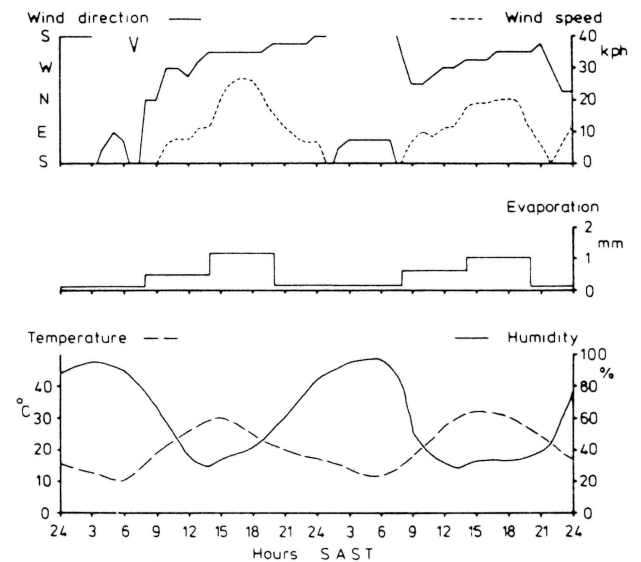


FIGURE 45: Climatic conditions at Gogabeb during 1 and 2 December 1980 with south-westerly wind in the central Namib.

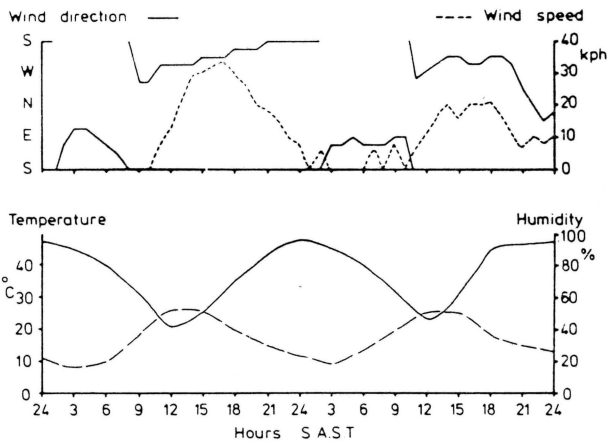


FIGURE 46: Climatic conditions at Rooibank during 1 and 2 December 1980 with south-westerly wind in the central Namib.

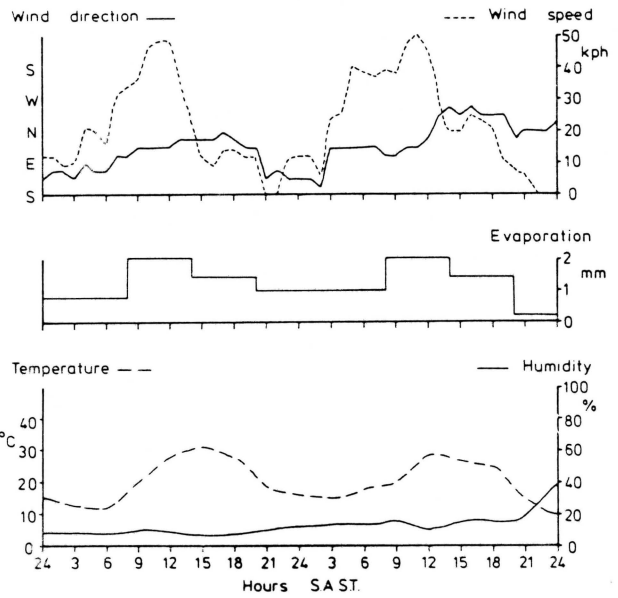


FIGURE 48: Climatic conditions at Gobabeb on 18 and 19 June 1981, a berg wind period in the central Namib.

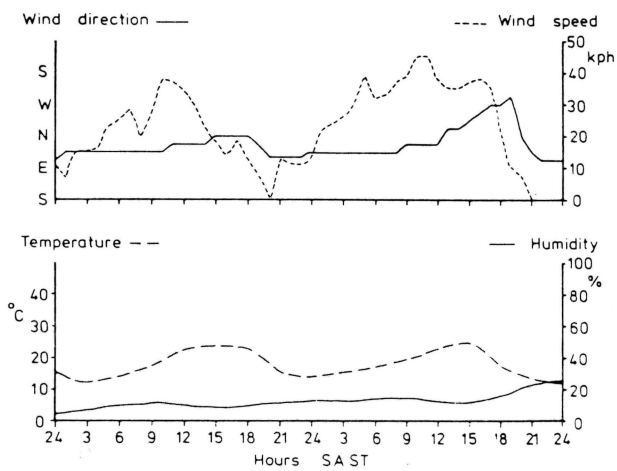


FIGURE 47: Climatic conditions at Ganab on 18 and 19 June 1981, a berg wind period in the central Namib.

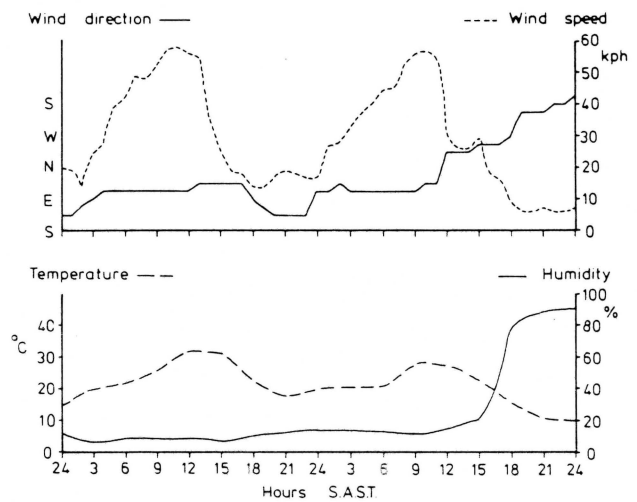


FIGURE 49: Climatic conditions at Rooibank on 18 and 19 June 1981, a berg wind period in the central Namib.

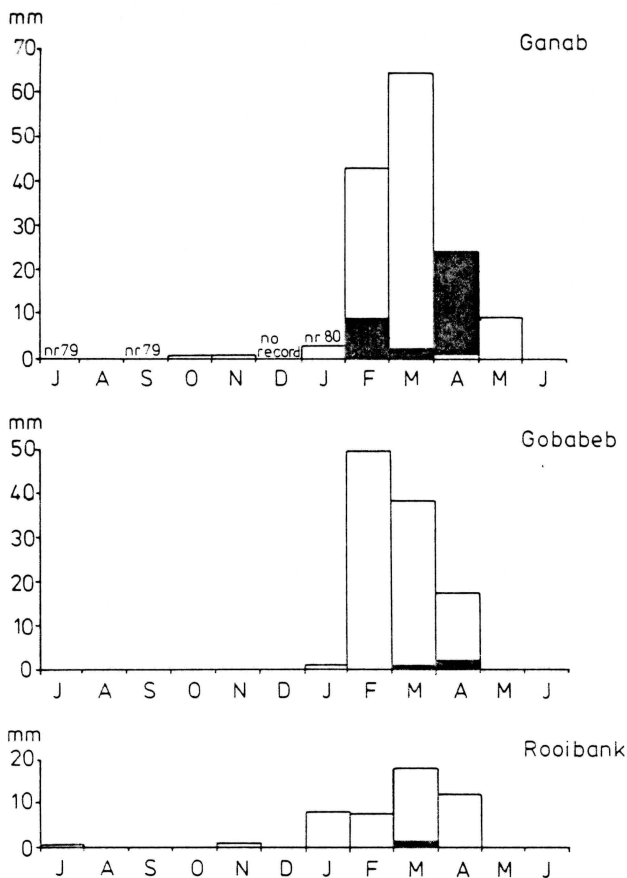


FIGURE 50: Total monthly rainfall for one dry year, 1979/80 (shaded bars) and one wet year, 1977/78 (open bars).

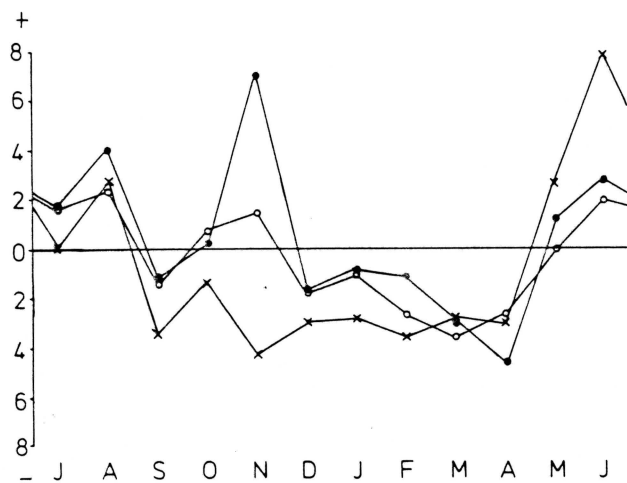


FIGURE 51: Difference in mean monthly maximum temperature between a wet year, 1977/78, and a dry year, 1979/80. Ganab (○—○), Gobabeb (●—●), Rooibank (×—×).

4 CONCLUSION

Definitions of a desert are numerous, but usually focus on low rainfall or one of the many rainfall/evaporation indices (Thorntwaite 1948). When compared with some other deserts, the Namib appears to have an equable climate. The Namib falls into the category of cool, coastal deserts, together with the Atacama and Peruvian deserts, Moroccan Sahara, the Horn of Afri-

ca and north-western Mexico (Meigs 1953). Trewartha (1961) maintains that the Chilean-Peruvian desert is the most arid of the coastal deserts over the largest span of latitude and that there is a high level of consistency in climatic parameters from north to south. The Namib is classified as extremely arid along its coastal belt changing to a summer rainfall zone on the eastern edge of the desert at a distance of little over 100 km inland. This steep climatic gradient is found elsewhere on the continent, e.g. on the Horn of Africa, but few other desert areas have as well documented a climatic record as the Namib.

5 ACKNOWLEDGEMENTS

The Weather Bureau of the Department of Transport, South Africa, kindly provided unpublished summaries of meteorological data which were incorporated into this manuscript. The Transvaal Museum and Research Grants Division of the CSIR are kindly thanked for financial support. The Department of Agriculture and Nature Conservation provided facilities and permission to work in the Namib-Naukluft Park.

We are indebted to the many Nature Conservators who have helped to maintain equipment and collect data since 1971, most recently N. Boonzaaier, G. Cloete and F. von Blotnitz. Assistance with data reduction was given by: S. Bethune, S. Falconer, S. de Villiers, V. Gray, J. Lewis, T. Marinaki, K. O'Brien, J. Norton, J. Pallett, A. Pavia, C. Stoffberg, D. Taylor, M. Timm, M. Vanderwalle and M. Ward. Preparation of the many wind roses was undertaken by: G. Horton, C. Irish, R. Leggott, D. Osberg, L. Praetorius and J. Sinclair.

We much appreciate the comments and suggestions on an early draft of this manuscript given by: Mr. C.G. Coetzee, Dr. F.M. Gamble, Dr. D.H.R. Hellwig, Mr. J.C. Maré, Dr. J.J. Taljaard and Professor P.D. Tyson.

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7 APPENDIX A

A-1

TABLE 4: Mean monthly and mean annual rainfall in mm.

	J	F	M	A	M	J	J	A	S	O	N	D	Annual
Flodden Moor n = 1 - 3 y	0.00	0.35	0.00	0.67	0.87	0.90	0.00	0.00	0.00	0.40	0.00	0.13	3.32
Ganab n = 11 - 14 y	21.67	15.46	31.99	9.00	1.16	0.79	0.00	0.82	0.00	0.20	2.68	3.19	86.96
Gobabeb n = 17 - 18 y	5.45	4.58	6.66	3.30	0.29	1.60	1.07	1.66	1.12	0.47	0.61	0.39	27.20
Narabeb n = 5 - 9 y	1.51	2.52	4.67	4.64	0.00	5.03	0.34	1.10	0.15	0.22	0.16	0.01	20.35
Pelican Point n = 18 - 19 y	1.77	2.59	7.01	0.46	0.32	1.24	0.02	0.29	0.12	0.15	1.19	0.08	15.24
Rooibank n = 12 - 16 y	1.91	1.45	8.13	1.63	0.14	1.98	0.66	0.77	0.13	0.12	0.09	0.03	16.65
Swartbank n = 10 - 12 y	2.70	4.57	3.70	2.03	0.12	2.23	0.00	1.66	0.02	0.51	0.76	0.49	18.79
Vogelfederberg n = 2 - 4 y	0.38	0.47	1.42	0.60	0.00	15.47	0.00	3.07	0.04	0.00	0.00	0.00	21.45
Zebra Pan n = 2 - 3 y	1.63	0.00	0.05	1.58	0.18	10.07	0.00	4.01	0.07	0.43	0.13	0.77	18.92

A-2

TABLE 5: Mean monthly and mean annual fog precipitation in mm.

	J	F	M	A	M	J	J	A	S	O	N	D	Annual
Flodden Moor n = 1 - 2y	6.18	1.43	3.85	0.77	1.68	1.08	4.00	10.15	10.45	6.25	6.47	12.82	65.13
SD	3.43	1.07	3.34	1.33	0.11	1.10	3.74	3.76	5.88	2.12	3.68	3.98	
%CV	55.50	74.83	86.75	172.73	6.55	101.85	93.50	37.04	56.27	33.92	56.88	31.05	
Ganab n = 10 - 14y	0.03	1.12	0.31	0.16	0.43	0.54	0.12	0.15	0.14	0.26	0.34	0.23	2.67
SD	0.06	0.33	1.11	0.42	1.17	1.13	0.39	0.39	0.38	0.60	1.23	0.38	
%CV	200.00	275.00	358.06	260.00	272.09	209.26	325.00	260.00	271.43	230.77	361.76	165.22	
Gobabeb n = 13 - 15y	1.45	2.04	2.57	1.74	1.18	2.12	2.27	3.90	5.04	3.58	2.39	2.51	30.79
SD	1.50	2.53	2.32	1.87	1.73	1.98	2.55	2.34	3.59	2.46	1.97	1.74	
%CV	103.45	124.02	90.27	107.47	146.61	93.39	112.33	60.00	71.23	68.72	82.43	69.32	
Narabeb n = 5 - 8y	1.71	0.51	2.93	0.75	1.29	1.45	2.64	4.76	6.91	4.35	3.64	4.97	35.91
SD	1.31	0.45	1.97	0.75	1.28	1.96	2.55	4.50	3.45	2.37	2.11	3.22	
%CV	76.61	88.24	67.24	100.00	99.22	135.17	96.59	94.54	49.93	54.48	57.97	64.79	
Rooibank n = 12 - 15y	1.93	2.46	5.18	12.72	10.89	7.53	9.43	9.13	11.03	4.86	3.35	1.68	80.19
SD	1.17	2.14	4.71	5.20	3.39	4.33	3.67	4.04	5.59	2.44	2.66	1.30	
%CV	60.62	86.99	90.93	40.88	31.13	57.50	38.92	44.25	50.68	50.21	79.40	77.38	
Swakopmund n = 6 - 9y	1.06	0.78	0.94	2.34	4.40	5.69	5.90	6.29	3.11	1.79	0.96	0.47	33.34
SD	1.26	0.83	0.81	1.69	2.14	4.99	4.44	5.48	1.92	1.44	1.06	0.51	
%CV	118.87	106.41	86.17	72.22	48.64	87.70	75.25	87.12	61.74	80.45	110.42	108.51	
Swartbank n = 8 - 12y	10.06	9.46	16.73	15.89	12.24	11.76	17.00	19.90	24.20	19.93	16.26	10.19	183.62
SD	5.96	6.78	9.65	11.78	5.47	8.44	10.63	14.39	13.95	8.62	10.48	3.76	
%CV	59.24	71.67	57.68	74.13	44.69	71.77	62.53	72.31	57.64	43.25	64.45	36.90	
Vogelfederberg n = 2 - 4y	14.53	11.10	16.02	3.32	10.80	15.70	5.53	24.82	26.15	20.01	11.20	24.30	183.48
SD	4.99	7.89	15.80	3.91	12.39	17.69	2.58	9.57	16.41	5.09	2.76	0.92	
%CV	34.34	71.08	98.63	117.77	114.72	112.68	46.65	38.56	62.75	25.44	24.64	3.79	
Zebra Pan n = 2 - 3y	1.03	0.55	0.95	0.00	1.13	1.08	1.93	1.15	3.98	1.68	1.15	0.48	15.11
SD	0.32	0.78	1.34	-	1.96	1.88	2.23	0.64	2.65	1.94	1.06	0.37	
%CV	31.07	141.82	141.05	-	173.45	174.07	115.54	55.65	66.58	115.48	92.17	77.08	

TABLE 6: Mean monthly and mean annual number of days on which precipitating fog occurred.

		J	F	M	A	M	J	J	A	S	O	N	D	Annual
Flodden Moor	n = 1 - 2y	6.00	3.33	3.00	0.67	2.00	1.50	2.67	6.00	8.33	7.33	7.67	7.00	55.50
	SD	4.24	2.52	2.65	1.15	0	0.71	2.31	3.00	3.51	3.51	3.79	2.00	
	%CV	70.67	75.68	88.33	171.64	-	47.33	86.52	50.00	52.15	47.89	49.41	28.57	
Ganab	n = 10 - 14y	0.17	0.21	0.31	0.15	0.33	0.33	0.09	0.25	0.18	0.31	0.08	0.50	2.76
	SD	0.39	0.58	1.11	0.38	0.89	0.65	0.30	0.62	0.40	0.48	0.28	0.85	
	%CV	229.41	276.19	358.06	253.30	269.70	196.97	333.33	248.00	222.22	154.84	350.00	170.00	
Gobabeb	n = 13 - 15y	2.13	2.67	3.47	1.40	1.53	1.73	2.64	3.71	5.62	4.46	4.23	3.64	37.23
	SD	1.81	2.72	2.39	1.30	1.68	1.49	1.95	1.94	3.07	2.85	2.39	2.62	
	%CV	84.98	101.87	68.88	92.86	109.80	86.13	73.86	52.29	54.63	63.90	56.50	71.98	
Narabeb	n = 5 - 8y	2.00	1.29	2.50	1.00	1.63	1.25	2.57	4.29	7.71	4.71	4.33	5.17	38.45
	SD	1.67	1.11	1.64	0.71	2.33	1.58	2.51	3.25	3.99	3.45	2.16	1.77	
	%CV	83.50	86.05	65.60	71.00	142.94	126.40	97.69	75.76	51.75	73.25	49.88	22.63	
Roobank	n = 12 - 15y	3.00	3.46	5.93	10.67	8.57	4.87	7.33	8.58	9.58	6.15	4.50	3.00	75.64
	SD	1.36	2.03	3.94	4.01	1.99	2.39	3.02	3.09	3.03	2.23	2.71	1.63	
	%CV	45.33	58.67	66.44	37.58	23.22	49.08	41.20	36.01	31.63	36.26	60.22	54.33	
Swakopmund	n = 6 - 9y	1.88	1.90	4.30	6.00	8.78	8.11	8.33	8.25	7.00	4.42	4.00	1.71	64.68
	SD	1.90	0.99	3.09	3.46	2.86	4.59	4.03	5.01	3.79	2.99	3.92	1.70	
	%CV	101.06	52.11	71.86	57.67	32.57	56.60	48.38	60.73	54.14	67.65	98.00	99.41	
Swartbank	n = 8 - 12y	6.50	6.00	8.08	5.75	4.80	4.36	5.75	7.91	11.50	9.33	8.91	6.82	86.71
	SD	1.90	2.62	4.68	4.33	1.93	3.29	3.14	4.28	3.34	3.26	4.09	2.44	
	%CV	29.23	43.67	57.92	64.15	40.21	75.46	54.61	54.11	29.04	34.94	45.90	35.78	
Vogelfederberg	n = 2 - 4y	6.67	8.00	5.61	1.67	4.33	1.67	3.00	6.67	10.00	9.75	9.50	10.50	77.37
	SD	2.08	1.00	3.79	0.58	3.21	2.08	1.41	4.04	4.24	4.11	0.71	0.71	
	%CV	31.18	12.50	66.84	34.73	74.13	124.55	47.00	60.57	42.40	42.15	7.47	6.76	
Zebra Pan	n = 2 - 3y	1.00	0.50	2.00	0.00	1.00	0.33	2.00	1.00	4.00	1.50	1.67	1.00	16.00
	SD	0	0.71	2.83	-	1.73	0.58	0	0	0	0.71	1.53	0	
	%CV	-	142.00	141.50	-	173.00	175.76	-	-	-	47.33	91.62	-	

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TABLE 7: Mean daily temperatures (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	20.3	22.4	24.2	25.2	20.1	20.1	18.3	16.7	17.2	19.2	18.3	20.9
n = 2 - 3y	1.4	0.7	1.7	0.5	1.5	1.6	1.8	0.8	1.2	2.0	0.9	1.9
Ganab	24.0	23.2	25.6	23.9	20.6	18.8	17.8	18.3	19.7	20.7	22.0	23.5
n = 5y	1.7	1.4	0.8	1.9	0.7	1.1	0.7	1.6	1.1	1.3	3.1	1.2
Gobabeb	22.8	23.3	24.8	24.3	21.6	19.9	18.6	17.6	18.0	19.2	21.5	21.9
n = 5y	1.2	1.2	1.6	2.0	1.1	1.6	1.4	2.0	0.7	1.4	2.7	0.8
Narabeb	21.6	22.6	24.5	24.0	21.6	20.0	18.8	17.1	17.0	18.5	20.2	21.3
n = 5y	1.7	1.3	2.2	2.0	2.0	2.3	1.9	2.7	0.7	1.3	2.1	1.1
Pelican Point	17.3	17.7	17.2	15.8	16.0	15.6	14.5	13.5	13.2	12.9	15.2	16.8
n = 5y	0.5	1.0	0.8	0.7	1.0	2.2	1.1	0.8	0.6	0.4	0.6	0.4
Rooibank	19.6	20.0	20.6	19.7	18.7	18.5	17.0	14.2	14.2	15.7	16.8	18.5
n = 4 - 5y	1.3	1.6	2.0	1.2	2.4	3.9	1.5	1.4	1.2	1.2	1.9	1.0
Swartbank	20.6	22.0	23.0	22.1	19.3	18.3	16.9	15.8	16.9	17.7	18.7	20.5
n = 4 - 5y	1.9	2.2	1.8	1.3	1.0	1.9	1.3	1.0	1.3	1.1	1.4	0.7
Vogelfederberg	21.4	22.0	22.5	23.6	20.2	18.4	18.8	15.8	16.2	17.4	19.2	20.0
n = 2 - 3y	1.1	1.2	2.5	0.9	1.1	1.3	2.1	2.3	1.0	1.5	2.1	1.2
Zebra Pan	23.6	24.0	25.9	25.2	20.3	18.6	18.3	18.1	20.0	23.2	22.0	24.7
n = 2 - 3y	0.3	2.8	2.8	0.7	1.4	1.0	0.4	1.5	0.4	1.4	3.9	1.0

TABLE 8: Mean daily maximum temperatures (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	28.3	29.6	32.6	33.6	27.7	26.9	26.5	23.9	26.2	28.0	26.2	28.8
n = 2 - 3y	1.1	0.5	1.8	0.1	1.6	1.7	1.8	0.2	1.2	3.0	0.1	1.2
Ganab	31.3	29.1	32.4	30.6	27.4	25.3	24.6	25.2	27.4	28.0	29.2	31.1
n = 5y	1.7	1.4	1.3	2.2	0.5	1.0	0.8	1.5	1.0	1.0	3.8	1.0
Gobabeb	30.9	30.4	33.0	32.6	29.6	27.5	26.6	26.1	27.0	28.6	31.2	30.1
n = 5y	1.5	1.6	1.4	2.3	1.2	1.5	1.3	2.2	0.8	1.2	3.9	1.2
Narabeb	28.2	28.9	31.6	31.5	28.8	26.7	26.2	24.8	25.2	26.8	28.0	28.6
n = 5y	2.2	1.5	2.1	2.3	2.2	1.9	2.0	2.9	0.8	1.1	2.2	1.0
Pelican Point	19.6	20.0	19.5	18.5	19.5	19.4	18.3	16.6	15.7	16.2	17.4	19.0
n = 5y	0.6	1.1	0.7	0.7	1.2	3.1	1.2	0.8	0.6	0.2	0.7	0.5
Rooibank	24.8	24.9	26.6	27.2	26.8	25.6	24.5	21.0	20.6	21.8	22.0	23.8
n = 4 - 5y	1.9	1.9	1.9	1.4	2.1	3.8	1.5	1.8	1.6	1.4	1.9	1.4
Swartbank	27.9	28.0	31.0	31.0	27.6	27.0	25.8	24.4	25.3	26.5	26.8	28.3
n = 4 - 5y	2.3	1.7	1.6	1.1	0.9	1.9	1.5	1.0	1.8	1.0	1.6	0.9
Vogelfederberg	29.5	29.3	31.0	32.0	28.4	26.1	26.5	23.8	25.1	26.9	27.7	27.8
n = 2 - 3y	1.4	1.2	1.7	0.7	1.1	0.7	2.4	2.6	1.1	1.4	2.5	1.1
Zebra Pan	31.6	30.9	33.3	32.3	27.6	25.7	25.5	25.2	28.5	32.0	30.2	33.3
n = 2 - 3y	0.1	3.3	2.5	0.5	2.1	0.6	0.4	1.9	0.6	1.7	4.5	0.6

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TABLE 9: Mean daily minimum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	12.2	15.2	15.7	16.8	12.5	13.2	10.1	9.5	8.2	10.4	10.3	13.0
n = 2 - 3y	1.7	0.9	2.1	0.9	1.7	1.6	1.9	1.4	1.2	1.1	1.6	2.5
Ganab	16.7	17.3	18.8	17.1	13.9	12.4	11.0	11.3	12.0	13.4	14.9	15.8
n = 5y	1.7	1.4	0.7	1.6	0.9	1.2	0.9	1.7	1.2	1.7	2.7	1.3
Gobabeb	14.6	16.1	16.5	15.9	13.6	12.3	10.6	9.2	9.1	9.9	11.8	13.7
n = 5y	0.9	0.9	1.8	1.6	1.1	1.7	1.4	1.8	0.6	1.5	1.4	0.4
Narabeb	14.9	16.4	17.5	16.5	14.4	13.4	11.4	9.3	8.8	10.2	12.5	14.0
n = 5y	1.1	1.0	2.2	1.7	1.7	2.7	1.7	2.5	0.5	1.5	2.0	1.2
Pelican Point	15.0	15.5	14.9	13.2	12.5	11.9	10.7	10.8	10.6	11.5	13.0	14.6
n = 5y	0.6	0.9	0.8	0.6	0.8	1.3	0.9	0.8	0.5	0.5	0.5	0.3
Rooibank	14.4	15.1	14.7	12.2	10.7	11.4	9.5	7.4	8.0	8.8	11.7	13.2
n = 4 - 5y	0.6	1.2	2.0	0.9	2.7	4.5	1.5	1.0	0.7	1.1	1.9	0.6
Swartbank	13.3	15.9	15.0	13.3	11.0	9.6	8.0	7.3	8.4	8.9	10.6	12.8
n = 4 - 5y	1.4	2.7	1.9	1.4	1.0	1.9	1.2	0.9	0.8	1.1	1.2	0.5
Vogelfederberg	13.3	14.6	14.0	15.1	12.1	0.7	11.1	7.9	7.3	7.9	10.6	12.2
n = 2 - 3y	0.7	1.2	3.3	1.1	1.0	1.8	1.8	2.0	0.9	1.6	2.3	1.2
Zebra Pan	15.7	17.0	18.5	18.0	12.9	11.5	11.1	11.1	11.5	14.3	13.8	16.1
n = 2 - 3y	0.5	2.3	3.2	0.8	0.8	1.3	0.5	1.0	0.2	1.1	3.3	1.3

TABLE 10: Mean monthly maximum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	36.0	35.6	40.6	39.8	34.8	32.1	33.1	32.9	36.0	37.5	34.3	36.4
n = 2 - 3y	2.9	0.7	2.1	1.6	0.9	0.4	1.6	1.2	2.5	4.9	1.8	0.0
Ganab	37.4	35.2	35.3	34.3	31.8	29.2	28.8	30.9	34.5	36.1	36.0	37.2
n = 5y	1.5	0.7	0.9	2.2	2.0	1.0	0.2	0.6	2.5	2.4	3.1	1.8
Gobabeb	37.2	35.7	40.0	38.4	35.2	33.3	33.2	34.0	35.4	37.4	36.9	37.4
n = 5y	3.5	2.0	1.3	1.6	0.7	0.9	0.5	1.9	2.3	4.2	2.5	2.8
Narabeb	35.4	35.2	39.8	38.9	35.5	33.7	33.3	33.8	35.1	37.1	35.6	35.7
n = 5y	3.4	2.2	2.3	1.7	1.1	1.6	1.2	2.4	1.7	4.1	1.8	2.2
Pelican Point	23.3	23.5	23.5	27.0	32.1	30.0	29.6	25.8	23.7	20.9	21.6	22.0
n = 5y	1.9	1.9	1.9	2.0	3.1	2.1	1.4	5.0	6.3	3.1	3.2	0.9
Rooibank	32.1	30.7	36.5	38.0	37.7	34.0	34.3	32.8	29.2	30.5	30.0	28.8
n = 4 - 5y	2.7	3.2	4.5	2.1	1.3	2.2	0.8	3.8	5.2	5.2	2.8	2.6
Swartbank	34.9	34.7	38.6	39.5	35.8	33.6	33.4	33.7	35.0	35.3	34.6	34.6
n = 4 - 5y	2.1	3.0	3.8	1.4	0.7	0.6	0.7	2.3	4.8	4.9	2.4	2.7
Vogelfederberg	37.3	35.7	39.0	38.4	34.8	32.0	31.7	33.5	33.2	34.6	33.9	34.7
n = 2 - 3y	2.7	2.9	1.7	1.6	0.8	1.1	0.1	4.0	3.7	6.2	3.1	0.6
Zebra Pan	37.7	35.6	37.7	35.9	33.3	29.9	30.1	32.3	35.6	38.7	38.1	39.0
n = 2 - 3y	2.5	4.6	1.3	1.0	0.4	0.2	0.8	2.1	1.1	0.1	2.1	0.8

TABLE 11: Mean monthly minimum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	9.4	10.3	9.8	8.2	2.8	4.5	0.8	1.9	2.7	4.8	6.8	10.2
n = 2 - 3y	2.3	1.4	3.1	2.2	1.9	4.2	1.8	1.5	1.1	1.8	1.1	1.8
Ganab	10.7	12.2	13.2	11.3	5.6	6.1	3.4	3.5	5.2	6.4	8.4	9.0
n = 5y	2.2	1.4	2.6	2.9	3.4	2.9	1.7	2.3	1.1	1.9	1.9	0.9
Gobabeb	10.9	12.1	10.8	8.5	6.1	5.3	3.9	3.2	3.7	4.5	7.9	10.6
n = 5y	1.1	1.8	2.4	1.6	1.4	2.9	1.3	1.1	0.8	2.3	0.7	0.5
Narabeb	11.6	12.4	11.0	8.5	4.1	4.9	2.8	2.7	3.2	5.1	8.2	11.0
n = 5y	0.7	1.1	2.6	2.3	1.6	3.8	0.9	1.7	1.1	1.0	0.7	0.6
Pelican Point	13.0	12.9	12.2	10.6	8.3	8.0	7.3	7.0	8.0	8.6	10.9	11.6
n = 5y	0.6	0.5	1.1	0.7	0.7	0.9	1.0	1.5	0.8	1.5	0.9	1.0
Rooibank	10.7	11.4	10.5	7.0	4.2	4.7	3.0	3.7	3.6	4.6	9.1	9.6
n = 4 - 5y	1.0	1.2	2.7	1.8	1.0	2.0	2.1	1.2	1.3	1.5	3.2	0.8
Swartbank	10.0	12.2	10.7	6.0	2.6	1.9	1.2	2.1	3.3	4.9	6.9	9.3
n = 4 - 5y	1.4	3.1	3.1	3.3	2.3	2.4	0.9	1.3	1.1	1.1	0.7	1.0
Vogelfederberg	9.3	9.3	8.0	7.0	3.1	3.5	2.4	1.1	2.5	3.4	6.6	9.1
n = 2 - 3y	1.2	1.3	5.2	2.0	2.1	4.4	0.3	1.1	1.9	1.8	2.9	1.3
Zebra Pan	11.4	11.7	11.9	12.4	5.8	5.6	3.8	4.1	6.6	7.6	8.4	9.9
	0.2	0.4	4.0	4.0	2.6	2.5	1.4	1.2	1.0	1.6	2.3	1.1

TABLE 12: Absolute highest maximum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	38.0	36.0	42.5	41.6	35.8	32.5	34.2	33.7	37.8	40.9	35.6	36.4
Ganab	38.6	36.0	36.1	37.5	34.9	30.6	29.0	31.4	36.9	39.3	38.7	39.4
Gobabeb	41.8	37.8	41.7	40.8	36.2	34.6	34.0	36.9	39.0	42.8	39.6	41.4
Narabeb	39.9	37.3	42.8	40.7	36.5	36.5	35.4	37.1	37.7	42.4	36.9	38.9
Pelican Point	26.0	26.4	26.7	29.5	36.0	31.6	30.6	31.0	31.3	26.0	26.6	22.8
Rooibank	35.5	34.8	41.7	40.1	39.4	37.0	35.5	35.5	36.2	36.1	34.0	31.9
Swartbank	38.4	38.1	41.7	41.4	36.9	34.5	34.6	37.4	40.0	41.9	37.5	38.1
Vogelfederberg	39.0	38.3	40.2	40.2	35.7	33.2	31.8	36.3	35.8	38.9	36.1	35.1
Zebra Pan	39.4	38.8	38.6	36.8	33.7	30.0	30.6	33.7	36.3	38.8	39.5	39.6

TABLE 13: Absolute lowest minimum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	7.7	9.0	6.9	5.7	0.6	-0.2	0.0	0.8	1.9	3.5	6.0	8.9
Ganab	8.1	10.5	9.0	7.5	0.9	2.9	1.3	1.1	3.7	3.7	6.0	7.7
Gobabeb	9.0	9.1	8.7	6.3	4.2	2.0	2.4	1.9	2.9	1.0	7.0	10.0
Narabeb	10.3	10.7	8.2	5.8	1.3	1.5	1.6	0.7	2.0	4.2	7.2	10.3
Pelican Point	12.2	12.5	10.8	9.6	7.2	7.0	6.0	5.5	7.2	6.0	9.8	10.4
Rooibank	9.9	9.4	9.4	4.1	2.6	2.3	-0.2	2.1	1.8	2.5	5.3	8.2
Swartbank	8.4	8.8	9.0	2.3	-0.7	-1.7	0.2	0.5	2.1	3.3	6.2	8.2
Vogelfederberg	8.6	7.8	3.1	4.7	1.2	-1.2	2.2	0.3	0.3	1.4	5.0	8.8
Zebra Pan	11.2	11.4	9.0	8.1	3.7	4.0	2.8	3.2	5.9	6.4	6.8	9.1

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TABLE 14: Absolute lowest maximum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	19.4	21.2	23.1	24.4	14.6	13.4	15.0	14.4	18.4	20.7	18.3	22.7
Ganab	22.4	15.9	23.2	21.0	16.4	8.3	13.1	11.9	16.5	18.5	17.6	21.0
Gobabeb	23.7	22.4	19.6	21.6	16.4	15.9	13.7	15.4	18.5	20.9	22.4	21.4
Narabeb	20.9	18.5	19.2	21.6	15.3	14.0	13.3	13.5	17.2	19.4	21.7	20.4
Pelican Point	16.8	16.5	15.7	14.0	12.0	11.8	11.5	12.4	12.7	13.5	14.3	15.1
Rooibank	18.3	17.9	19.3	16.9	14.3	12.5	10.4	12.8	13.0	15.5	14.5	18.1
Swartbank	20.0	20.6	22.5	19.3	15.5	13.5	11.4	14.6	16.4	20.2	19.0	22.1
Vogelfederberg	24.2	24.0	22.0	22.3	14.0	12.6	14.7	12.2	18.1	19.6	20.2	21.9
Zebra Pan	25.8	23.4	23.9	25.0	16.4	16.3	15.2	15.5	17.8	21.9	22.0	25.9

TABLE 15: Absolute highest minimum temperatures.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	18.7	24.0	30.0	27.0	24.2	21.3	21.4	23.5	22.8	18.7	15.9	20.1
Ganab	26.1	23.4	24.8	24.3	20.6	18.9	16.3	22.7	20.0	24.2	24.0	26.2
Gobabeb	19.5	24.9	28.4	31.6	21.9	20.5	19.1	20.9	22.0	25.2	21.4	20.7
Narabeb	21.6	25.2	30.4	27.9	24.5	24.0	20.9	23.6	20.6	23.3	21.2	25.5
Pelican Point	18.5	18.5	18.4	16.5	20.4	19.8	18.1	17.5	12.4	14.4	16.7	18.0
Rooibank	18.7	19.0	27.2	24.5	24.5	22.2	21.3	19.3	19.9	13.9	16.3	17.5
Swartbank	18.2	25.0	28.6	25.3	22.7	19.1	17.5	17.1	18.0	18.5	17.2	17.5
Vogelfederberg	21.3	22.6	25.6	24.0	21.7	17.5	17.3	20.5	16.6	11.2	21.4	17.9
Zebra Pan	24.0	25.6	24.9	23.7	19.7	19.7	15.1	18.8	20.3	20.0	22.3	24.1

TABLE 16: Mean days with maximum temperature greater than 35°C.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	0.5	1.7	11.7	12.7	1.0	0	0	0	1.0	1.5	1.0	2.0
Ganab	4.4	1.6	4.6	1.8	0	0	0	0	0.8	1.6	3.4	3.2
Gobabeb	3.2	3.6	10.4	9.6	2.0	0	0	0.6	1.0	2.0	4.0	2.0
Narabeb	0.5	1.4	8.6	7.4	2.8	0.2	0.2	0.2	1.0	1.0	2.0	0.8
Pelican Point	0	0	0	0	0.2	0	0	0	0	0	0	0
Rooibank	0.2	0	2.4	3.6	3.6	1.3	0.2	0.2	0.7	0.3	0	0
Swartbank	1.0	1.2	6.3	6.0	2.6	0	0	0	1.8	0.8	0.4	0.8
Vogelfederberg	2.3	2.0	7.7	9.7	1.3	0	0	0	0.5	0	1.3	0.7
Zebra Pan	4.5	5.0	14.5	4.0	0	0	0	0	0	5.0	4.5	9.5

TABLE 23: Mean annual, mean annual maximum, mean annual minimum and mean annual temperature amplitude.

	Mean Annual	SD	% CV	Mean Annual Max.	SD	% CV	Mean Annual Min.	SD	% CV	Mean Annual Ampl.	SD	% CV
Flodden Moor	20.2	2.6	9.6	28.2	2.7	22.0	12.3	2.7	12.9	15.9	1.3	8.2
Ganab	21.5	2.5	9.1	28.5	2.6	17.8	14.6	2.6	11.6	13.9	1.0	7.2
Gobabeb	21.1	2.4	7.8	29.5	2.3	21.1	12.8	2.7	11.4	16.7	1.4	8.4
Narabeb	20.6	2.5	7.9	27.9	2.2	21.8	13.3	2.9	12.1	14.7	1.2	8.2
Pelican Point	15.5	1.7	8.2	18.3	1.5	14.0	12.9	1.8	11.0	5.5	1.2	21.8
Rooibank	17.8	2.2	9.5	24.1	2.3	22.8	11.4	2.6	12.4	12.7	2.1	16.5
Swartbank	19.3	2.3	7.3	27.5	2.0	25.9	11.2	2.9	11.9	16.3	1.6	9.8
Vogelfederberg	19.6	2.5	8.6	27.8	2.4	23.7	11.4	2.7	12.8	16.4	1.2	7.3
Zebra Pan	22.0	2.8	10.4	29.7	3.1	18.9	14.3	2.7	12.7	15.4	1.4	9.1

TABLE 24: Mean daily humidity (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	64	63	53	43	52	44	37	56	59	60	61	63
n = 2 - 3y	0.0	4.5	0.7	3.0	10.5	12.0	1.4	7.7	6.3	0.0	4.2	1.4
Ganab	42	54	47	34	30	29	25	35	34	29	36	43
n = 2 - 5y	6.4	3.5	4.6	8.5	9.3	4.8	2.1	5.6	4.2	8.9	14.6	2.0
Gobabeb	58	60	53	44	37	34	36	48	53	56	56	60
n = 5y	0.5	5.8	6.8	5.3	8.7	10.2	4.3	10.0	6.4	4.1	3.5	1.9
Narabeb	57	65	53	51	40	43	39	52	54	55	52	58
n = 3 - 5y	7.8	6.3	10.8	6.5	7.7	13.9	8.8	12.8	7.1	8.1	5.5	4.2
Pelican Point	90	90	89	91	84	80	80	86	89	88	89	89
n = 5y	1.6	2.4	2.3	2.7	4.3	6.8	4.7	3.4	1.8	1.3	1.4	2.3
Rooibank	71	73	67	63	52	49	48	60	65	63	67	70
n = 2 - 5y	2.1	5.6	4.1	6.6	3.8	14.6	7.4	3.0	2.8	4.1	4.5	1.5
Swartbank	61	62	60	54	48	45	41	56	61	60	62	64
n = 4 - 5y	2.6	2.9	5.4	6.6	4.7	4.5	9.9	7.6	5.3	2.8	3.0	1.7
Vogelfederberg	58	54	52	35	35	39	35	50	56	55	57	58
n = 2y	0.7	2.8	7.0	4.9	7.0	2.1	2.8	10.0	0.7	3.5	1.4	0.7
Zebra Pan	51	50	51	40	40	38	34	45	43	41	47	50
n = 2 - 3y	4.2	6.3	6.4	7.0	6.4	6.0	5.6	4.2	0.0	7.0	4.9	2.1

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TABLE 25: Mean daily maximum humidity (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	96	91	77	61	78	59	51	80	88	94	94	95
n = 2 - 3y	0.7	6.1	7.8	4.0	19.5	15.7	7.1	12.0	7.8	2.1	4.2	0.7
Ganab	59	76	66	47	42	41	35	51	51	45	55	64
n = 2 - 5y	10.4	9.2	10.4	13.0	12.3	5.7	3.5	7.8	7.1	12.1	21.1	3.6
Gobabeb	88	88	78	66	55	48	54	72	82	88	86	91
n = 5y	3.0	6.6	10.7	10.8	13.3	11.6	6.6	11.4	6.7	5.8	3.5	2.9
Narabeb	84	91	75	69	56	56	56	74	81	83	80	87
n = 3 - 5y	10.0	5.9	13.1	4.9	9.6	17.3	10.5	13.7	6.6	10.0	9.6	6.8
Pelican Point	95	96	96	97	89	85	85	93	95	94	93	94
n = 5y	1.5	1.8	1.1	2.3	4.0	8.5	4.6	2.7	1.1	1.0	2.6	1.3
Rooibank	96	97	94	90	77	70	70	83	89	89	89	94
n = 2 - 5y	3.5	0.7	2.8	3.7	2.0	18.2	8.3	6.8	8.6	8.3	8.6	0.0
Swartbank	94	93	90	84	70	66	60	83	94	94	96	96
n = 4 - 5y	1.7	1.3	3.9	5.2	5.8	3.1	13.6	12.6	3.7	4.9	1.0	1.4
Vogelfederberg	95	87	80	55	55	54	54	81	90	92	94	94
n = 2y	0.7	4.2	14.1	9.9	12.0	4.2	25.4	19.1	2.8	4.9	3.5	0.7
Zebra Pan	75	70	69	53	54	51	45	65	64	60	69	72
n = 2 - 3y	7.1	12.0	10.6	8.5	10.4	8.0	8.5	8.5	1.4	9.9	12.0	4.2

TABLE 26: Mean daily minimum humidity (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	32	35	28	24	26	28	21	31	29	26	28	31
n = 2 - 3y	0.7	4.2	8.5	3.5	2.6	8.6	2.8	3.5	5.7	2.1	4.2	1.4
Ganab	25	34	28	20	17	16	14	19	16	12	18	22
n = 2 - 5y	3.0	5.1	3.4	4.1	6.7	3.8	0.0	4.2	2.6	7.1	8.2	1.0
Gobabeb	28	32	27	23	18	20	19	23	23	24	25	28
n = 5y	3.5	6.7	4.2	3.6	6.0	9.1	4.3	9.3	6.7	4.1	5.3	4.0
Narabeb	29	38	31	33	24	30	22	30	27	27	24	28
n = 3 - 5y	7.5	7.0	10.5	11.6	7.6	12.1	9.4	11.7	7.8	6.1	4.5	1.0
Pelican Point	86	84	83	85	79	74	75	80	82	82	82	84
n = 5y	2.6	3.5	3.9	4.0	4.4	7.4	4.6	4.3	3.0	2.0	1.5	4.2
Rooibank	45	49	39	35	24	27	25	36	40	37	44	45
n = 2 - 5y	0.7	11.3	5.6	10.9	5.7	11.9	7.9	4.6	4.9	5.8	6.0	2.5
Swartbank	28	30	29	24	26	25	20	27	29	25	29	31
n = 4 - 5y	5.9	5.9	8.0	8.5	4.7	6.5	6.5	4.1	7.4	2.9	6.2	2.1
Vogelfederberg	20	21	24	14	16	15	14	20	21	17	20	22
n = 2y	1.4	1.4	0.7	0.0	2.1	1.4	1.4	4.2	2.1	2.8	1.4	0.7
Zebra Pan	27	29	32	27	24	24	23	24	22	22	25	26
n = 2 - 3y	1.4	0.0	2.1	4.9	2.3	4.2	2.8	0.0	1.4	4.2	2.1	0.0

TABLE 27: Mean monthly maximum humidity (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	100	100	95	97	100	100	95	100	100	100	100	100
n = 2 - 3y	0.0	0.6	7.1	5.8	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0
Ganab	100	99	98	92	85	100	93	99	92	96	100	94
n = 2 - 5y	0.0	1.4	5.0	11.9	19.0	0.5	10.6	1.4	6.0	9.0	0.0	8.1
Gobabeb	100	100	100	100	99	92	98	100	100	100	100	100
n = 5y	0.0	0.0	0.0	0.0	2.2	18.8	4.5	0.0	0.0	0.0	0.0	0.0
Narabeb	100	100	100	100	99	91	100	100	100	100	94	100
n = 3 - 5y	0.0	0.0	0.0	0.0	2.2	21.0	0.0	0.0	0.0	0.0	11.0	0.0
Pelican Point	100	100	100	100	100	100	100	100	100	100	100	100
n = 5y	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rooibank	100	100	99	99	100	95	100	94	96	92	93	98
n = 2 - 5y	0.0	0.0	1.5	2.5	0.0	9.5	0.0	9.2	5.1	7.2	9.0	2.9
Swartbank	99	99	98	100	100	100	99	100	100	100	99	100
n = 4 - 5y	2.4	1.5	3.5	0.0	0.0	0.0	1.8	0.0	0.0	0.0	2.0	0.0
Vogelfederberg	100	100	100	100	100	100	100	100	100	100	100	100
n = 2y	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zebra Pan	100	97	100	100	97	99	100	100	100	100	100	100
n = 2 - 3y	0.0	4.9	0.0	0.0	5.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 28: Mean monthly minimum humidity (SD: lower line in small print).

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	20	25	14	14	12	13	8	14	12	13	14	17
n = 2 - 3y	0.7	7.5	7.8	7.5	4.9	1.0	6.4	4.2	0.7	2.8	1.4	2.1
Ganab	8	17	17	10	7	3	4	10	5	5	9	12
n = 2 - 5y	5.3	7.8	7.4	4.0	4.3	3.4	2.1	2.1	2.8	5.7	8.5	1.0
Gobabeb	12	16	11	10	6	5	7	5	4	8	11	16
n = 5y	5.9	7.8	5.4	3.7	5.2	4.8	4.6	5.4	2.9	7.3	6.2	5.9
Narabeb	9	24	10	13	7	10	9	11	7	7	9	13
n = 3 - 5y	11.0	9.6	7.5	6.1	4.4	4.5	6.4	10.4	1.4	3.5	7.0	7.6
Pelican Point	74	73	71	67	39	29	36	47	57	68	71	71
n = 5y	4.4	4.3	6.1	7.9	10.7	5.3	9.4	20.3	14.6	3.1	1.8	4.0
Rooibank	14	26	19	16	7	6	8	15	15	20	27	24
n = 2 - 5y	0.7	17.7	9.3	7.4	2.5	5.6	5.5	12.2	8.8	12.8	13.8	11.0
Swartbank	11	12	17	11	10	8	8	10	10	15	16	14
n = 4 - 5y	3.1	3.2	8.7	9.7	2.1	6.2	3.8	4.9	7.1	4.7	10.2	4.3
Vogelfederberg	9	11	10	7	6	2	11	11	5	8	10	10
n = 2y	0.7	0.0	1.4	0.0	1.4	0.7	1.4	10.6	0.0	1.4	3.5	3.5
Zebra Pan	18	17	19	16	15	12	12	11	12	11	15	16
n = 2 - 3y	2.8	6.4	2.8	9.2	1.0	3.6	3.5	2.1	3.5	2.8	1.4	2.8

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TABLE 29: Absolute highest maximum humidity.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	100	100	100	100	100	100	100	100	100	100	100	100
Ganab	100	100	100	100	100	100	100	100	100	100	100	100
Gobabeb	100	100	100	100	100	100	100	100	100	100	100	100
Narabeb	100	100	100	100	100	100	100	100	100	100	100	100
Pelican Point	100	100	100	100	100	100	100	100	100	100	100	100
Rooibank	100	100	100	100	100	100	100	100	100	100	100	100
Swartbank	100	100	100	100	100	100	100	100	100	100	100	100
Vogelfederberg	100	100	100	100	100	100	100	100	100	100	100	100
Zebra Pan	100	100	100	100	100	100	100	100	100	100	100	100

TABLE 30: Absolute lowest minimum humidity.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	19	17	8	5	6	12	3	11	11	11	13	15
Ganab	2	11	8	6	3	1	2	8	1	1	1	11
Gobabeb	4	5	4	6	1	1	2	1	1	1	1	9
Narabeb	2	15	6	6	2	3	3	6	6	4	2	10
Pelican Point	72	71	68	58	30	23	24	21	38	63	69	67
Rooibank	13	13	7	9	4	3	3	3	3	9	13	15
Swartbank	8	9	8	3	7	1	5	4	3	8	8	8
Vogelfederberg	8	11	9	7	5	1	3	3	5	7	7	7
Zebra Pan	16	12	17	9	14	8	9	9	9	9	14	14

TABLE 31: Absolute lowest maximum humidity.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	80	43	20	9	15	19	20	16	25	40	53	64
Ganab	17	38	28	13	13	7	8	19	12	10	14	17
Gobabeb	58	32	30	22	8	9	14	8	8	19	24	35
Narabeb	45	59	23	15	9	9	10	11	18	23	16	54
Pelican Point	83	83	85	77	25	23	29	27	38	77	77	81
Rooibank	74	90	67	28	15	9	14	10	70	57	62	88
Swartbank	75	70	19	23	18	7	19	21	25	64	77	90
Vogelfederberg	71	33	23	16	16	6	10	12	13	37	45	58
Zebra Pan	33	20	33	32	25	14	21	19	23	23	22	22

TABLE 32: Absolute highest minimum humidity.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	45	66	57	40	73	78	73	65	62	49	42	44
Ganab	51	48	47	44	54	74	32	47	47	38	33	43
Gobabeb	58	74	55	62	70	78	82	67	62	50	42	64
Narabeb	62	65	71	70	79	77	73	81	47	61	44	60
Pelican Point	96	100	100	100	100	100	100	100	100	100	100	96
Rooibank	64	72	63	66	70	81	79	76	76	58	63	65
Swartbank	68	60	63	55	56	79	78	80	63	47	49	56
Vogelfederberg	31	34	52	24	36	48	47	55	40	36	31	33
Zebra Pan	39	46	52	38	68	77	47	73	42	46	40	39

TABLE 33: Mean days with maximum humidity greater than 90%.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	27.5	12.7	9.5	9.3	10.7	6.3	5.0	22.0	15.0	22.0	26.0	25.5
Ganab	5.0	7.5	3.0	2.0	1.4	3.8	1.0	3.0	2.3	0.8	2.0	3.7
Gobabeb	18.6	14.6	14.0	9.4	5.2	7.0	6.0	14.4	15.3	17.6	15.8	22.4
Narabeb	11.3	14.5	9.0	6.2	5.6	6.6	7.0	11.3	14.3	13.3	10.7	13.7
Pelican Point	27.4	25.2	27.8	28.4	22.6	17.8	20.4	22.8	25.2	25.2	21.8	24.4
Rooibank	30.5	28.5	19.5	18.5	15.7	11.2	14.8	9.5	13.0	10.3	14.8	16.8
Swartbank	26.8	26.3	17.8	14.3	11.3	13.3	10.0	18.3	22.3	20.0	22.8	30.0
Vogelfederberg	25.5	20.5	18.0	6.0	8.0	10.0	8.5	9.0	15.5	23.5	19.0	25.0
Zebra Pan	9.0	6.5	7.0	2.5	6.0	4.3	2.0	10.5	3.5	4.5	7.0	7.5

TABLE 34: Mean days with minimum humidity less than 10%.

	J	F	M	A	M	J	J	A	S	O	N	D
Flodden Moor	0	0	0.5	2.0	1.0	0	0.5	0	0	0	0	0
Ganab	1.5	0	0.3	2.4	5.6	9.0	7.0	1.0	5.2	7.4	4.5	0
Gobabeb	0.6	0.6	1.8	1.8	7.8	10.0	9.0	6.8	8.0	2.0	1.6	0.2
Narabeb	1.3	0	0.8	1.0	6.2	2.0	6.6	3.5	4.7	2.0	0.8	0.3
Pelican Point	0	0	0	0	0	0	0	0	0	0	0	0
Rooibank	0	0	0.5	0.3	4.0	4.0	4.8	0.5	0.7	0	0	0
Swartbank	0.8	0.5	1.0	2.8	1.8	4.0	4.8	0.7	1.7	0.7	0.5	0.5
Vogelfederberg	1.0	0	0.5	8.0	4.0	12.5	14.0	7.0	10.5	5.0	1.5	1.0
Zebra Pan	0	0	0	0.5	0	0.3	0.5	0	5.0	8.5	0	0

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TABLE 35: Mean annual maximum, mean annual minimum and mean annual humidity amplitude.

	Mean Annual	SD	% CV	Mean Annual Max.	SD	% CV	Mean Annual Min.	SD	% CV	Mean Annual Ampl.	SD	% CV
Flodden Moor	55	8.9	16.2	80	15.7	19.6	28	4.0	14.3	50	18.5	37.0
Ganab	37	8.4	22.7	53	11.8	22.3	19	8.2	43.2	33	7.1	21.5
Gobabeb	50	9.6	19.2	75	15.4	20.5	24	4.1	17.1	50	12.2	24.4
Narabeb	52	7.6	14.6	74	12.5	16.9	29	4.4	15.2	46	11.5	25.0
Pelican Point	87	3.2	3.7	93	2.8	3.0	81	3.7	4.6	9	4.7	52.2
Rooibank	62	8.4	13.5	87	9.4	10.8	37	8.2	22.2	50	7.7	15.4
Swartbank	56	7.5	13.4	85	12.7	14.9	27	3.0	11.1	58	10.7	18.4
Vogelfederberg	48	10.6	22.5	77	17.7	23.0	18	3.8	21.1	59	15.0	25.4
Zebra Pan	44	5.7	12.9	62	9.5	15.3	25	2.9	11.6	37	8.4	22.7

TABLE 36: Mean monthly evaporation as measured by Piché tube, at Gobabeb only, in millimetres.

	J	F	M	A	M	J	J	A	S	O	N	D
Mean												
Monthly	385	325	407	434	455	437	415	345	313	370	360	385
SD	39.8	73.5	93.8	81.3	37.4	54.6	90.7	94.4	35.7	42.7	78.2	28.0
CV %	10.3	22.6	23.0	18.7	8.2	12.5	21.9	27.4	11.4	11.5	21.7	7.3

TABLE 37: Mean monthly evaporation from class A pan, at Gobabeb only, in millimetres.

	J	F	M	A	M	J	J	A	S	O	N	D
Mean												
Monthly	316	258	306	270	253	215	226	211	221	272	303	317

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TABLE 39: Solar radiation measured in MJ m⁻².

	J	F	M	A	M	J	J	A	S	O	N	D
Mean												
Daily	23.211	23.226	20.123	17.713	15.347	13.836	13.840	16.257	18.499	21.031	23.066	23.620
Standard												
Deviation	2.420	1.549	4.006	1.182	1.078	0.726	1.669	1.490	2.279	2.343	2.761	1.733
Absolute												
Maximum	25.906	26.113	24.455	19.896	16.455	15.336	15.626	18.901	21.263	23.626	25.284	25.698
Absolute												
Minimum	12.435	19.274	9.119	14.507	11.606	12.435	7.875	12.849	12.145	13.388	12.145	16.580
Coefficient												
Of Variance %	10.426	6.669	19.908	6.673	7.024	5.247	12.059	9.165	12.320	11.141	11.970	7.337

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TABLE 40: Mean monthly summary of air and soil temperatures (°C) at Various Depths (cm).

Month	at 0800 S.A.S.T.						at 1400 S.A.S.T.						at 2000 S.A.S.T.								
	Air temp.	Surface temp.	10	20	30	60	120 cm	Air temp.	Surface temp.	10	20	30	60	120 cm	Air temp.	Surface temp.	10	20	30	60	120 cm
J	16.1	17.2	26.3	30.9	31.1	30.5	28.7	32.3	61.0	33.0	30.3	31.0	30.5	28.7	24.9	28.4	37.8	33.0	32.0	30.3	28.7
F	16.4	19.1	26.6	31.2	31.4	30.9	29.2	30.2	61.6	33.0	30.5	31.2	30.9	29.2	25.2	29.0	38.2	33.3	32.3	30.8	29.2
M	17.3	18.4	26.6	30.7	31.2	30.9	29.4	30.8	59.7	33.1	30.3	31.0	30.9	29.4	26.5	28.1	37.1	33.1	32.1	30.8	29.4
A	15.6	15.9	23.7	27.6	28.5	29.2	29.0	30.7	56.6	29.7	27.3	28.4	29.2	29.0	24.4	25.3	33.2	29.9	29.3	29.1	29.0
M	14.5	12.2	20.8	24.7	25.5	26.7	27.8	29.0	47.6	25.8	24.3	25.4	26.8	27.8	22.7	21.4	29.0	26.3	26.1	26.7	27.7
J	12.0	10.0	17.8	21.3	22.2	24.1	26.2	25.4	41.5	21.4	20.9	22.2	24.1	26.1	19.3	17.8	25.0	22.6	22.8	24.0	26.1
J	11.0	9.0	17.6	20.7	21.3	22.9	24.9	25.1	42.1	20.8	20.2	21.4	23.0	25.0	19.3	17.8	24.8	21.9	22.0	22.9	24.9
A	11.5	9.2	18.1	21.4	22.1	23.1	24.5	25.3	45.6	22.5	21.1	22.1	23.2	24.5	20.3	19.0	26.3	23.2	22.9	23.2	24.4
S	11.6	12.3	20.6	24.3	24.7	24.9	24.9	27.7	51.7	26.1	24.0	24.6	25.0	24.9	21.3	22.0	30.2	26.5	25.7	24.9	25.0
O	13.0	15.9	21.8	26.0	26.5	26.4	25.8	27.4	55.1	28.9	25.7	26.4	26.4	25.8	21.2	22.4	32.4	28.5	27.4	26.4	25.7
N	14.4	19.9	24.1	28.6	29.0	28.3	26.9	29.2	60.0	32.1	28.3	28.5	28.4	26.9	23.3	25.4	35.9	31.1	30.0	28.4	26.9
D	15.0	19.8	25.2	30.0	30.2	29.6	27.9	28.9	61.4	32.6	29.5	30.1	29.7	27.9	23.7	26.8	27.1	32.0	31.1	29.6	27.9
Mean Annual	14.0	14.9	22.4	26.4	27.0	27.3	27.1	28.5	53.6	28.2	26.0	26.8	27.3	27.1	21.1	23.6	32.2	28.4	27.8	27.2	27.1
Range	6.3	10.9	9.0	10.5	10.1	8.0	4.9	7.2	20.1	12.3	10.3	9.8	7.9	4.9	7.2	11.2	13.4	11.4	10.3	7.9	5.0

FLODDEN MOOR 1979-1981

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	6.11	0.27			0.07		0.07	0.20	1.34	1.21	0.74	1.68	3.02	1.54	2.49	4.43
11 - 15	6.52	0.13							1.21	1.41	1.95	2.96	3.36	2.55	2.55	7.53
16 - 20	3.83	0.07							0.67	2.15	2.55	3.02	1.75	1.41	1.07	5.78
21 - 25	0.67								0.47	2.02	0.94	1.07	0.20	0.07	0.07	2.22
26 - 30	0.13								0.34	1.61	0.27	0.13				0.34
31 - 35									0.40	0.94						0.07
36 - 40									0.07	0.34						
41 and over																
Calms	11.96%															
Total	17.27	0.47			0.07		0.07	0.20	4.50	9.68	6.45	8.87	8.33	5.78	6.18	20.36

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.12	0.15	0.07	0.15	0.07			0.36	1.75	1.24	1.34	1.17	2.85	1.39	1.32	5.85
11 - 15	4.39	0.07	0.07						0.95	1.24	1.39	2.41	2.49	1.97	3.14	8.70
16 - 20	1.53								0.95	2.85	3.14	2.78	1.61	1.46	1.46	3.87
21 - 25	0.73								0.58	3.00	1.24	1.10	0.22	0.07	0.15	1.24
26 - 30									0.29	1.17	0.15	0.07			0.15	0.22
31 - 35									0.57	0.58						
36 - 40																
41 and over																
Calms	19.00%															
Total	11.77	0.22	0.15	0.15	0.07			0.36	5.04	10.09	7.46	7.53	7.16	4.90	6.21	19.88

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.36	0.25	0.50	0.15	0.20	0.15	0.40	1.79	4.46	0.59	1.04	1.14	2.08	1.29	2.13	5.90
11 - 15	2.68	0.05	0.45	0.15	0.10	0.10	0.30	1.04	2.68	0.89	1.44	1.94	1.24	1.88	1.29	3.17
16 - 20	1.54	0.05	0.40	0.05			0.05	0.55	2.98	2.83	1.79	1.79	1.14	0.45	0.35	1.79
21 - 25	0.05	0.15	0.20						2.58	2.58	1.54	0.79	0.25	0.25	0.25	0.50
26 - 30	0.05	0.10							0.69	1.54	0.30	0.20	0.05			
31 - 35									0.40	0.50						
36 - 40										0.15						
41 and over																
Calms	24.31%															
Total	9.67	0.59	1.64	0.20	0.30	0.25	0.75	3.37	13.79	9.18	6.10	5.85	4.76	3.87	4.02	11.36

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.47	0.79	0.83	0.79	1.25	1.02	1.16	1.87	6.48	1.25	1.11	0.83	1.53	0.60	1.57	2.00
11 - 15	1.39	0.69	0.97	0.74	0.37	0.37	0.93	1.06	4.03	1.39	1.34	1.25	1.57	0.69	0.97	0.74
16 - 20	0.60	0.37	0.93	0.56	0.09	0.32	0.32	0.42	2.64	2.87	2.13	1.02	0.83	0.60	0.46	0.37
21 - 25	0.51	0.23	0.32			0.14	0.19		0.93	1.94	0.32	0.76	0.28	0.14	0.28	0.19
26 - 30	0.32	0.28					0.05		0.74	0.56		0.09			0.09	0.09
31 - 35		0.05							0.42	0.32					0.05	
36 - 40									0.05							
41 and over																
Calms	31.16%															
Total	6.30	2.41	3.06	2.08	1.71	1.85	2.64	3.29	15.28	8.33	4.91	3.94	4.21	2.04	3.43	3.38

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.33	0.54	1.39	0.85	0.81	0.58	1.57	1.30	7.66	1.57	1.48	0.76	1.57	0.85	1.21	1.21
11 - 15	1.52	0.76	1.66	1.61	0.95	0.85	1.03	1.57	4.60	1.70	1.43	0.99	0.85	0.45	1.03	0.63
16 - 20	0.67	1.08	1.70	0.99	0.40	0.31	0.36	0.36	2.24	2.11	0.90	0.72	0.31	0.27	0.22	0.18
21 - 25	0.21	0.54	1.79	0.67	0.13	0.04	0.04	0.04	1.48	0.76	0.22	0.18		0.04	0.18	0.22
26 - 30	0.09	0.18	0.45	0.58					0.31	0.31						0.18
31 - 35	0.04		0.04	0.13												0.04
36 - 40																
41 and over																
Calms	31.00%															
Total	4.93	3.09	7.03	4.83	2.20	1.79	3.00	3.27	16.26	6.45	4.03	2.64	2.71	1.61	2.64	2.46

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.83	0.44	1.31	1.32	1.66	0.63	1.36	1.85	5.75	1.36	1.02	0.83	1.66	0.58	1.01	1.56
11 - 15	1.22	0.68	1.66	3.22	1.22	0.58	0.63	0.97	3.12	1.41	1.07	0.88	0.44	0.63	0.63	1.17
16 - 20	1.02	0.68	2.73	3.50	1.46	0.44	0.54	0.63	1.90	0.88	0.44	0.10	0.19	0.29	1.34	0.63
21 - 25	0.34	0.44	1.71	1.56	0.39	0.15		0.34	1.41	0.34				0.15	0.10	0.34
26 - 30	0.30	0.63	0.73	0.78	0.19											
31 - 35	0.24	0.30														
36 - 40	0.10	0.15	0.05													
41 and over		0.10														
Calms	26.85%															
Total	6.04	3.41	8.48	10.38	4.92	1.80	2.53	3.90	12.72	4.04	2.53	1.85	2.29	1.65	2.68	3.90

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.96	0.71	0.70	1.13	1.13	0.71	0.63	0.85	5.72	3.53	1.48	1.55	0.99	0.64	1.26	1.54
11 - 15	1.48	0.49	1.06	2.19	0.85	0.14	0.22	0.28	2.61	2.19	0.92	0.99	1.13	0.64	0.64	2.19
16 - 20	0.78	0.64	1.91	3.88	1.48	0.42	0.07	0.22	0.78	1.13	0.42	0.35	0.14	0.22	0.78	1.34
21 - 25	0.56	0.28	1.34	1.13	0.56	0.07		0.14	0.56	0.71	0.14	0.07			0.14	1.20
26 - 30	0.64	0.14	0.92	0.35						0.28					0.22	0.92
31 - 35	0.07	0.14	0.14													0.22
36 - 40																
41 and over																
Calms	31.91%															
Total	5.51	2.47	6.07	8.68	4.02	1.34	0.92	1.48	9.67	7.84	2.96	2.96	2.26	1.48	3.04	7.41

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.90	0.73	0.54	0.61	0.54	0.34	0.47	1.07	4.50	2.82	1.21	2.08	2.35	0.94	1.01	1.41
11 - 15	2.02	0.40	1.07	1.07	0.40	0.94	0.61	1.41	3.90	2.35	1.14	2.69	1.81	0.81	0.67	0.94
16 - 20	0.94	0.54	0.74	1.34	0.81	0.27	0.13	0.40	2.28	2.69	0.74	0.20	0.34	0.20	0.34	0.74
21 - 25	0.20	0.07	0.40	0.47	0.47	0.13	0.07	0.07	0.94	1.68	0.07	0.13	0.13		0.20	1.74
26 - 30	0.13	0.07		0.07	0.20	0.07		0.07	0.67	0.47		0.07				0.13
31 - 35	0.07								0.34	0.13						
36 - 40										0.07						
41 and over																
Calms	32.19%															
Total	7.26	1.81	2.75	3.56	2.42	1.75	1.28	3.02	12.63	10.21	3.16	5.17	4.64	1.95	2.22	3.96

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.14	0.42	0.21	0.49	0.49	0.07	0.28	0.83	4.09	1.74	1.74	2.08	1.80	1.74	0.62	3.61
11 - 15	2.21	0.07		0.42	0.55		0.06	0.21	2.50	2.64	2.22	2.57	2.15	1.04	0.83	2.34
16 - 20	1.39			0.42		0.07		0.42	1.94	4.65	1.11	0.69	0.07	0.42	0.07	1.87
21 - 25	0.07		0.07					0.07	1.18	2.64	0.35	0.21		0.07	0.07	0.42
26 - 30								0.21	0.28	1.25	0.07					0.07
31 - 35									0.69	0.62						
36 - 40									0.35	0.07						
41 and over									0.90	0.14						
Calms	31.19%															
Total	8.82	0.49	0.28	1.32	1.04	0.14	0.35	1.74	11.94	13.75	5.48	5.55	4.02	3.26	1.60	8.82

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.91	0.29	0.40	0.07	0.27	0.07	0.07	0.94	3.43	1.75	1.21	1.41	1.28	1.61	1.21	5.18
11 - 15	2.62	0.07	0.34	0.13		0.20	0.13	0.40	3.23	1.81	1.55	2.82	1.81	1.21	1.01	2.96
16 - 20	0.54	0.13			0.07	0.27	0.07	0.07	2.69	4.03	1.55	1.01	0.80	0.74	0.61	2.02
21 - 25	0.07				0.07	0.13	0.13	0.13	2.08	2.82	0.67	0.40	0.07	0.07	0.07	0.61
26 - 30					0.07	0.07		0.27	1.34	2.35	0.07					0.07
31 - 35					0.07				0.47	0.94						
36 - 40									0.13	0.13						
41 and over																
Calms	27.28%															
Total	8.13	0.47	0.74	0.20	0.54	0.74	0.40	1.81	13.37	14.31	5.04	5.65	3.96	3.63	2.89	10.82

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	7.22	0.62	0.07	0.14	0.07	0.21	0.35	0.62	3.33	1.18	0.63	1.67	3.33	1.67	1.32	4.30
11 - 15	3.54		0.07					0.49	1.80	1.53	1.46	2.84	3.33	2.50	1.32	4.02
16 - 20	1.53		0.07					0.21	2.01	2.98	1.53	2.50	2.22	1.74	0.63	3.19
21 - 25	0.76								0.83	3.19	0.83	0.49		0.07	0.21	0.69
26 - 30	0.07								1.11	2.01	0.07					0.28
31 - 35									0.69	0.97						
36 - 40									0.21	0.28						
41 and over																
Calms	16.04%															
Total	13.12	0.63	0.21	0.14	0.07	0.21	0.35	1.32	9.99	12.14	4.51	7.50	8.88	8.97	3.42	12.50

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	7.46	0.20				0.13		0.07	1.28	0.81	1.41	1.54	3.29	2.02	2.42	4.77
11 - 15	7.86	0.27							0.74	1.21	1.34	2.49	3.70	1.95	3.02	6.99
16 - 20	2.89								0.47	2.49	2.49	2.28	2.08	0.67	1.88	4.50
21 - 25	0.67								0.60	2.28	1.48	1.01	0.54		0.13	1.61
26 - 30	0.13								0.34	1.68	0.34	0.07		0.07	0.07	0.07
31 - 35									0.27	0.34						
36 - 40									0.20	0.40						
41 and over										0.07						
Calms	16.90%															
Total	19.02	0.47				0.13		0.07	3.90	9.27	7.06	3.39	9.61	4.70	7.53	17.94

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.31	0.03	0.31	0.67	0.59	1.06	3.42	3.64	0.97	0.53	1.44	1.61	2.32	4.42	4.06	1.03
11 - 15	0.42	0.08	0.29	0.44	0.19	0.33	0.30	0.54	0.36	0.17	1.17	2.47	3.31	3.53	1.51	0.72
16 - 20	0.28	0.06	0.22	0.39	0.28	0.11	0.06	0.06	0.08	0.25	1.25	4.25	5.00	2.19	0.72	0.17
21 - 25	0.03	0.03		0.17	0.11	0.03	0.03	0.06		0.11	0.92	3.78	3.72	1.51	0.28	0.19
26 - 30			0.03	0.14	0.08	0.03			0.03	0.03	0.50	1.97	1.50	0.39	0.06	0.03
31 - 35	0.03			0.03	0.06						0.08	0.36	0.36	0.08		
36 - 40											0.19	0.06				
41 and over																
Calms	24.34%															
Total	1.06	0.19	0.83	1.89	1.47	1.56	3.81	4.39	1.44	1.08	5.56	14.50	16.80	12.22	6.72	2.14

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.59	0.29	0.59	0.95	0.86	1.18	3.34	3.72	1.00	0.56	1.45	2.07	3.19	4.70	3.19	0.59
11 - 15	0.24	0.33	0.44	0.95	0.41	0.33	0.59	0.71	0.30	0.44	1.33	3.22	4.02	3.25	1.36	0.30
16 - 20	0.15	0.06	0.03	0.71	0.38	0.12	0.06		0.06	0.26	1.80	4.85	4.05	1.30	0.26	0.09
21 - 25	0.09	0.12	0.09	0.15	0.09	0.05				0.09	1.83	3.69	2.16	0.80	0.06	
26 - 30	0.03	0.03		0.06						0.03	0.68	1.63	1.03	0.38	0.03	
31 - 35	0.03			0.03						0.03	0.21	0.38	0.09	0.09		
36 - 40												0.03				
41 and over																
Calms	24.83%															
Total	1.12	0.83	1.15	2.84	1.74	1.68	3.99	4.43	1.36	1.42	7.30	15.87	14.54	11.02	4.90	0.98

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.89	0.19	1.29	1.95	2.02	3.12	5.94	5.62	2.34	0.51	1.42	1.32	1.45	1.69	1.48	0.89
11 - 15	0.59	0.56	1.07	1.45	0.94	0.40	0.94	1.26	1.45	0.70	1.40	1.75	2.26	1.32	1.15	0.43
16 - 20	0.54	0.59	0.56	1.15	0.81	0.08	0.24	0.21	0.56	0.70	2.28	2.96	1.26	0.86	0.51	0.24
21 - 25	0.27	0.81	0.30	0.64	0.21	0.05	0.05		0.13	0.43	1.53	2.53	1.29	0.46	0.24	0.19
26 - 30	0.08	0.13	0.16	0.40	0.19			0.03	0.05	0.16	0.97	1.05	0.64	0.13	0.03	0.11
31 - 35		0.11	0.05	0.24	0.08						0.29	0.13	0.03			
36 - 40		0.03		0.03								0.05				
41 and over																
Calms	22.11%															
Total	2.37	2.42	3.44	5.78	4.25	3.65	7.18	7.12	4.54	2.50	7.90	9.95	7.04	4.49	3.41	1.85

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.14	0.56	1.53	2.58	2.67	3.92	5.61	6.03	1.50	0.71	1.44	0.89	1.69	1.44	1.33	1.17
11 - 15	0.94	0.33	1.31	2.36	0.86	0.44	1.14	2.14	0.89	0.58	1.19	1.92	1.72	1.53	1.64	1.06
16 - 20	0.61	0.67	1.25	1.81	0.36	0.17	0.25	0.17	0.58	0.50	1.89	2.08	2.08	0.94	0.69	0.72
21 - 25	0.78	0.69	0.47	0.94	0.31	0.03	0.06		0.11	0.28	1.14	1.28	0.64	0.17	0.11	0.25
26 - 30	0.19	0.44	0.44	0.31	0.11	0.03	0.03		0.06	0.44	0.31	0.08	0.11	0.08	0.22	
31 - 35	0.08	0.28	0.08	0.11							0.06	0.06				0.06
36 - 40		0.14	0.03		0.08											
41 and over			0.03													
Calms	19.82%															
Total	3.75	3.11	5.14	8.11	4.39	4.58	7.08	8.33	3.08	2.17	6.11	6.53	6.28	4.19	3.86	3.47

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.18	0.46	1.02	2.85	3.82	4.46	6.07	4.84	1.45	0.91	2.34	1.59	1.75	1.18	2.12	0.33
11 - 15	0.99	0.46	1.07	3.68	1.07	0.51	1.26	2.80	1.29	0.86	1.64	1.02	1.26	1.34	1.69	1.18
16 - 20	0.78	0.32	0.81	1.94	0.75	0.19		0.11	0.27	0.32	1.00	1.02	1.48	0.83	1.10	0.86
21 - 25	0.46	0.38	0.62	1.13	0.62	0.03	0.05		0.05	0.11	0.21	0.40	0.27	0.27	0.51	0.35
26 - 30	0.19	0.62	0.81	0.43	0.56	0.03	0.03			0.03		0.08	0.08	0.11	0.03	0.24
31 - 35	0.16	0.48	0.46	0.14	0.27									0.05		
36 - 40	0.03	0.13	0.19	0.05	0.08											
41 and over	0.05	0.08			0.24											
Calms	18.12%															
Total	3.84	2.93	4.97	10.21	7.42	5.21	7.42	7.74	3.06	2.23	5.19	4.11	4.84	3.78	5.46	3.47

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.25	0.83	1.78	2.72	3.50	3.75	6.00	4.25	1.06	0.72	1.67	0.97	1.81	1.08	1.44	0.89
11 - 15	1.08	0.61	1.89	3.38	1.92	0.69	1.11	1.67	1.17	0.31	0.97	0.86	1.19	0.81	1.25	0.89
16 - 20	0.58	0.89	1.81	2.33	1.19	0.14	0.42	0.36	0.47	0.31	0.14	0.28	0.28	0.25	0.89	0.78
21 - 25	0.72	0.75	1.47	1.28	1.03	0.06	0.03	0.11	0.11					0.17	0.42	0.53
26 - 30	0.19	0.78	1.47	1.00	1.08		0.03		0.03						0.08	0.19
31 - 35	0.06	0.69	0.67	0.39	0.75			0.06	0.06					0.03		0.06
36 - 40	0.03	0.11	0.67	0.08	0.33				0.03					0.03	0.03	0.03
41 and over		0.06	0.22	0.06	0.31											
Calms	18.42%															
Total	3.92	4.78	9.97	11.44	10.11	4.64	7.67	6.44	2.92	1.33	2.86	2.14	3.44	2.33	4.11	3.47

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.16	0.73	1.16	3.41	2.85	3.41	5.35	4.57	1.34	0.97	2.31	1.88	1.48	0.94	1.26	0.55
11 - 15	1.29	0.78	1.08	3.31	0.86	0.59	1.21	2.15	0.73	0.40	0.65	1.40	1.29	0.83	1.05	1.16
16 - 20	0.62	0.94	1.21	3.17	0.57	0.38	0.08	0.08	0.30	0.27	0.11	0.08	0.73	0.27	0.43	0.78
21 - 25	0.65	1.26	0.97	1.37	0.83	0.03					0.03	0.08	0.05		0.24	0.22
26 - 30	0.27	1.26	0.59	0.35	0.22										0.13	0.11
31 - 35	0.03	0.91	0.40	0.05	0.19										0.05	
36 - 40		0.46	0.32	0.05											0.03	
41 and over		0.05	0.03													
Calms	25.78%															
Total	4.01	6.40	5.75	11.72	5.62	4.41	6.64	6.80	2.37	1.64	3.09	3.44	3.55	2.50	3.06	3.23

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.81	1.27	0.56	1.45	2.66	3.60	7.07	5.73	0.89	0.99	2.04	2.07	2.18	1.29	1.08	0.70
11 - 15	0.35	0.22	0.56	1.56	0.70	0.40	0.91	1.67	1.13	0.59	1.96	2.09	2.58	1.80	0.72	0.37
16 - 20	0.51	0.46	0.67	1.37	0.51	0.13	0.11	0.27	0.48	0.30	0.99	1.02	1.21	1.10	0.46	0.30
21 - 25	0.30	0.46	0.40	0.65	0.51	0.08		0.05	0.05	0.11	0.30	0.24	0.22	0.19	0.13	0.08
26 - 30	0.13	0.51	0.38	0.35	0.75	0.05		0.03		0.03	0.08	0.13	0.03	0.03	0.13	0.11
31 - 35	0.13	0.30	0.43	0.24	0.40	0.03										0.03
36 - 40		0.13	0.03	0.13	0.30	0.05										
41 and over		0.05	0.05		0.05											
Calms	30.27%															
Total	2.23	2.39	3.09	5.75	5.89	4.35	8.09	7.74	2.55	2.02	5.38	5.56	6.21	4.41	2.47	1.59

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.47	0.11	0.61	1.16	1.75	3.41	7.30	7.27	1.97	0.69	2.11	2.00	2.30	1.63	1.22	0.44
11 - 15	0.16	0.08	0.02	1.00	0.80	0.91	1.86	2.52	1.00	0.77	1.55	3.55	3.02	1.75	0.50	0.16
16 - 20	0.22	0.08	0.13	0.44	0.63	0.27	0.25	0.38	0.52	0.66	2.00	2.27	3.00	1.08	0.41	0.27
21 - 25	0.16	0.02	0.11	0.44	0.63	0.02		0.05	0.27	0.19	0.69	0.88	0.91	0.66	0.13	0.08
26 - 30	0.11	0.02	0.05	0.11	0.63				0.02	0.08	0.27	0.36	0.33	0.11		0.08
31 - 35	0.05	0.05		0.11	0.36							0.02				
36 - 40	0.08			0.02	0.08											
41 and over			0.13													
Calms	24.58%															
Total	1.29	0.53	0.94	3.31	4.92	4.64	9.42	10.25	3.81	2.42	6.64	9.11	9.58	5.25	2.29	1.05

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.80	0.08	0.40	0.61	1.82	2.20	6.10	6.69	1.77	1.15	1.34	1.58	2.66	1.63	1.66	0.61
11 - 15	0.26	0.05	0.21	0.56	0.77	0.56	1.98	1.74	0.88	0.72	1.58	3.06	3.19	1.72	0.56	0.37
16 - 20	0.08		0.10	0.56	0.37	0.26	0.43	0.26	0.67	0.59	1.85	3.44	3.57	1.72	0.32	0.32
21 - 25	0.02		0.02	0.61	0.26	0.13	0.05	0.08	0.21	0.24	1.55	1.85	1.58	0.77	0.18	0.05
26 - 30	0.02	0.10	0.02	0.16	0.51			0.02	0.21	0.26	0.94	0.94	0.64	0.21	0.05	0.02
31 - 35	0.02	0.02	0.02	0.18	0.05	0.05	0.02	0.05	0.10	0.02	0.10	0.32	0.05			
36 - 40			0.02	0.02				0.05		0.02	0.16	0.08				
41 and over				0.02												
Calms	23.28%															
Total	1.24	0.27	0.83	2.71	3.82	3.23	8.49	8.92	3.87	3.04	7.55	11.29	11.72	5.08	2.20	1.40

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.42	0.11	0.30	0.61	0.86	1.75	4.53	6.47	1.42	0.72	1.47	1.36	1.92	2.08	2.03	0.44
11 - 15	0.11	0.11	0.19	0.50	0.58	0.83	0.89	1.22	0.92	0.44	1.08	3.06	2.97	2.17	0.86	0.61
16 - 20	0.22	0.22	0.06	0.28	0.69	0.44	0.17	0.11	0.39	0.53	1.55	4.08	3.96	1.89	0.36	0.22
21 - 25	0.11	0.03	0.03	0.33	0.39	0.06	0.06	0.06	0.06	0.11	0.92	3.58	2.56	1.28	0.11	0.11
26 - 30		0.06	0.06	0.17	0.14				0.03	0.25	0.89	1.53	1.11	0.89	0.08	0.03
31 - 35			0.08	0.08							0.61	0.61	0.17	0.06		
36 - 40				0.14							0.19					
41 and over												0.27				
Calms	24.88%															
Total	0.86	0.53	0.64	2.11	2.75	3.08	5.64	7.86	2.81	2.06	6.72	14.25	12.58	8.36	3.44	1.42

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.64	0.53	0.27	0.43	0.62	0.81	3.79	4.35	1.29	0.64	1.18	1.56	2.50	3.01	2.50	0.99
11 - 15	0.16	0.08	0.24	0.13	0.27	0.19	0.97	0.81	0.70	0.72	0.81	2.79	2.96	2.07	1.29	0.27
16 - 20	0.19	0.11	0.19	0.35	0.30	0.08	0.19	0.30	0.35	0.51	1.32	5.78	4.73	2.07	0.54	0.11
21 - 25	0.05	0.08	0.08	0.24	0.19	0.05		0.03	0.05	0.46	1.05	4.01	3.01	1.77	0.05	
26 - 30				0.11						0.19	1.05	2.12	0.83	0.46	0.05	
31 - 35										0.03	0.35	0.72	0.29			
36 - 40											0.13	0.16				
41 and over																
Calms	26.16%															
Total	1.05	0.32	0.78	1.26	1.37	1.13	4.95	5.48	2.39	2.55	5.89	17.15	14.32	9.38	4.44	1.37

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.69	1.43	2.46	0.42	0.22	0.06	0.17	0.11	0.39	1.04	1.48	1.06	2.10	1.37	5.15	4.76
11 - 15	1.48	1.01	1.60	0.31	0.03		0.03		0.11	0.90	1.99	2.66	2.67	2.35	6.08	7.67
16 - 20	0.53	0.81	0.76	0.25					0.03	0.42	2.49	2.24	1.34	1.96	5.15	4.37
21 - 25	0.14	0.34	0.22	0.08					0.03	0.26	1.29	0.48	0.22	0.28	1.51	1.43
26 - 30		0.08	0.14							0.22	0.45	0.03		0.06	0.28	0.14
31 - 35														0.20		
36 - 40																
41 and over																
Calms	17.84%															
Total	4.85	3.70	5.21	1.06	0.25	0.06	0.20	0.11	0.56	2.83	7.70	6.47	6.36	6.02	18.37	18.37

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.69	1.03	1.89	0.74	0.18	0.09	0.50	0.27	0.38	1.51	2.13	1.65	2.13	1.36	5.82	6.26
11 - 15	1.74	0.95	1.51	0.27	0.09	0.09	0.12	0.09	0.12	0.86	1.92	2.25	2.60	1.68	5.32	6.29
16 - 20	0.92	0.47	0.77		0.06	0.06		0.06	0.18	0.53	2.34	2.57	1.51	1.85	3.34	3.90
21 - 25		0.15	0.2		0.09					0.12	1.51	0.27	0.50	0.38	0.95	1.36
26 - 30										0.09	0.27	0.09			0.21	0.09
31 - 35																
36 - 40																
41 and over																
Calms	20.15%															
Total	5.35	2.60	4.37	1.00	0.41	0.24	0.62	0.41	0.68	3.10	8.66	6.83	6.74	5.29	15.63	17.91

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.55	0.80	1.53	0.76	0.24	0.56	0.99	1.04	1.58	1.29	1.72	0.94	1.74	0.96	3.89	6.15
11 - 15	0.86	0.72	1.02	0.21	0.13	0.18	0.21	0.40	0.83	1.53	1.93	1.90	2.09	1.74	3.76	4.32
16 - 20	0.16	0.08	0.16	0.18	0.05	0.02	0.10	0.13	0.24	1.23	2.04	1.66	1.20	1.37	1.72	2.63
21 - 25	0.08	0.08	0.10	0.24	0.08	0.05	0.02			0.61	1.20	0.80	0.29	0.51	0.86	0.51
26 - 30		0.02	0.02	0.08	0.05	0.05			0.02	0.05	0.24	0.13	0.13	0.08	0.02	0.02
31 - 35					0.02					0.05	0.02			0.02		
36 - 40							0.02									
41 and over																
Calms	31.61%															
Total	3.65	1.72	2.84	1.50	0.59	0.91	1.34	1.59	2.68	4.78	7.17	5.45	5.51	4.67	10.26	13.65

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.47	0.61	0.97	0.58	0.69	2.75	2.58	1.53	2.47	1.47	1.08	1.36	1.89	1.05	3.19	2.28
11 - 15	0.91	0.44	0.36	0.25	0.19	0.67	0.94	1.03	1.03	1.36	2.72	2.00	1.75	1.83	1.94	0.86
16 - 20	0.55	0.17	0.28	0.19	0.33	0.14	0.05	0.25	0.17	0.67	2.53	0.75	0.89	0.87	0.89	0.25
21 - 25	0.19	0.17	0.17	0.22	0.22	0.08			0.17	0.39	0.75	0.30	0.19	0.25	0.28	0.17
26 - 30	0.05	0.05	0.22	0.33	0.08		0.11				0.05				0.11	0.05
31 - 35			0.25	0.11	0.05	0.03	0.03								0.08	
36 - 40			0.11	0.05												
41 and over			0.05													
Calms	40.50%															
Total	3.19	1.44	2.42	1.75	1.58	3.67	3.72	2.81	3.83	3.89	7.94	4.42	4.72	4.00	6.50	3.61

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.13	0.43	0.71	0.37	1.02	4.11	5.80	2.13	4.14	1.70	2.35	1.51	2.13	1.17	2.47	1.67
11 - 15	0.68	0.34	0.25	0.40	0.56	1.20	1.98	1.11	1.79	1.67	2.94	0.89	1.42	0.86	1.27	0.83
16 - 20	0.34	0.09	0.31	0.22	0.80	0.59	0.31	0.37	0.56	0.93	1.33	0.59	0.59	0.59	0.31	0.31
21 - 25	0.12	0.22	0.28	0.37	0.59	0.25	0.09	0.18	0.25	0.19	0.28	0.09	0.06	0.12	0.12	0.12
26 - 30	0.06	0.09	0.34	0.56	0.71	0.15	0.12	0.12	0.09				0.03		0.06	0.09
31 - 35		0.03	0.28	0.40	0.52	0.03									0.03	0.03
36 - 40			0.18	0.15	0.22											
41 and over			0.15	0.12	0.46											
Calms	32.30%															
Total	3.33	1.20	2.50	2.59	4.88	6.33	8.30	3.92	6.82	4.48	5.99	3.09	4.20	2.75	4.26	3.06

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.64	0.60	0.75	0.29	1.12	3.79	8.07	1.72	4.60	2.07	1.81	1.01	1.67	0.72	1.58	1.32
11 - 15	0.53	0.34	0.63	0.37	0.86	1.67	4.63	0.92	1.29	1.41	1.38	0.80	0.86	0.89	1.18	1.17
16 - 20	0.06	0.29	0.37	0.40	0.57	1.24	0.89	0.14	0.69	0.92	0.43	0.11	0.26	0.23	0.34	0.29
21 - 25		0.17	0.52	0.66	1.01	0.92	0.17	0.20	0.17	0.11	0.03		0.06	0.03	0.17	0.32
26 - 30	0.03	0.14	0.37	1.06	0.69	0.72	0.06			0.06	0.03				0.11	0.06
31 - 35		0.06	0.29	0.49	0.32	0.17										
36 - 40		0.03	0.23	0.37	0.11	0.23										
41 and over	0.06	0.37	0.32	0.06	0.17											
Calms	29.51%															
Total	2.36	1.70	3.53	3.97	4.74	8.91	13.82	2.99	6.75	4.57	3.68	1.93	2.84	1.87	3.39	3.45

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.56	0.51	0.94	0.40	2.20	4.30	6.13	0.73	4.03	2.15	2.80	0.83	2.18	0.83	1.53	1.18
11 - 15	0.59	0.16	0.51	0.40	0.62	1.94	1.56	0.59	1.83	1.42	2.47	0.59	1.18	0.46	1.51	0.46
16 - 20	0.32	0.22	0.43	0.46	0.65	0.67	0.43	0.13	0.59	0.48	0.54	0.11	0.54	0.27	0.78	0.32
21 - 25	0.13	0.22	0.48	0.54	1.02	0.46	0.11	0.03	0.13	0.08	0.03		0.13		0.35	0.35
26 - 30	0.13	0.27	0.51	0.65	0.81	0.32	0.35	0.05	0.11				0.03		0.27	0.24
31 - 35	0.08	0.13	0.24	0.48	0.43	0.03	0.08								0.05	0.08
36 - 40		0.05	0.24	0.13	0.24	0.03										
41 and over			0.38	0.16	0.05	0.03										
Calms	33.74%															
Total	2.82	1.56	3.74	3.23	6.02	7.77	8.66	1.53	6.69	4.14	5.83	1.53	4.06	1.56	4.49	2.63

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.56	0.59	0.70	0.19	1.91	3.17	3.28	1.42	2.69	1.91	2.20	1.45	2.98	1.15	2.66	1.34
11 - 15	0.62	0.27	0.43	0.11	1.10	0.64	0.43	0.72	1.69	2.04	2.69	1.59	1.72	1.15	1.99	1.02
16 - 20	0.13	0.13	0.24	0.16	0.51	0.51	0.32	0.11	0.75	1.02	1.15	0.19	0.43	0.46	0.72	0.19
21 - 25	0.03	0.05	0.24	0.24	0.29	0.22	0.16	0.08	0.32	0.35	0.19	0.03	0.05		0.19	0.24
26 - 30	0.08	0.03	0.11	0.40	0.13	0.16	0.19	0.08	0.21	0.13			0.03	0.03	0.03	0.11
31 - 35	0.05	0.03	0.05	0.24	0.40	0.08	0.05		0.11							
36 - 40			0.05	0.13	0.29	0.05										
41 and over			0.03	0.03	0.11											
Calms	39.17%															
Total	2.47	1.10	1.85	1.50	4.76	4.92	4.43	2.53	5.81	5.46	6.24	3.25	5.21	2.79	5.59	2.90

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.00	0.50	1.44	0.39	0.94	1.44	2.53	1.00	2.36	1.75	2.75	2.03	2.53	0.92	3.11	2.69
11 - 15	0.83	0.47	0.94	0.11	0.30	0.44	0.83	0.55	1.28	1.42	4.00	2.11	1.89	1.11	2.08	2.47
16 - 20	0.06	0.08	0.28	0.17	0.22	0.08	0.03	0.17	0.86	1.83	2.53	0.94	0.75	0.69	0.97	1.42
21 - 25	0.03			0.03	0.22	0.03	0.03	0.03	0.17	0.78	0.72	0.08	0.14	0.25	0.19	0.36
26 - 30				0.05	0.03	0.05		0.05	0.25	0.33	0.08		0.11		0.03	
31 - 35					0.05			0.17	0.08	0.03						
36 - 40									0.03	0.05						
41 and over																
Calms	35.19%															
Total	2.92	1.05	2.67	0.75	1.78	2.05	3.42	1.97	5.03	6.19	10.08	5.17	5.42	2.97	6.39	6.94

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.92	0.53	1.30	0.42	0.28	0.50	0.53	0.47	1.86	1.72	2.55	1.33	2.33	1.36	3.36	4.05
11 - 15	1.25	0.19	0.44	0.22	0.05	0.03	0.19	0.25	1.05	1.39	3.03	2.11	2.30	2.14	3.25	3.05
16 - 20	0.22	0.05	0.25	0.05	0.03	0.08	0.03	0.08	0.25	1.64	3.72	1.66	1.14	1.44	1.97	1.41
21 - 25	0.05	0.03	0.03	0.03	0.03	0.03	0.05	0.11	0.14	0.88	1.61	0.39	0.42	0.22	0.47	0.33
26 - 30			0.08	0.03		0.05	0.03		0.05	0.28	0.53	0.14	0.19	0.05	0.05	0.11
31 - 35					0.03				0.05		0.03	0.03	0.03	0.03		
36 - 40																
41 and over				0.03												
Calms	32.79%															
Total	4.44	0.81	2.14	0.78	0.42	0.69	0.83	0.92	3.41	5.91	11.47	5.56	6.41	5.25	9.11	8.97

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.61	0.94	2.36	0.78	0.36	0.25	0.42	0.42	1.53	1.33	1.67	1.08	2.03	1.55	4.80	4.72
11 - 15	1.25	0.67	2.22	0.55	0.11	0.03	0.11	0.17	0.44	1.42	2.05	1.64	2.19	2.28	4.58	4.72
16 - 20	0.50	0.69	1.55	0.19			0.03		0.17	1.42	2.92	2.28	1.22	1.33	3.05	2.00
21 - 25	0.05	0.42	0.47			0.03			0.05	1.14	1.92	0.50	1.25	0.39	0.78	0.67
26 - 30		0.14	0.17		0.05					0.39	0.25			0.11	0.11	0.08
31 - 35			0.03													
36 - 40					0.03											
41 and over																
Calms	23.19%															
Total	4.42	2.86	6.81	1.53	0.56	0.33	0.53	0.58	2.19	5.31	8.81	5.50	5.69	5.67	13.33	12.19

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.31	1.75	1.94	0.51	0.51	0.21	0.32	0.13	0.56	0.94	2.07	1.42	2.39	1.40	5.22	5.67
11 - 15	1.97	0.94	1.37	0.35	0.05		0.03		0.24	0.67	2.02	2.56	2.71	2.36	5.59	6.13
16 - 20	0.48	0.70	1.24	0.24	0.05				0.08	0.94	2.72	2.53	1.45	1.32	3.68	3.87
21 - 25		0.32	0.43					0.03	0.03	0.56	1.85	0.78	0.30	0.54	1.61	0.94
26 - 30		0.08	0.27							0.27	0.30	0.05	0.16	0.13	0.13	0.03
31 - 35			0.03							0.08	0.05				0.03	
36 - 40										0.03					0.03	
41 and over																
Calms	16.69%															
Total	5.75	3.79	5.27	1.10	0.62	0.21	0.35	0.16	0.91	3.50	9.01	7.04	7.02	5.64	16.29	16.64

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.21	1.23	0.53	0.33	0.06		0.03	0.33	1.81	1.20	2.20	1.59	2.09	1.34	2.32	3.52
11 - 15	4.21	2.12	0.47	0.14	0.08		0.03	0.11	1.37	2.06	3.32	2.34	2.32	2.43	2.65	4.19
16 - 20	3.24	1.65	0.11					0.03	0.86	2.65	4.16	2.43	1.73	1.70	1.76	2.43
21 - 25	1.48	0.86							0.36	2.79	2.46	0.47	0.03	0.25	0.28	1.03
26 - 30	0.25	0.14							0.20	1.76	0.67				0.11	0.11
31 - 35									0.17	0.92	0.03				0.06	0.08
36 - 40									0.06	0.22						
41 and over																
Calms	11.86%															
Total	13.39	6.00	1.12	0.47	0.14		0.06	0.47	4.82	11.61	12.83	6.84	6.17	5.72	7.17	11.36

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.49	1.35	0.35	0.16	0.13	0.06	0.16	0.35	1.67	1.92	2.77	2.12	3.01	1.70	3.62	2.66
11 - 15	4.29	1.25	0.19	0.10	0.13	0.19	0.06	0.06	1.06	2.28	3.24	2.66	2.76	1.99	3.24	2.95
16 - 20	2.95	1.63	0.26	0.03	0.03	0.06	0.13	0.03	0.48	2.50	3.75	2.72	1.28	1.15	2.66	2.18
21 - 25	0.96	0.71	0.03		0.03			0.03	0.22	2.37	2.92	0.58	0.19	0.10	0.16	0.42
26 - 30	0.22	0.03	0.03						0.16	1.54	0.67	0.22	0.03	0.03		0.03
31 - 35						0.03			0.06	0.38	0.06					
36 - 40									0.03	0.03						
41 and over																
Calms	13.91%															
Total	11.92	4.97	0.87	0.29	0.32	0.35	0.35	0.48	3.69	11.03	13.37	8.30	7.28	4.97	9.68	8.24

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.91	1.24	0.75	0.56	0.40	0.08	0.19	0.65	3.52	1.64	1.18	0.81	1.64	1.24	2.18	3.14
11 - 15	2.77	1.32	0.81	0.35	0.35	0.30	0.24	0.56	2.23	1.80	2.04	2.78	1.64	1.21	1.96	2.12
16 - 20	1.13	1.42	0.43	0.30	0.19	0.13	0.40	1.67	3.01	3.58	1.99	0.89	0.78	0.78	1.18	
21 - 25	0.38	0.56	0.19	0.08	0.11		0.03	0.08	0.46	2.82	2.20	0.78	0.40	0.27	0.22	0.24
26 - 30	0.05	0.19	0.05						0.11	1.83	0.62	0.11	0.03			0.11
31 - 35	0.03		0.05						0.05	0.46	0.11					
36 - 40									0.03	0.03						
41 and over																
Calms	21.91%															
Total	10.27	4.73	2.28	1.29	1.05	0.51	0.59	1.69	8.06	11.59	9.73	5.97	4.60	3.49	5.13	7.10

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.84	0.33	0.64	0.36	0.75	0.33	0.53	0.63	9.70	2.31	1.45	0.64	1.62	0.53	0.81	1.73
11 - 15	1.39	0.56	0.70	1.06	1.09	0.67	0.57	0.47	4.60	3.18	3.15	1.56	1.34	0.59	1.14	0.64
16 - 20	0.42	0.25	0.59	0.78	0.78	0.59	0.53	0.25	1.84	3.48	3.98	1.22	0.78	0.50	0.42	0.17
21 - 25	0.22	0.42	0.67	0.45	0.08		0.17		0.28	2.12	1.56	0.31	0.33	0.36	0.22	0.14
26 - 30	0.31	0.11	0.36			0.08	0.08	0.02	0.08	0.86	0.03	0.03	0.06	0.11	0.14	0.06
31 - 35		0.06	0.08						0.03	0.39						
36 - 40									0.03	0.03						
41 and over																
Calms	25.24%															
Total	5.18	1.73	3.04	2.65	2.70	1.67	1.98	1.28	16.55	12.37	10.17	3.76	4.12	2.09	2.73	2.73

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.81	0.44	0.94	0.50	1.12	0.25	1.28	0.44	11.50	4.05	1.53	0.69	1.31	0.44	0.78	0.84
11 - 15	1.19	0.37	1.00	1.40	1.34	0.87	0.75	0.53	5.36	3.65	2.96	0.87	0.97	0.34	0.50	0.34
16 - 20	0.37	0.45	0.59	1.75	1.53	1.18	0.72	0.19	1.25	2.77	2.74	0.78	0.16	0.25	0.31	0.22
21 - 25	0.23	0.25	1.28	0.78	1.25	0.78	0.09	0.03	0.12	2.18	0.65	0.09	0.06	0.09	0.12	0.16
26 - 30	0.09	0.16	0.56	0.28	0.19	0.37		0.03	0.06	0.50	0.06	0.03			0.03	0.09
31 - 35	0.03		0.34	0.06	0.03	0.09										
36 - 40			0.03													
41 and over																
Calms	23.10%															
Total	3.74	1.71	4.74	4.77	5.45	3.55	2.84	1.22	18.30	13.15	7.95	2.46	2.49	1.12	1.75	1.65

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.92	0.51	0.82	0.68	1.41	0.45	1.38	0.73	11.69	3.73	1.30	0.54	0.88	0.88	0.85	0.77
11 - 15	1.13	0.59	1.10	1.72	1.66	1.27	1.21	0.45	5.70	2.71	2.34	1.13	0.68	0.34	0.71	0.79
16 - 20	0.56	0.65	1.21	2.65	2.12	2.79	0.76	0.17	1.38	2.20	1.35	0.14	0.23	0.11	0.20	0.37
21 - 25	0.23	0.28	1.10	1.78	1.21	1.78	0.11		0.39	1.30	0.20			0.03	0.17	0.25
26 - 30	0.14	0.28	0.56	0.35	0.34	0.56	0.06		0.23	0.34						0.31
31 - 35		0.17	0.37	0.11	0.03	0.20			0.03	0.06						
36 - 40		0.03	0.03				0.03									
41 and over																
Calms	17.50%															
Total	3.98	2.51	5.19	7.79	6.77	7.06	3.56	1.36	19.42	10.33	5.19	1.81	1.78	1.36	1.92	2.48

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.75	0.51	0.99	0.94	1.02	0.40	0.65	0.65	9.84	3.31	1.33	2.31	1.34	0.54	1.05	0.86
11 - 15	0.94	0.40	0.94	1.59	0.73	0.48	0.70	0.70	5.30	3.39	2.07	1.56	1.05	0.83	0.59	0.89
16 - 20	0.46	0.48	0.97	1.77	1.29	1.37	0.89	0.59	1.40	1.94	1.40	0.48	0.89	0.56	0.40	0.67
21 - 25	0.30	0.38	0.94	1.42	1.02	1.02	0.24	0.24	1.08	1.21	0.13	0.13	0.24	0.03	0.11	0.43
26 - 30	0.43	0.30	0.70	0.46	0.43	0.27	0.03		0.13	0.56	0.03	0.05	0.05		0.05	0.46
31 - 35	0.08	0.16	0.22			0.03			0.03		0.03	0.05				0.08
36 - 40		0.19	0.08	0.11												
41 and over																
Calms	20.39%															
Total	3.95	2.42	4.84	6.29	4.49	3.58	2.50	2.18	17.77	10.40	5.48	4.60	3.58	1.96	2.20	3.39

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.46	0.57	1.43	0.32	0.89	0.27	0.76	0.62	6.95	3.25	1.89	1.87	1.73	0.81	1.41	1.68
11 - 15	0.97	0.54	0.81	0.57	0.95	0.46	0.89	1.06	3.37	2.41	2.62	2.14	1.68	1.03	0.73	0.89
16 - 20	0.38	0.43	0.68	0.62	0.76	0.78	0.92	0.27	1.33	3.79	2.00	0.68	0.76	0.87	0.35	0.27
21 - 25	0.08	0.41	0.35	0.60	0.27	0.46	0.49	0.30	0.65	2.14	0.76	0.16	0.43	0.22	0.19	0.11
26 - 30	0.11	0.14	0.27	0.11		0.14	0.19	0.05	0.49	0.60	0.05	0.14	0.11	0.03	0.03	0.11
31 - 35	0.03	0.03	0.05	0.05					0.14	0.32	0.05	0.08	0.08			0.03
36 - 40										0.05		0.05				
41 and over																
Calms	25.51%															
Total	4.03	2.11	3.60	2.27	2.87	2.11	3.25	2.30	13.42	12.50	7.39	5.11	4.79	2.95	2.71	3.08

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.40	0.88	1.12	0.43	0.82	0.18	0.49	0.24	5.21	2.85	2.70	1.82	1.88	0.75	1.91	2.43
11 - 15	1.12	1.12	0.36	0.33	0.30	0.33	0.55	0.39	2.55	2.73	3.34	2.70	1.52	1.40	1.64	1.21
16 - 20	0.79	0.88	0.12	0.09	0.46	0.39	0.43	0.09	1.06	3.70	3.70	0.94	1.00	0.79	0.61	0.46
21 - 25	0.52	0.36	0.06	0.06	0.09	0.06	0.21		0.33	3.55	1.46	0.52	0.54	0.61	0.12	0.06
26 - 30	0.03							0.03	0.21	1.43	0.21	0.03	0.14	0.07		
31 - 35									0.06	0.64			0.16			
36 - 40								0.03	0.09	0.07						
41 and over									0.33	0.09						
Calms	23.02%															
Total	6.26	3.25	1.67	0.91	1.67	0.97	1.67	0.79	9.66	15.18	11.42	6.01	5.34	3.74	4.28	4.16

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.38	1.21	1.08	0.49	0.10	0.20	0.65	0.56	4.48	1.80	2.09	0.95	1.14	0.78	1.28	2.38
11 - 15	2.81	1.28	0.78	0.46	0.39	0.10	0.16	0.69	1.64	2.35	3.11	2.42	1.64	1.28	1.93	1.86
16 - 20	1.45	0.62	0.26	0.16	0.03	0.03	0.23	0.20	1.08	4.35	4.05	1.06	0.62	0.55	0.49	0.88
21 - 25	0.52	0.33	0.03	0.03				0.13	0.52	4.28	2.35	0.16	0.03	0.36	0.13	0.36
26 - 30	0.07	0.10					0.07	0.03	0.46	2.71	0.72	0.03	0.03	0.10		0.10
31 - 35						0.07	0.03		0.16	0.38						
36 - 40							0.03	0.03		0.03						
41 and over								0.10					0.03			
Calms	22.14%															
Total	8.93	3.53	2.16	1.14	0.52	0.39	1.18	1.73	8.34	16.51	12.33	4.61	3.50	2.98	3.83	6.18

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.68	1.42	0.58	0.15			0.15	0.42	2.04	1.46	1.88	1.54	2.30	1.11	2.38	3.38
11 - 15	3.96	1.84	0.69	0.19	0.04			0.23	1.34	2.42	3.19	2.80	2.11	2.42	2.76	2.80
16 - 20	2.57	1.61	0.12	0.08				0.15	0.73	2.88	3.69	2.15	1.04	1.31	1.08	2.27
21 - 25	1.15	1.15							0.31	3.80	2.53	0.23	0.08		0.54	1.50
26 - 30	0.08	0.27	0.04						0.15	2.53	0.65				0.04	0.35
31 - 35		0.04							0.04	1.00						
36 - 40										0.19						
41 and over										0.12						
Calms	12.25%															
Total	13.44	6.34	1.42	0.42	0.04		0.15	0.81	4.61	14.40	11.34	6.72	5.53	4.84	6.80	10.29

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.73	1.28	0.57	0.17	0.07	0.03	0.24	0.47	1.68	1.38	2.45	1.31	1.91	1.18	2.72	2.72
11 - 15	5.00	2.28	0.20	0.07	0.07	0.07	0.03	0.24	0.71	2.15	2.99	2.45	2.32	1.75	2.85	3.69
16 - 20	2.65	2.22	0.17	0.10	0.03	0.03	0.07	0.10	0.67	2.55	4.60	2.32	1.21	1.34	1.34	2.79
21 - 25	1.07	1.40		0.03				0.03	0.47	2.69	3.19	0.37	0.13	0.27	0.44	0.97
26 - 30	0.20	0.30	0.10				0.33	0.03	0.27	2.22	0.74	0.10		0.07		
31 - 35									0.03	0.24	1.34	0.07				
36 - 40									0.03	0.44						
41 and over										0.10						
Calms	10.98%															
Total	13.67	7.12	1.04	0.37	0.17	0.13	0.40	0.91	4.06	12.86	14.04	6.55	5.57	4.60	7.35	10.17

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.43	3.46	2.22	0.14	0.34	0.14	0.39	0.25	0.59	0.93	1.26	0.90	2.33	1.66	3.51	1.88
11 - 15	3.96	3.23	0.67	0.03	0.03		0.03	0.17	0.78	0.73	2.42	2.32	2.64	2.00	2.92	2.98
16 - 20	3.34	2.33						0.11	0.73	1.12	2.22	3.40	2.14	1.52	2.39	2.59
21 - 25	1.21	0.39							0.51	0.96	1.77	0.82	0.34	0.34	0.76	1.74
26 - 30	0.31	0.03							0.25	0.67	0.93	0.28	0.03		0.48	0.73
31 - 35	0.14	0.03								0.51	0.20				0.08	0.17
36 - 40										0.14	0.03					0.03
41 and over																
Calms	15.80%															
Total	12.40	9.47	2.99	0.17	0.36	0.14	0.42	0.53	2.87	5.11	8.83	7.73	7.47	5.51	10.15	10.12

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.05	2.45	1.60	0.27	0.12	0.24	0.27	0.12	1.15	1.00	1.57	1.09	2.28	1.68	3.31	3.49
11 - 15	4.08	2.28	0.24	0.06		0.06	0.06	0.09	0.53	1.09	2.30	2.25	2.48	1.98	2.78	3.01
16 - 20	2.72	1.45	0.06	0.06	0.06		0.12	0.03	0.47	0.74	2.55	3.29	2.10	1.33	1.89	2.01
21 - 25	1.24	0.35	0.30				0.06		0.24	0.65	2.16	1.42	0.18	0.33	0.74	1.01
26 - 30	0.24								0.21	0.30	1.24	0.24	0.06	0.03	0.18	0.38
31 - 35	0.06									0.27	0.12				0.03	0.03
36 - 40										0.29	0.03					
41 and over																
Calms	19.80%															
Total	13.39	6.53	1.92	0.38	0.18	0.30	0.50	0.24	2.60	4.64	9.96	8.27	7.09	5.35	8.92	9.93

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.18	4.67	1.43	0.22	0.28	0.48	0.95	0.20	0.42	0.34	0.78	0.84	2.07	2.27	4.53	3.36
11 - 15	3.44	3.19	0.45	0.03		0.03	0.29	0.36	0.39	0.45	1.18	3.16	3.08	2.35	3.41	2.57
16 - 20	1.99	0.76			0.06		0.08	0.25	0.59	0.73	2.01	2.38	2.29	1.15	1.15	1.71
21 - 25	0.42	0.20						0.11	0.36	0.95	1.09	0.57	0.17	0.20	0.42	0.42
26 - 30	0.06	0.03					0.03		0.31	0.42	0.53	0.03			0.06	0.11
31 - 35			0.03						0.11	0.31	0.08	0.03				
36 - 40				0.06					0.03	0.14	0.08					
41 and over																
Calms	24.54%															
Total	11.08	8.84	1.90	0.31	0.34	0.50	1.34	0.92	2.21	3.33	5.76	7.61	7.61	5.96	9.57	8.17

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.42	2.72	3.08	0.67	0.58	1.28	1.53	0.86	0.81	0.78	1.42	0.78	2.08	2.33	3.17	1.69
11 - 15	1.64	0.92	0.36	0.08	0.06	0.22	2.00	0.83	0.67	0.89	2.03	2.58	2.56	1.64	1.53	0.89
16 - 20	0.50	0.39	0.38	0.06	0.03	0.06	0.69	0.64	0.75	1.01	2.33	1.78	1.22	0.67	0.44	0.11
21 - 25	0.14	0.03	0.11	0.03	0.03	0.03	0.08	0.14	0.67	0.94	1.58	0.56	0.19	0.17	0.06	
26 - 30	0.08	0.06	0.14	0.03	0.03		0.08	0.08	0.22	0.61	0.39	0.17	0.06		0.06	0.03
31 - 35		0.03	0.17					0.08	0.11	0.28	0.03					
36 - 40			0.11	0.06				0.06	0.06	0.11						
41 and over			0.19							0.03						
Calms	35.08%															
Total	5.78	4.14	4.25	0.92	0.72	1.58	4.39	2.69	3.28	4.69	7.78	5.81	6.11	4.81	5.25	2.72

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.08	1.34	1.81	0.55	1.04	2.68	4.76	1.37	0.88	0.96	1.20	1.34	1.40	1.61	1.91	1.29
11 - 15	0.82	0.71	0.33	0.25	0.52	0.88	4.16	7.42	0.77	1.37	2.27	2.54	1.67	1.12	0.90	0.36
16 - 20	0.25	0.08	0.36	0.22	0.30	0.33	3.83	1.09	1.15	1.75	2.16	1.12	0.36	0.36	0.44	0.11
21 - 25	0.05		0.49	0.38	0.16	0.22	1.15	0.63	0.79	1.50	0.79	0.14	0.05	0.08	0.05	
26 - 30	0.03	0.03	0.47	0.41	0.19	0.03	0.14	0.08	0.47	0.74	0.25					0.03
31 - 35			0.30	0.55	0.08	0.08	0.03		0.03	0.11						
36 - 40			0.52	0.38	0.03	0.08	0.03			0.03						
41 and over			0.82	1.07												
Calms	26.26%															
Total	3.23	2.19	5.09	3.80	2.32	4.40	14.09	4.60	4.08	6.46	6.69	5.14	3.47	3.09	3.31	1.78

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.29	0.88	0.94	0.44	1.64	3.28	4.95	1.32	1.03	0.50	1.00	1.38	2.26	1.23	1.20	0.82
11 - 15	0.76	0.47	0.50	0.35	0.59	1.08	5.01	1.79	0.82	1.23	1.73	2.17	1.29	0.91	0.97	0.35
16 - 20	0.18	0.18	0.70	0.44	0.09	0.35	5.48	1.88	0.67	1.70	1.14	0.44	0.20	0.29	0.17	0.44
21 - 25	0.23	0.12	0.38	0.67	0.15	0.20	2.05	0.79	0.67	0.91	1.23	0.06		0.03		0.03
26 - 30	0.12	0.12	0.73	0.44	0.12	0.06	0.32	0.38	0.29	0.29	0.09				0.12	0.06
31 - 35		0.03	0.64	1.03	0.06	0.12	0.12	0.09	0.12	0.09				0.03	0.03	
36 - 40			0.76	0.76	0.09			0.03	0.03	0.03						
41 and over		0.32	1.44	2.93			0.06									
Calms	22.92%															
Total	2.58	2.11	6.10	7.06	2.73	5.10	18.00	6.27	3.63	4.75	4.19	4.04	3.75	2.49	2.55	1.70

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.15	0.74	0.80	0.47	1.24	2.64	4.92	1.33	1.54	1.07	1.27	1.16	1.42	1.48	1.90	0.41
11 - 15	0.71	0.21	0.27	0.39	0.50	1.27	5.07	1.60	1.16	1.57	2.07	1.63	1.36	1.01	0.92	0.24
16 - 20	0.41	0.33	0.21	0.30	0.33	0.24	4.74	0.89	0.83	1.57	1.51	0.77	0.44	0.24	0.36	0.27
21 - 25	0.24	0.18	0.42	0.59	0.33	0.18	1.99	0.41	0.56	0.95	0.53	0.24	0.06	0.03	0.21	0.03
26 - 30	0.24	0.12	0.41	0.74	0.30	0.03	0.15	0.09	0.27	0.33	0.12				0.03	0.06
31 - 35	0.12	0.12	0.65	0.68	0.06	0.03	0.03		0.30	0.30	0.03					0.06
36 - 40	0.15	0.15	0.71	0.56	0.03	0.03										0.09
41 and over		0.45	2.22	1.54	0.06											
Calms	24.85%															
Total	3.05	2.30	5.69	5.27	2.85	4.42	16.90	4.32	4.66	5.79	5.53	3.75	3.28	2.76	3.42	1.16

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.44	2.50	1.88	0.63	0.60	1.82	2.83	1.22	1.16	1.34	1.22	1.10	2.33	1.73	1.37	0.92
11 - 15	1.22	0.72	0.51	0.06	0.12	0.45	2.39	0.83	0.83	1.34	1.64	2.09	2.09	1.10	0.83	0.54
16 - 20	0.30	0.12	0.06	0.18	0.18	0.15	1.49	0.78	0.89	1.58	1.64	1.55	0.50	0.51	0.30	0.18
21 - 25	0.27	0.03	0.15	0.21	0.15	0.06	0.66	0.48	0.86	1.55	1.28	0.33	0.06	0.06	0.09	0.03
26 - 30		0.03	0.12	0.18	0.09	0.21	0.21	0.15	0.30	0.72	0.12	0.06				
31 - 35			0.18	0.24	0.06		0.03	0.15	0.21	0.39		0.03				
36 - 40			0.39	0.25					0.06	0.18						
41 and over			0.57	0.39		0.03			0.12	0.06						
Calms	35.90%															
Total	4.23	3.40	3.85	2.12	1.19	2.71	7.60	3.61	4.44	7.16	5.90	5.16	5.07	3.40	2.59	1.67

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.13	2.37	2.03	0.44	0.44	1.32	1.99	1.99	1.42	1.18	1.99	1.08	1.72	1.32	1.69	1.55
11 - 15	2.06	2.06	0.54	0.03		0.37	0.91	0.68	1.28	1.48	1.89	2.40	2.08	1.28	1.59	1.35
16 - 20	2.09	1.22	0.06	0.03	0.03	0.17	0.30	0.54	0.98	1.69	2.67	1.55	0.41	0.57	0.57	0.74
21 - 25	0.47	0.03	0.03		0.10	0.06	0.24	0.06	0.64	1.65	2.70	0.84		0.06	0.17	0.27
26 - 30	0.10	0.03			0.03	0.03		0.17	0.44	1.11	0.71	0.14	0.03			
31 - 35				0.03			0.03	0.03	0.24	0.51	0.24		0.03			
36 - 40									0.24	0.24	0.03					
41 and over									0.27	0.03						
Calms	28.83%															
Total	6.85	6.31	2.67	0.54	0.61	2.06	3.48	3.48	5.50	8.00	10.21	6.01	4.25	3.24	4.02	3.92

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.36	3.81	3.80	0.45	0.64	0.34	1.06	0.78	1.96	1.01	1.34	1.04	1.34	1.26	2.63	1.93
11 - 15	2.49	2.74	0.43	0.08	0.08	0.06	0.14	0.73	1.54	1.09	1.40	2.55	2.35	1.62	1.74	2.38
16 - 20	1.68	1.51					0.08	0.36	1.37	1.26	2.52	2.74	1.54	0.76	1.06	1.54
21 - 25	0.64	0.50						0.11	0.76	1.96	2.10	1.04	0.06	0.14	0.22	0.48
26 - 30	0.08	0.08						0.06	0.70	1.46	1.04	0.14		0.03		0.22
31 - 35	0.03							0.03	0.06	0.03	1.09	0.22				0.06
36 - 40								0.06	0.03	0.23	0.03					
41 and over										0.08						
Calms	22.18%															
Total	8.29	8.65	3.28	0.53	0.73	0.45	1.34	2.10	6.69	8.23	8.65	7.50	5.29	3.81	5.66	6.51

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.74	3.68	1.93	0.36	0.39	0.28	0.78	0.47	1.09	1.03	1.26	0.98	2.01	1.26	2.85	2.09
11 - 15	4.19	2.37	0.39	0.06	0.03	0.03	0.14	0.70	1.06	0.98	1.23	2.34	3.24	2.43	2.96	3.25
16 - 20	2.62	1.31	0.03				0.03	0.39	0.84	1.03	2.06	2.71	1.56	1.00	1.65	1.95
21 - 25	1.14	0.73	0.03					0.22	0.51	1.28	1.59	0.92	1.67	0.50	0.31	1.75
26 - 30								0.08	0.81	0.95	0.98	0.11			0.22	0.70
31 - 35	0.03								0.36	0.84	0.25					
36 - 40									0.31	0.17						
41 and over									0.19	0.03						
Calms	16.37%															
Total	11.86	8.10	2.38	0.42	0.42	0.31	0.95	1.86	4.67	6.31	7.37	7.06	8.48	5.19	8.49	9.76

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.39	3.04	1.56	0.38	0.27	0.30	0.35	0.27	0.81	0.99	1.02	1.37	1.61	1.56	3.28	2.58
11 - 15	4.06	2.93	0.32	0.03		0.03	0.03	0.19	0.59	1.05	2.07	2.34	2.61	2.15	3.01	3.25
16 - 20	3.09	1.99	0.11				0.08	0.05	0.51	1.18	2.57	2.56	1.56	1.69	2.45	2.42
21 - 25	0.97	0.59						0.54	0.30	1.32	2.10	1.08	0.43	0.43	1.16	1.29
26 - 30	0.21	0.16						0.22	0.24	0.94	1.24	0.30			0.27	0.83
31 - 35	0.08						0.03		0.05	0.27	0.11	0.03			0.03	0.27
36 - 40									0.11	0.11	0.03	0.05				
41 and over										0.05	0.03					
Calms	16.26%															
Total	11.81	8.72	1.99	0.41	0.27	0.32	0.49	1.27	2.61	5.91	9.11	7.85	6.21	5.83	10.19	10.75

January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.45	1.45	0.25		0.11		0.06		0.48	0.51	1.59	0.79	1.33	0.26	2.24	3.18
11 - 15	6.58	1.62	0.09	0.03		0.03			0.26	0.77	1.73	1.30	1.82	0.96	3.60	5.70
16 - 20	6.35	1.50	0.06						0.06	0.96	2.07	1.56	1.36	0.68	4.20	5.73
21 - 25	4.74	0.65							0.03	0.48	2.18	0.74	0.45	0.03	1.53	3.43
26 - 30	2.38	0.06								0.28	1.59	0.06		0.03	0.31	1.50
31 - 35	0.74								0.11	0.79	0.03				0.09	0.48
36 - 40	0.28								0.06	0.11	0.03					0.28
41 and over	0.03															0.11
Calms	10.49%															
Total	25.55	5.28	0.40	0.03	0.11	0.03	0.06		0.82	3.18	10.07	4.51	5.02	1.96	11.97	20.42

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.95	1.33	0.20	0.03	0.03	0.07	0.20	0.13	0.49	0.78	1.43	1.01	1.79	0.94	2.18	3.35
11 - 15	6.54	1.27	0.07	0.03		0.07	0.03	0.20	0.13	0.72	1.66	1.43	2.34	0.81	3.19	5.57
16 - 20	6.57	1.27					0.03	0.07	0.10	0.65	2.08	1.33	2.12	0.75	3.19	5.57
21 - 25	3.48	0.94			0.03	0.07			0.10	0.36	1.76	0.81	0.65	0.13	0.75	2.93
26 - 30	1.89	0.65	0.03							0.39	1.37	0.26	0.13	0.03	0.10	0.98
31 - 35	0.62	0.16	0.03								0.68	0.29			0.07	0.16
36 - 40	0.07	0.07									0.10				0.03	0.07
41 and over																
Calms	37.02%															
Total	24.22	1.86	0.15	0.06	0.06	0.21	0.26	0.40	0.81	2.90	9.08	5.14	7.03	2.67	9.51	18.62

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.48	1.34	0.44	0.05	0.33	0.14	0.77	0.66	1.10	1.10	0.93	0.79	1.40	0.66	1.95	3.78
11 - 15	6.61	1.75	0.19	0.05	0.05	0.03	0.11	0.52	0.55	0.88	1.15	1.32	1.97	0.90	2.63	6.14
16 - 20	4.17	0.41	0.08	0.03	0.03		0.05	0.22	0.38	1.21	1.89	1.53	1.10	0.69	2.06	4.19
21 - 25	2.22	0.22	0.14	0.03	0.05	0.08		0.05	0.19	0.55	1.73	0.96	0.36	0.36	1.23	1.70
26 - 30	1.07		0.82	0.03	0.14				0.08	0.41	1.07	0.47	0.19	0.14	0.22	0.33
31 - 35	0.08	0.03	0.19	0.03	0.03					0.14	0.49				0.05	0.03
36 - 40	0.03		0.11		0.03					0.05	0.14					
41 and over										0.03	0.03					
Calms	20.59%															
Total	19.65	3.73	1.23	0.22	0.66	0.25	0.93	1.45	2.30	4.35	7.43	5.07	5.02	2.74	8.20	16.17

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	5.22	1.06	0.69	0.25	0.36	0.50	2.36	2.81	2.81	2.53	2.33	1.14	1.33	0.53	1.50	4.19
11 - 15	3.06	0.56	0.28	0.14	0.14	0.06	0.67	0.97	1.47	1.53	2.33	1.36	1.50	0.75	2.39	3.83
16 - 20	0.86	0.22	0.17	0.17	0.09	0.06	0.03	0.14	0.33	1.33	3.00	1.36	0.61	0.47	1.33	1.56
21 - 25	0.39	0.31	0.25	0.17	0.09		0.03	0.03	0.14	0.64	2.03	0.36	0.31	0.32	0.39	0.75
26 - 30	0.09	0.06	0.11	0.28	0.06		0.09	0.09	0.11	0.31	0.83	0.28	0.14	0.17	0.39	0.25
31 - 35	0.11	0.14	0.42	0.14	0.03					0.09	0.36				0.03	0.09
36 - 40		0.03	0.33	0.19	0.03	0.06	0.06								0.03	
41 and over		0.03	0.25	0.09				0.03								
Calms	25.39%															
Total	9.72	2.39	2.50	1.36	0.78	0.67	3.22	4.06	4.86	6.42	10.89	5.00	3.89	2.14	6.06	10.67

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.25	1.02	0.54	0.30	0.32	0.62	4.14	5.60	6.53	5.27	3.63	1.83	1.70	0.73	1.10	2.37
11 - 15	2.39	0.48	0.38	0.11	0.22	0.36	1.24	2.18	1.67	2.55	2.47	1.45	0.62	0.59	1.21	1.70
16 - 20	0.75	0.35	0.48	0.56	0.19	0.16	1.24	0.30	0.30	1.02	1.94	0.83	0.56	0.38	0.75	0.91
21 - 25	0.16	0.22	0.38	0.54	0.54	0.22	0.03		0.08	0.78	1.24	0.35	0.05	0.08	0.35	0.24
26 - 30	0.08	0.19	0.56	0.70	0.65	0.13	0.03			0.35	0.60			0.05	0.05	0.11
31 - 35	0.05	0.19	0.27	0.54	0.38	0.16				0.03	0.11					
36 - 40			0.51	0.32	0.19	0.13	0.03									
41 and over		0.05	0.56	0.51	0.27	0.13										
Calms	18.60%															
Total	6.69	2.50	3.68	3.68	2.74	1.88	5.70	8.06	8.58	10.00	9.97	4.46	2.93	1.83	3.47	5.32

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.89	0.57	0.37	0.30	0.97	1.34	3.29	5.79	7.61	4.69	2.77	0.94	1.34	0.88	1.19	1.86
11 - 15	1.00	0.55	0.85	0.33	0.79	0.76	1.07	1.57	1.86	0.97	1.89	0.85	0.52	0.52	1.37	1.71
16 - 20	0.52	0.73	0.52	0.40	0.79	0.12	0.43	0.27	0.49	0.73	1.00	0.43	0.15	0.09	0.51	1.13
21 - 25	0.30	0.33	0.73	0.79	0.49	0.18	0.12	0.03	0.33	0.40	0.46				0.24	0.49
26 - 30	0.12	0.15	0.64	1.61	0.85	0.12	0.09		0.40	0.30	0.12				0.06	0.24
31 - 35	0.06	0.06	0.46	1.22	0.49	0.15	0.09		0.06	0.12	0.12					0.06
36 - 40			0.70	1.22	0.09	0.06	0.03									
41 and over		0.03	0.84	1.86	0.27	0.30					0.03					
Calms	20.98%															
Total	3.90	2.53	5.12	7.73	4.75	3.05	5.12	7.76	10.75	7.22	6.39	2.22	2.01	1.49	3.47	5.51

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.28	1.51	0.78	0.39	0.66	0.69	3.42	2.52	7.65	3.66	3.12	0.78	1.23	0.33	1.11	1.26
11 - 15	1.53	0.42	0.78	0.24	0.42	0.21	1.14	1.26	1.62	1.17	2.10	0.63	0.57	0.18	0.90	0.96
16 - 20	1.05	0.15	0.54	0.30	0.78	0.21	0.21	0.36	0.69	0.69	1.89	0.42	0.24	0.18	0.69	0.42
21 - 25	0.48	0.33	0.48	0.39	0.84	0.18	0.15	0.06	0.12	0.45	0.84	0.06			0.27	0.24
26 - 30	0.36	0.24	0.60	0.93	1.74	0.12				0.12	0.39				0.03	0.18
31 - 35	0.15	0.18	0.69	0.84	0.45	0.09	0.03			0.03	0.21					0.21
36 - 40	0.06	0.03	0.66	1.17	0.21	0.09										0.09
41 and over	0.03	0.06	0.99	0.78	0.18	0.03										
Calms	29.79%															
Total	5.94	1.92	5.52	5.04	5.28	1.62	4.95	4.20	10.08	6.12	8.55	1.89	2.04	0.69	3.00	3.36

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.25	0.81	1.64	0.11	0.75	0.38	1.91	1.48	3.95	1.99	3.12	0.99	2.20	0.30	2.26	2.69
11 - 15	1.45	0.62	0.51	0.08	0.40	0.19	0.91	0.83	1.83	1.40	2.55	0.94	1.42	0.27	1.91	2.04
16 - 20	1.16	0.22	0.19	0.11	0.22	0.38	0.30	0.22	0.78	0.83	2.42	0.48	0.35	0.08	0.78	1.45
21 - 25	0.35	0.05	0.27	0.19	0.54	0.19	0.11	0.08	0.35	0.89	1.67	0.16	0.19		0.35	0.48
26 - 30	0.22	0.08	0.19	0.24	0.48	0.22	0.27	0.03	0.13	0.48	0.35	0.03	0.03		0.08	0.16
31 - 35	0.11	0.08	0.11	0.27	0.22	0.13	0.13		0.16	0.22	0.19					0.05
36 - 40			0.24	0.16	0.19	0.08			0.05	0.13	0.05					
41 and over			0.22	0.24	0.16	0.05		0.03								
Calms	33.01%															
Total	6.56	1.85	3.36	1.40	2.96	1.32	3.63	2.66	7.26	5.94	10.35	2.61	4.19	0.65	5.38	6.88

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.48	1.26	1.04	0.08	0.28	0.25	1.35	0.81	2.65	1.91	2.56	1.60	2.28	0.31	2.73	3.72
11 - 15	2.34	1.15	0.28			0.41	0.29	0.31	1.10	2.17	3.07	1.43	1.26	0.59	2.25	3.82
16 - 20	1.60	0.34	0.11		0.02	0.14	0.16	0.16	0.56	1.80	3.62	0.34	0.45	0.11	1.55	2.73
21 - 25	1.10	0.15			0.02	0.05	0.02	0.11	0.25	1.24	3.13	0.25	0.02	0.02	0.47	1.26
26 - 30	0.28					0.02	0.02	0.02	0.02	0.56	1.69	0.14	0.02		0.05	0.19
31 - 35	0.19						0.02		0.02	0.31	0.50				0.02	0.08
36 - 40	0.02								0.02	0.25	0.22					
41 and over									0.11	0.14	0.08					
Calms	25.45%															
Total	9.01	3.41	1.43	0.08	0.32	0.87	1.85	1.41	4.73	8.38	14.87	4.26	4.03	1.03	7.07	11.80

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.59	0.99	0.32	0.03	0.26	0.19	0.52	0.33	1.45	1.52	1.98	1.32	1.95	0.46	1.85	3.77
11 - 15	3.83	0.49	0.16		0.06		0.03	0.06	0.95	1.65	2.31	1.55	1.55	1.48	3.07	5.09
16 - 20	3.44	0.43					0.06		0.59	1.42	3.24	1.45	0.79	0.59	1.38	3.73
21 - 25	2.21	0.16				0.03	0.03	0.03	0.33	1.12	2.97	0.59	0.13	0.09	0.72	2.24
26 - 30	1.15	0.03					0.03	0.03	0.06	0.66	2.28	0.09	0.03	0.06	0.26	0.72
31 - 35	0.23					0.06		0.16	0.28	0.95	0.03				0.03	0.06
36 - 40						0.03	0.03		0.09	0.23	0.29					0.09
41 and over											0.06					0.03
Calms	19.34%															
Total	15.98	2.11	0.99	0.03	0.33	0.33	0.72	0.46	3.6	6.91	14.12	5.06	4.46	2.71	7.34	15.77

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.39	1.32	0.41	0.17	0.06	0.20	0.24	0.45	0.90	1.01	2.05	0.80	1.22	0.31	2.16	2.51
11 - 15	5.78	1.21	0.10					0.10	0.55	0.90	1.74	1.11	2.12	1.08	4.56	4.35
16 - 20	5.68	1.32	0.06	0.03					0.17	0.59	1.91	1.66	1.46	0.55	3.73	5.43
21 - 25	3.80	0.37	0.26						0.27	0.76	1.88	0.62	0.10	0.10	1.60	2.75
26 - 30	1.46	0.24							0.27	0.69	1.01	0.48	0.06		0.66	1.55
31 - 35	0.31									0.41	1.01	0.10			0.10	0.52
36 - 40									0.03	0.13	0.17					
41 and over											0.17					
Calms	12.47%															
Total	21.44	5.75	0.66	0.20	0.06	0.20	0.24	0.55	2.23	4.53	9.92	4.74	4.98	2.05	12.83	17.15

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.19	1.15	0.72	0.02	0.13	0.22	0.29	0.08	0.37	0.43	1.77	0.69	2.06	0.29	2.31	3.30
11 - 15	5.05	2.17	0.56				0.08	0.02	0.16	0.45	1.45	1.50	2.04	1.02	2.71	5.32
16 - 20	5.25	1.26	0.43					0.02	0.05	0.59	2.09	1.50	1.29	0.72	3.33	5.69
21 - 25	3.79	1.12	0.05						0.02	0.45	2.55	0.91	0.34	0.05	1.42	4.22
26 - 30	1.61	0.43								0.05	1.66	0.26	0.05		0.26	2.17
31 - 35	0.37	0.16								0.16	0.83	0.08			0.10	0.11
36 - 40	0.13	0.02								0.10	0.37					
41 and over	0.02										0.02					
Calms	12.80%															
Total	19.46	7.04	1.77	0.02	0.13	0.22	0.37	0.13	0.61	2.25	10.77	4.97	5.80	2.09	10.16	21.61

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.21	2.46	2.82	0.49	0.54	0.40	0.13	0.22	0.22	0.58	0.49	0.31	0.81	1.30	4.17	5.82
11 - 15	2.24	0.63	0.40	0.18	0.09			0.09	0.13	0.22	0.94	1.34	1.84	2.69	5.33	7.53
16 - 20	1.25	0.22	0.04	0.04	0.09				0.09	0.49	0.03	1.88	2.91	3.90	3.94	5.60
21 - 25	0.40	0.05	0.09	0.04						0.36	1.25	1.48	2.06	2.33	2.02	2.64
26 - 30			0.04		0.04					0.36	0.45	0.94	1.16	1.12	0.40	0.81
31 - 35										0.09	0.13	0.31	0.22	0.09	0.18	0.22
36 - 40											0.04	0.09	0.04	0.04	0.04	
41 and over												0.13				
Calms	10.12%															
Total	8.11	3.36	3.40	0.76	0.76	0.40	0.13	0.31	0.45	2.10	4.34	6.50	9.05	11.47	16.08	22.62

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.11	2.29	2.29	0.64	0.88	0.76	0.70	0.12	0.29	0.23	0.76	0.41	1.64	1.47	4.76	5.46
11 - 15	1.88	0.94	0.18	0.18	0.06	0.12	0.06	0.18	0.12	0.47	0.53	1.59	2.23	2.58	4.23	7.28
16 - 20	1.00	0.18	0.06	0.12			0.18	0.06	0.06	0.41	1.23	2.41	3.17	2.82	5.40	4.70
21 - 25	0.82	0.12	0.06		0.06				0.06	0.29	0.76	1.23	1.23	1.23	2.17	2.47
26 - 30	0.06	0.06	0.06		0.06			0.06	0.06	0.06	0.32	0.84	0.47	0.12	1.11	0.47
31 - 35		0.06			0.06						0.18					0.06
36 - 40															0.18	
41 and over																
Calms	14.68%															
Total	6.87	3.64	2.64	0.94	1.11	0.88	0.94	0.41	0.59	1.47	4.29	6.28	8.75	8.22	17.85	20.43

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.32	1.39	3.85	2.37	1.52	2.24	1.25	1.08	0.54	0.85	0.90	1.08	0.85	1.21	4.70	4.44
11 - 15	1.25	0.45	0.40	0.76	0.31	0.36	0.40	0.58	0.22	0.67	0.94	1.75	1.43	2.24	3.81	4.26
16 - 20	0.72	0.36	0.27	0.31		0.13	0.05	0.22	0.18	0.72	1.17	3.36	2.51	2.64	1.66	2.46
21 - 25	0.18	0.27	0.36	0.13				0.05	0.27	0.72	0.90	2.15	1.12	0.76	1.30	0.72
26 - 30	0.05	0.05	0.09		0.05				0.05	0.27	0.57	0.63	0.62	0.27	0.13	
31 - 35		0.13	0.13	0.05						0.27	0.09	0.05	0.09	0.09		
36 - 40		0.05	0.22							0.05	0.05					
41 and over			0.09							0.05						
Calms	18.64%															
Total	5.51	2.69	5.42	3.63	1.88	2.73	1.70	1.93	1.25	3.58	4.70	8.96	6.68	7.21	11.60	11.87

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.72	0.56	3.70	3.94	4.81	3.06	3.47	1.11	1.34	0.69	1.16	0.56	1.25	0.60	2.08	1.57
11 - 15	0.97	0.65	0.97	2.82	1.81	2.73	2.55	1.30	0.46	0.60	1.48	2.73	2.59	1.16	1.76	1.02
16 - 20	0.60	0.42	1.44	1.30	0.46	0.28	0.32	0.42	0.32	0.51	1.99	2.82	1.44	1.20	1.34	1.06
21 - 25	0.23	0.60	1.06	0.51	0.09	0.05	0.14			0.32	1.16	0.97	0.79	0.60	0.09	0.23
26 - 30	0.09	0.56	0.88	0.46	0.05	0.09	0.05		0.05	0.19	0.46	0.19	0.46	0.14	0.14	
31 - 35		0.23	0.75	0.05			0.05			0.14	0.05	0.09	0.09			
36 - 40		0.09	0.65			0.05	0.05									
41 and over			0.88					0.05								
Calms	12.92%															
Total	3.66	3.10	10.32	9.07	7.22	6.25	6.62	2.87	2.18	2.45	6.30	7.36	6.62	3.70	5.42	3.94

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.42	0.81	3.00	3.14	3.81	2.91	2.78	1.39	1.57	0.90	1.79	1.21	1.88	0.99	1.57	1.03
11 - 15	0.63	0.54	1.16	3.36	2.24	2.87	3.32	1.49	0.76	1.61	2.11	1.52	1.25	1.21	1.03	0.54
16 - 20	0.40	0.49	1.21	2.91	1.12	1.12	0.67	0.40	0.31	0.94	0.99	1.52	0.76	0.63	0.54	0.40
21 - 25	0.31	0.49	1.66	1.84	0.22	0.13		0.05	0.05	0.45	0.40	0.31	0.22	0.36	0.27	0.13
26 - 30	0.05	0.40	1.75	1.08	0.09	0.09			0.13				0.09	0.05		
31 - 35	0.09	0.31	1.03	0.27	0.05	0.05										
36 - 40		0.22	1.97	0.09	0.22											
41 and over			2.06	0.40	0.05											
Calms	11.34%															
Total	3.89	3.27	13.84	13.08	7.80	7.17	6.77	3.32	2.69	4.03	5.29	4.51	4.21	3.23	3.41	2.11

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.48	0.60	1.85	1.48	1.99	2.68	2.13	0.93	1.34	1.11	1.53	1.20	1.20	0.46	1.43	0.83
11 - 15	1.48	0.83	1.11	2.96	2.92	4.17	2.18	1.81	0.42	0.93	1.11	1.43	0.97	1.06	1.11	0.83
16 - 20	0.37	0.42	1.85	3.56	2.27	1.43	0.88	0.57	0.37	0.65	0.57	0.37	0.23	0.28	0.65	0.28
21 - 25	0.14	1.06	2.18	4.03	0.65	0.18		0.23	0.60	0.42		0.09	0.05	0.09	0.05	0.14
26 - 30	0.14	0.60	2.08	2.45	0.28	0.23		0.09	0.32	0.28				0.09	0.05	0.05
31 - 35	0.05	0.28	2.78	1.20	0.28	0.18	0.18	0.05	0.05	0.05				0.05		
36 - 40		0.28	2.31	0.65		0.05		0.05	0.05	0.09						
41 and over			3.33	0.19												
Calms	9.07%															
Total	3.66	4.07	17.50	16.53	8.38	8.92	5.37	3.70	3.15	3.47	3.19	3.10	2.45	1.94	3.33	2.13

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.66	0.90	0.97	2.21	3.00	2.63	1.59	1.31	1.11	0.90	1.18	1.60	1.31	0.48	1.11	0.90
11 - 15	1.11	0.28	1.18	3.46	2.63	4.70	2.08	0.97	0.28	1.18	1.18	1.38	0.76	1.04	0.51	0.90
16 - 20	0.97	0.97	1.31	6.02	3.53	1.80	0.90	0.07	0.28	0.62	1.18	0.62	0.62	0.69	0.69	0.35
21 - 25	0.35	0.83	2.49	3.78	0.83	0.07	0.13			0.14	0.14	0.07		0.07	0.21	0.48
26 - 30	0.21	1.18	2.21	1.94	0.41	0.14				0.14					0.28	0.21
31 - 35		0.97	1.73	0.48	0.07	0.07									0.41	0.21
36 - 40		0.28	2.35	0.14											0.10	
41 and over			3.32	0.07												
Calms	6.94%															
Total	4.26	5.36	15.46	18.06	10.39	9.35	4.67	2.33	1.65	2.95	3.67	3.64	2.69	2.67	3.16	3.23

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.15	0.87	2.82	2.55	4.84	3.22	1.41	1.01	0.94	0.81	2.49	2.42	2.69	1.07	3.09	1.68
11 - 15	0.81	0.67	0.94	1.55	1.28	2.08	1.61	1.88	0.81	1.01	1.68	2.22	2.42	1.75	2.42	1.81
16 - 20	0.47	0.47	0.53	1.07	0.74	0.60	0.81	0.67	0.34	0.81	1.54	1.14	0.81	0.81	0.60	0.54
21 - 25	0.27	0.40	0.54	1.14	0.34	0.27	0.13	0.27	0.20	0.47	0.40	0.20	0.40	0.07	0.20	
26 - 30	0.07	0.34	1.14	0.81	0.13	0.13	0.07		0.47	0.34	0.13		0.20	0.20		
31 - 35		0.47	0.87	0.47	0.13	0.07										
36 - 40		0.20	0.74	0.07	0.13	0.07										
41 and over			0.74	0.07	0.13											
Calms	15.39%															
Total	3.76	3.43	8.33	7.73	7.79	6.52	4.03	3.83	2.75	3.56	6.25	5.98	6.52	3.76	6.32	4.03

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.63	1.06	4.03	2.73	3.84	2.22	1.62	0.23	1.06	0.55	2.13	2.13	1.99	0.74	4.44	3.56
11 - 15	1.48	0.67	0.79	1.20	0.46	0.42	0.51	0.37	0.69	0.38	3.05	3.01	3.10	1.67	2.59	3.47
16 - 20	0.60	0.09	0.14	0.37	0.37	0.14	0.37	0.05	0.69	1.20	1.71	2.45	1.90	1.57	0.97	1.34
21 - 25	0.05	0.09	0.14	0.14	0.14	0.05	0.18	0.05	0.37	0.74	0.83	0.65	0.18	0.18	0.65	0.55
26 - 30		0.05	0.05	0.09	0.14		0.09		0.05	0.46	0.28	0.23	0.14		0.05	
31 - 35		0.05						0.05	0.05	0.05		0.05				
36 - 40										0.05						
41 and over									0.05	0.18						
Calms	17.26%															
Total	6.76	1.81	5.14	4.54	4.95	2.82	2.78	0.74	2.96	4.58	8.01	8.52	7.31	4.17	8.70	8.94

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.72	2.46	4.88	3.09	1.75	0.72	0.98	0.49	0.90	1.16	1.43	0.81	1.66	1.79	5.11	4.52
11 - 15	1.08	0.36	0.40	0.36	0.09	0.22	0.22	0.27	0.58	0.94	2.02	2.64	2.87	2.24	3.09	3.67
16 - 20	0.31	0.04	0.04	0.04	0.18	0.04	0.18		0.45	1.03	2.19	2.19	3.00	1.79	1.88	1.66
21 - 25	0.18		0.09	0.04	0.04	0.09	0.04		0.09	1.03	1.30	0.90	0.54	0.45	1.21	0.77
26 - 30					0.09	0.04				0.85	1.03	0.49	0.09		0.45	0.13
31 - 35							0.09			0.09	0.22			0.04	0.04	0.04
36 - 40					0.09	0.09										
41 and over						0.04										
Calms	17.74%															
Total	5.29	2.87	5.33	3.58	2.24	1.25	1.52	0.76	2.02	5.11	8.20	7.03	8.15	6.32	11.78	10.80

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	4.22	1.64	3.18	1.21	1.37	0.49	0.39	0.55	0.71	0.49	1.48	0.71	1.37	1.31	4.17	4.39
11 - 15	2.96	0.71	0.88	0.35	0.05		0.11	0.77	0.11	0.55	0.82	1.15	2.47	2.63	5.37	6.80
16 - 20	0.09	0.22		0.11				0.05	0.22	0.16	0.93	3.40	2.14	3.56	4.00	3.34
21 - 25	0.05	0.11					0.05	0.05	0.22	0.55	0.99	1.81	0.92	1.75	1.86	1.70
26 - 30	0.22				0.11					0.38	0.44	0.55	0.44	0.33	0.82	0.16
31 - 35										0.22	0.33	0.16	0.05	0.11	0.22	
36 - 40											0.11					
41 and over										0.11						
Calms	12.77%															
Total	8.44	2.69	4.06	1.37	1.54	0.49	1.15	0.93	1.26	2.47	5.10	7.78	7.40	9.70	16.45	16.39

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	3.99	1.61	1.84	0.54	0.72	0.31	0.31	0.27	0.27	0.27	0.85	0.67	0.99	1.16	6.00	5.20
11 - 15	3.05	0.63	0.45	0.09	0.04		0.13	0.04	0.04	0.40	0.63	1.57	3.09	2.82	7.62	7.08
16 - 20	1.75	0.40	0.04				0.04			0.18	0.81	2.55	3.32	2.55	5.82	6.36
21 - 25	0.36	0.09	0.04						0.04	0.04	0.81	1.21	1.52	1.61	3.18	1.61
26 - 30	0.09									0.09	0.54	0.18	0.13	0.45	1.39	0.40
31 - 35										0.18	0.18	0.04	0.04		0.40	0.09
36 - 40											0.09				0.04	
41 and over																
Calms	8.60%															
Total	9.23	2.73	2.37	0.63	0.76	0.31	0.49	0.31	0.36	1.16	3.90	6.23	9.09	8.60	24.46	20.74

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January

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.07	0.67	0.81	0.40	0.54	0.20	0.34		0.20		0.81	1.34	3.63	4.70	7.12	1.48
11 - 15	0.20	0.07	0.34							0.07	0.54	1.48	3.23	5.24	4.91	0.60
16 - 20		0.07	0.20		0.20						0.54	2.49	4.64	5.51	2.15	
21 - 25		0.07	0.07	0.07						0.07	0.67	2.62	4.77	4.57	0.81	0.07
26 - 30			0.07		0.07						0.47	1.61	3.16	2.02	0.20	
31 - 35											0.54	0.54	0.67	0.34		
36 - 40											0.13	0.13	0.07	0.07		
41 and over												0.20				
Calms	22.09%															
Total	2.28	0.87	1.48	0.47	0.81	0.20	0.34		0.27	0.14	3.70	10.42	20.16	20.43	15.19	2.15

February

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.46	0.58	1.32	0.80	0.80	0.37	0.15	0.07		0.07	0.73	0.29	3.44	5.99	5.92	1.68
11 - 15	0.34	0.22	0.29	0.15	0.07	0.07				0.22	0.58	1.02	1.68	6.29	3.87	0.58
16 - 20			0.07								0.66	1.61	4.46	4.82	2.19	
21 - 25	0.07			0.15							0.73	2.92	5.04	3.51	0.15	0.22
26 - 30											0.44	1.61	3.65	2.56	0.22	0.07
31 - 35											0.22	1.02	0.73	0.80	0.07	
36 - 40											0.07	0.07		0.07		
41 and over																
Calms	22.44%															
Total	2.12	0.80	1.68	1.10	0.88	0.44	0.15	0.07		0.29	3.44	8.55	19.01	24.05	12.43	2.56

March

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.42	1.21	3.22	2.15	2.22	1.01	1.34	0.60	0.74	1.14	2.15	1.41	2.15	3.70	3.49	1.01
11 - 15	0.34	0.51	1.14	1.75	0.74	0.34	0.27	0.07		0.34	1.14	1.34	0.87	2.28	1.61	0.47
16 - 20	0.20	0.07	1.08	1.75	0.67	0.13				0.20	0.34	1.01	1.61	1.88	1.68	0.13
21 - 25	0.07	0.13	0.54	1.01	0.13	0.07				0.07	1.21	1.18	2.76	2.82	0.40	
26 - 30			0.20	0.60	1.13	0.07					0.74	1.81	2.08	1.07	0.13	
31 - 35		0.07	0.13	0.27	0.27						0.54	0.54	0.54	0.54	0.34	
36 - 40				0.07	0.27						0.07	0.07		0.07		
41 and over																
Calms	21.44%															
Total	3.02	2.02	6.38	7.59	4.43	1.61	1.61	0.67	1.28	2.69	7.06	8.13	11.69	11.49	7.26	1.61

April

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.31	1.53	5.88	4.21	4.07	1.81	1.85	0.46	0.83	0.32	2.41	1.20	1.16	0.97	1.48	0.54
11 - 15	0.69	0.60	2.18	3.33	1.39	0.09	0.23	0.14	0.37	0.32	1.16	1.53	2.08	1.20	0.42	0.37
16 - 20	0.23	0.14	2.69	2.92	0.69	0.14	0.05		0.09	0.23	1.34	2.55	3.15	1.53	0.60	0.23
21 - 25	0.05	0.09	2.18	2.41	0.23		0.14	0.05			0.19	0.93	1.34	1.76	0.88	0.51
26 - 30		0.05	0.93	0.93	0.14		0.09			0.05	0.51	0.37	0.79	0.28	0.05	
31 - 35			0.37	0.32	0.04						0.05		0.05	0.05		
36 - 40			0.14	0.14	0.09											
41 and over					0.09											
Calms	19.85%															
Total	3.29	2.41	14.35	14.26	6.76	2.04	2.36	0.65	1.23	1.11	6.39	7.00	8.99	5.05	3.06	1.20

May

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.93	0.99	5.02	3.49	3.54	2.37	1.16	0.31	0.90	0.49	1.66	0.99	2.15	2.02	2.33	0.85
11 - 15	0.76	0.54	2.96	3.00	1.97	0.54	0.09	0.04		0.13	1.12	1.03	2.06	1.93	1.16	0.54
16 - 20	0.40	0.18	3.14	3.58	0.81	0.18			0.04	0.09	0.81	0.81	1.79	2.11	1.12	0.18
21 - 25	0.13	0.22	2.06	2.50	0.36	0.09	0.13		0.04	0.04	0.22	0.18	0.90	0.90	0.45	0.13
26 - 30		0.04	1.84	1.79	0.54						0.13	0.04	0.13	0.40	0.18	0.04
31 - 35		0.09	0.39	2.63	0.45								0.04	0.04		0.04
36 - 40	0.04		0.31	0.40	0.18											
41 and over			0.04	0.22	0.99											
Calms	28.59%															
Total	3.27	2.06	16.35	15.73	3.83	3.18	1.39	0.36	0.99	0.76	3.94	3.05	7.08	7.39	5.24	1.79

June

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.44	1.02	3.47	3.47	3.43	1.34	1.48	0.69	0.65	1.02	1.25	0.97	2.31	1.48	1.57	0.60
11 - 15	0.60	0.60	3.24	3.38	2.18	0.60	0.46	0.32	0.42	0.55	0.65	0.65	1.11	1.20	0.37	0.37
16 - 20	0.37	0.28	2.13	3.51	1.48	0.51	0.23		0.14	0.09	0.42	0.28	0.93	0.79	1.48	0.65
21 - 25	0.09	0.23	2.33	3.52	0.93	0.69		0.05	0.09	0.09	0.14	0.05	0.23	0.19	0.46	0.28
26 - 30	0.09	0.19	2.78	2.92	0.56	0.32			0.19	0.09	0.09				0.05	
31 - 35		0.05	1.85	1.71	0.93	0.51									0.05	0.05
36 - 40	0.05	0.05	1.02	1.20	0.46	0.14									0.05	
41 and over			0.28	0.14	0.37											0.05
Calms	16.53%															
Total	2.64	2.41	18.10	19.95	10.32	4.12	2.18	1.06	1.48	1.85	2.55	1.94	4.58	3.66	4.63	1.99

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July

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.15	1.21	4.50	4.57	3.02	2.08	0.86	0.20	0.27	0.13	2.15	1.81	2.15	2.22	2.08	0.67
11 - 15	1.01	0.34	3.36	3.29	1.21	0.40				0.07	0.60	1.41	1.01	0.62	1.95	0.40
16 - 20	0.81	0.07	3.23	4.91	0.40	0.27					0.34	0.27	0.47	1.01	1.08	0.74
21 - 25	0.13	0.20	4.37	3.23	0.20	0.20						0.27	0.27	0.67	0.67	0.34
26 - 30	0.13	0.27	3.16	3.49	0.47	0.13						0.07			0.40	0.27
31 - 35		0.20	1.21	1.48										0.07	0.07	
36 - 40			1.14	0.60												
41 and over			0.27													
Calms	16.53%															
Total	4.23	2.28	21.24	21.57	5.31	3.09	0.81	0.20	0.27	0.20	3.09	3.83	3.90	4.77	6.25	0.42

August

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.44	0.72	5.45	3.45	2.48	1.84	0.80	0.32	0.26	0.48	1.76	1.84	2.24	3.29	1.36	0.48
11 - 15	0.40	0.08	2.32	2.80	1.20	0.88	0.32	0.08	0.08	0.56	1.12	2.24	3.61	1.84	1.28	0.32
16 - 20	0.40	0.24	1.36	2.48	1.04	0.16	0.08	0.08	0.08	0.48	0.72	0.96	2.48	2.00	0.56	
21 - 25		0.08	1.84	2.16	0.56	0.32	0.24	0.08			0.24	0.64	0.80	0.32	0.56	
26 - 30	0.08	0.16	1.12	0.96	0.56	0.16		0.16				0.16	0.16			
31 - 35			0.56	0.72	0.40	0.08					0.08			0.08		
36 - 40			0.32	0.32	0.16	0.08										
41 and over			0.24	0.40												
Calms	23.38%															
Total	2.32	1.28	13.22	12.90	6.81	3.53	1.44	0.72	1.12	1.52	3.93	5.85	9.38	7.53	3.77	0.80

September

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	0.90	1.81	3.33	2.22	2.78	1.81	1.46	0.49	0.69	0.42	1.74	1.52	3.06	2.54	3.69	1.74
11 - 15		0.07	1.04	1.81	0.83	0.42	0.21	0.14	0.35	1.34	1.46	1.67	2.39	3.06	1.32	0.14
16 - 20		0.07	0.49	1.53	0.49	0.07	0.07	0.07	0.14	1.11	2.64	4.10	3.13	0.56		
21 - 25			0.35	0.83	0.21	0.07				0.28	0.56	1.04	2.36	1.60	0.07	
26 - 30				0.49	0.42						1.04	0.42	0.35	0.20		
31 - 35				0.07	0.76	0.07			0.07	0.14				0.07		
36 - 40			0.14	0.07	0.21											
41 and over		0.07	0.07													
Calms	25.97%															
Total	0.90	2.01	5.42	7.01	5.69	2.43	1.74	0.69	1.11	1.94	6.04	7.29	12.84	11.39	5.63	1.88

October

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.89	1.21	3.02	2.82	1.55	1.01	0.34	0.10	0.31	0.81	1.81	1.48	1.88	2.42	4.14	1.14
11 - 15	0.20	0.20	0.87	1.48	0.87	0.34	0.47	0.27	0.02	0.27	1.55	1.28	3.23	2.55	1.41	0.20
16 - 20	0.07		0.20	0.67	0.40	0.20	0.27		0.13	0.54	1.41	2.49	4.30	1.31	0.67	
21 - 25	0.07		0.47	0.60	0.07	0.20	0.20				2.15	2.42	2.42	2.35	0.27	
26 - 30		0.07	0.07	0.07	0.60		0.07	0.07			0.74	1.61	1.23	1.61	0.07	
31 - 35			0.13	0.20	0.34	0.07	0.07				0.42	0.13	0.27	0.42		
36 - 40					0.20						0.27					
41 and over																
Calms	23.27%															
Total	3.23	1.48	4.77	5.85	4.03	1.91	2.08	0.67	1.21	1.61	8.40	9.41	13.37	11.22	6.85	1.34

November

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	2.57	0.76	2.08	1.39	0.62	0.56	0.49	0.10	0.33	0.07	0.22	1.32	2.57	3.36	4.93	1.81
11 - 15	0.07	0.07	0.35	0.69	0.14		0.07			0.29	1.04	1.74	3.19	3.12	2.43	0.21
16 - 20	0.07	0.07	0.14	0.42	0.21						1.11	2.01	4.31	4.17	0.33	
21 - 25			0.07	0.07	0.07	0.07					0.76	2.43	4.15	3.96	0.49	
26 - 30				0.14							1.35	1.46	1.31	1.34	0.14	
31 - 35			0.07	0.21	0.35						2.21	0.33	0.33	0.20		
36 - 40					0.28						0.07	0.31	0.27	0.14		
41 and over					0.14							0.14				
Calms	24.31%															
Total	2.71	0.90	2.71	2.92	1.81	0.62	0.56	0.10	0.33	0.35	6.88	10.14	16.34	18.19	8.12	2.01

December

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
6 - 10	1.14	0.40	1.68	0.81	0.81	0.54	0.74	0.07	0.24	0.07	0.37	0.74	3.83	4.30	5.14	1.01
11 - 15	0.20	0.07	0.67	0.20	0.13		0.13	0.07	0.20	0.13	1.01	1.55	3.30	4.44	3.56	0.34
16 - 20	0.07	0.07	0.40	0.13	0.07						0.54	1.21	4.70	3.29	1.28	0.27
21 - 25			0.13		0.07			0.07	0.07	0.13	1.28	2.55	6.18	2.62	0.47	0.13
26 - 30			0.07	0.07		0.07					0.57	2.15	3.33	2.55	0.20	
31 - 35											0.27	0.87	1.11	0.74	0.13	
36 - 40											0.07	0.20	0.20			
41 and over												0.13				
Calms	21.24%															
Total	1.41	0.54	2.96	1.21	1.08	0.60	0.87	0.20	0.60	0.34	4.64	9.27	24.06	18.15	11.09	1.75