ROYAL OBSERVATORY, HONG KONG

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CLIMATOLOGY OF CHEUNG CHAU 1971-1991

by

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1. INTRODUCTION

The data used in this note are hourly observations made at Cheung Chau between January 1971 and December 1991. A total of 184 080 observations was loaded into the Oracle database of the Royal Observatory and analyzed using SQL (Structured Query Language) to show significant climatological characteristics at Cheung Chau. Observations taken during the years 1953-1970 are not included in the present analysis as only those data since 1968 are available on computer tape and the station was re-located in April 1970 (see Section 2 below).

2. HISTORY OF THE STATION

Cheung Chau is an island on the southeast of Lantau Island and on the west side of the West Lamma Channel. The island is generally elongated in shape with the highest point of 106 m on the northern sector. Cheung Chau Aeronautical Meteorological Station was established in January 1953. It was originally located on the east side of the central section (22°12'28"N, 114°01'56"E), facing the Kwun Yam Wan with station level 37.6 m above mean sea-level. Its WMO station number and ICAO location indicator were 45002 and VHCC respectively. Due to obstructions caused by high buildings developed around, the station was moved to the western section of the southern part of the island on 20 April 1970. The new station (45001, VHCH) is located on the top of a hill about 800 m southwest of the original station (22°12'11"N, 114°01'27"E), with the station level 72.0 m above mean sea-level. It has a very good exposure to the weather conditions in the southwestern approach to the Airport at Kai Tak. Figure 1 shows the location of the station. Figures 2 and 3 show its top and side view respectively.

Scientific Assistants were on duty 24 hours a day and half-hourly observations were made and passed to the Airport by VHF radio-telephone transceiver. For aircraft take-off and landing, these weather reports were disseminated through a closed circuit television system to air traffic services units for onward transmission to aircraft pilots, to airline operators for pre-flight planning and to other users in the Passenger Terminal Building. This information was also included in the half-hourly meteorological broadcasts for aircraft in flight.

Due to staff resource constraint, the station became automated in March 1992. The last observation made was at 0000 UTC on 1 April 1992.

3. INSTRUMENTS AND METHODS OF OBSERVATION

The following paragraphs describe the instruments and methods of observation used in Cheung Chau Aeronautical Meteorological Station during the years 1971-1991.

(a) Atmospheric pressure

The barometer used was a Kew pattern manufactured by F. Darton and Co. Ltd. Correction for index error, adjustment of the readings to the standard temperature of 0 °C and the standard gravity of 9.80665 m/s^2, and reduction to mean sea-level were carried out using the methods described in the WMO publication No. 8, 'Guide to Meteorological Instruments and Observing Practices'.

Height of cistern above floor = 0.64 m
Height of cistern above mean sea-level = 79.16 m

A Casella barogragh kept a continuous record of the mean sea-level pressure. This was used to check the accuracy of the hourly readings.

(b) Air temperature, dew point and relative humidity

The thermometers were placed in a Stevenson screen with their bulbs 1.27 m above ground. Values of dew point temperature and relative humidity were calculated from the dry and wet bulb temperatures.

The maximum and minimum thermometers were similarly exposed, both read twice daily at 0800 hours and midnight.

A distant reading electrical resistance hygrograph had been used to keep a continuous record of the dry and wet bulb temperatures until 10 September 1976 when it was replaced by a mercury-in-steel thermograph.

(c) Wind

Winds had been measured by a Dines pressure-tube anemograph manufactured by R.W. Munro Ltd. with the head 92.05 m above mean sea-level since the station started operation. On 13 March 1986, it was replaced by a Mark IV Cup Generator and Vane anemometer with the cup centre 92.28 m above mean sea-level.

Gust had been reported only when it was greater than the mean wind speed by 5 m/s or more until January 1980 when reports were made irrespective of the mean wind speed.

(d) Rainfall

Hourly rainfall was recorded with an ordinary 127 mm standard rain-gauge. A tilting siphon rain-gauge (Tropical) was also installed to keep a continuous record of rainfall.

(e) Cloud

Visual observations of cloud type and amount, and estimates of the height of the cloud base were made with reference to well-marked topographical features.

At night, the height of the cloud base was measured by a cloud searchlight whenever cloud was present below the limits of penetration of the beam. The alidade was fixed on a post outside the observing room. The cloud searchlight was set up at a distance of 266.7 m away from the alidade.

(f) Visibility

Eye estimates of horizontal visibility were made with reference to well-marked topographical features.

(g) Weather

Occurrences of thunderstorm, fog, mist and haze were reported in routine weather observations.

4. ANALYSIS

(a) Monthly and annual wind roses

The total number of occurrences of concurrent wind speed and direction is computed for each month. Wind directions are grouped into ranges of 30° and wind speeds in m/s into categories as follows : 0.3-3.3, 3.4-7.9, 8.0-13.8 and >13.8. The percentage frequencies are plotted in the form of wind roses in Figures 4-6.

(b) Diurnal variation of wind

Hourly vector mean winds are computed for each month. These are plotted in Figures 7-8. It is interesting to note that from September to May, winds begin to veer after dawn until around 3 p.m. when they start to back again. The change in direction amounts to 60 degrees from September to December decreasing to about 30 in April and May. No regular change in direction is noticeable during the summer months from June to August. There is a distinct maximum in wind speed around or just before dawn in winter from November to February. The maximum shifts to the afternoon in summer from May to August and the diurnal variation of wind speed is small during transition periods.

(c) Percentage frequencies of the occurrence of visibility and/or height of the base of the lowest cloud layer covering 5 oktas or more of the sky below specified values at specified times

This analysis is made according to Model A of the Aerodrome Climatological Summary in WMO Technical Regulations - Volume II, No. 49, 1992 Edition. The frequencies are tabulated in Tables 1-12.

(d) Climatological summary

Monthly values of meteorological elements are summarized in Table 13.

(e) Tables of hourly means of meteorological elements

Hourly means in each month for the following elements are shown in Tables 14-19.

(i) mean sea-level pressure
(ii) air temperature
(iii) wet-bulb temperature
(iv) dew point
(v) relative humidity
(vi) cloud amount

(f) Graphs showing the diurnal variation of meteorological elements

Monthly graphs for the elements in (e) above are plotted in Figures 9-14 to show the diurnal variations.

(g) Frequency distributions of parameters relating to the occurrence of fog

These are plotted in Figures 15-21. Parameters chosen are occurrence time, duration, visibility, times of onset and cessation, temperatures at onset and cessation of fog. Duration refers to the number of hours of consecutive reports of fog. Frequency of visibility is based on hourly observations during fog. The frequency distribution of wind direction and speed when fog was observed is shown in Table 20.

During the 21-year period under study, fog was observed mainly between 1 and 10 a.m. (64%) and most frequently between 6 and 8 a.m. (26%) (Figure 15). About two thirds of fog periods had durations of less than 4 hours while visibilities reported had a near uniform distribution between 100 and 900 m (Figures 16 and 17). Fog could start at any time of the day although more than half (55%) had onset times between 1 and 8 a.m. About half (52%) had temperatures between 20 and 23 °C at time of onset. The preferred cessation time of fog was between 6 and 10 a.m. when 44% of the fog ceased. Temperatures at fog cessation most frequently lay between 20.5 and 23 °C (46%) (Figures 18-21). During fog, more than one third of the wind directions were between 120 and 150 degrees, about 86% of the wind speeds were below 5.5 m/s and the mean wind speed was 2.5 m/s.

(h) Frequency distributions of parameters relating to the occurrence of mist

These are plotted in Figures 22-28. Parameters chosen are the same as those for fog. Duration refers to the number of hours of consecutive reports of mist. Frequency of visibility is based on hourly observations during mist. The frequency distribution of wind direction and speed when mist was observed is shown in Table 21.

Like fog, mist was observed mainly between 1 and 10 a.m.(57%) and most frequently between 6 and 8 a.m. (22%). About 80% of mist periods had durations of less than 4 hours. Unlike fog, the distribution of visibility had a mode at 4 km. The onset of mist occurred most often between 6 and 10 a.m. (37%) and the preferred cessation time was also between 6 and 10 a.m. (38%). This is because most of these mist events lasted only a couple of hours. The preferred temperature range at onset time was 18.5 to 23 °C (56%), which is wider than that for fog. However, temperatures at mist cessation were similar to fog situation, being 20 to 23 °C (41%). The wind direction during mist was more varied with only 25% lying between 120 and 150 degrees. About 83% of the wind speeds were below 5.5 m/s and the mean wind speed was 2.9 m/s.

The analysis for haze is not carried out since there were only 79 reports of haze at Cheung Chau during this 21-year period.

(i) Frequency distributions of parameters relating to the occurrence of thunderstorm

These are shown in Figures 29-33. Parameters chosen are occurrence time, duration, maximum gust, temperature drop and pressure rise. Duration of thunderstorm refers to the number of hours of consecutive reports of thunderstorm. Maximum gust refers to the maximum gust within the period of thunderstorm and 1 hour before. The temperature drop and pressure rise are the differences between the maximum and minimum values of the hourly observations taken within that period. It should be noted that these are very often underestimates of the actual differences as read from thermographs and barographs because extreme values do not necessarily occur when hourly observations are made.

The likelihood of thunderstorm during different time of the day was more or less the same although it was slightly more frequent around noon and less frequent around midnight (Figure 29). About three quarters of thunderstorm periods had durations of less than 3 hours (Figure 30). There was a mean maximum gust of about 13.5 m/s and a maximum of 40 m/s (There are only 710 cases in Figure 31 out of a total of 790 thunderstorm events since gust was not reported unless it was greater than the mean wind speed by 5 m/s or more before 1980). The temperature drop and pressure rise had mean values of 1.3 °C and 0.9 hPa with maxima of around 8 °C and 5.5 hPa respectively (Figures 32 and 33). The reader may note that there was no temperature drop and pressure rise in quite a large number of thunderstorm situations. The reason could be attributable to the fact that thunderstorms occurred in such a distance from the station that the effect on temperature and pressure was not significant during those occasions.

(j) Gust factor

Gust factor is defined as the ratio of hourly instantaneous maximum gust to hourly mean wind. Using the regression equation of gust(G) on hourly mean wind(M), gust factor(GF) can be obtained. If the regression equation is written as

$$G = a\,M + b$$

then $$GF = a + b/M$$

Regression equations for winds in different quadrants with gust greater than the mean wind by 5 m/s or more and their corresponding gust factors are shown below :

$G = 1.22\,M + 4.54$,	$r=0.94$	(direction between 050° and 130° , east)
$G = 1.21\,M + 5.02$,	$r=0.93$	(direction between 140° and 220° , south)
$G = 1.25\,M + 5.28$,	$r=0.90$	(direction between 230° and 310° , west)
$G = 1.15\,M + 4.90$,	$r=0.95$	(direction between 320° and 040° , north)

where r is the correlation coefficient.

Hourly mean wind (m/s)	Gust factor			
	East	South	West	North
10	1.67	1.71	1.78	1.64
20	1.45	1.46	1.51	1.40
30	1.37	1.38	1.43	1.31
40	1.33	1.34	1.38	1.27

(k) Extreme values of temperature, rainfall and gust

The top 20 extreme values of maximum and minimum temperatures, maximum gust and maximum hourly, daily and monthly rainfall are listed in Table 22. The extreme values recorded at the Royal Observatory during the same period are also given on the last line for comparison.

For the occurrence of extreme maximum temperatures, only the case on 22 August 1976 (Rank 19) was due to the subsidence ahead of a tropical cyclone near Bashi. All others were due to the Pacific ridge or the southwest monsoon or low pressure areas in the South China Sea, except the last one which occurred with an anticyclone over China.

The heaviest rainfall at Cheung Chau, as characteristic of Hong Kong, was brought by tropical cyclones and monsoon troughs.

The top 20 maximum gusts were all recorded during the passage of typhoons. The typhoons were Ellen, Hope, Elsie and Rose in 1983, 1979, 1975 and 1971 respectively.

(l) Special phenomenon

On 19 March 1981, a funnel cloud 8 km to the southeast of Cheung Chau was reported by the duty observer at 11:31 a.m. which lasted for 4 minutes. Hail was observed in the territory later on the day, but was not observed at Cheung Chau. No other special phenomenon was observed (as present weather in synoptic reports) at this station during the period 1971-1991.

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2.	Lau, R. and W.C. Poon	1976	Climatology of Cape Collinson 1968-1973, Royal Observatory Technical Note No. 60
3.	Tsui, K.S.	1983	Waterspouts near Hong Kong, Royal Observatory Technical Note No. 67
4.	W.M.O.	1992	Technical Regulations - Vol. II, No.49

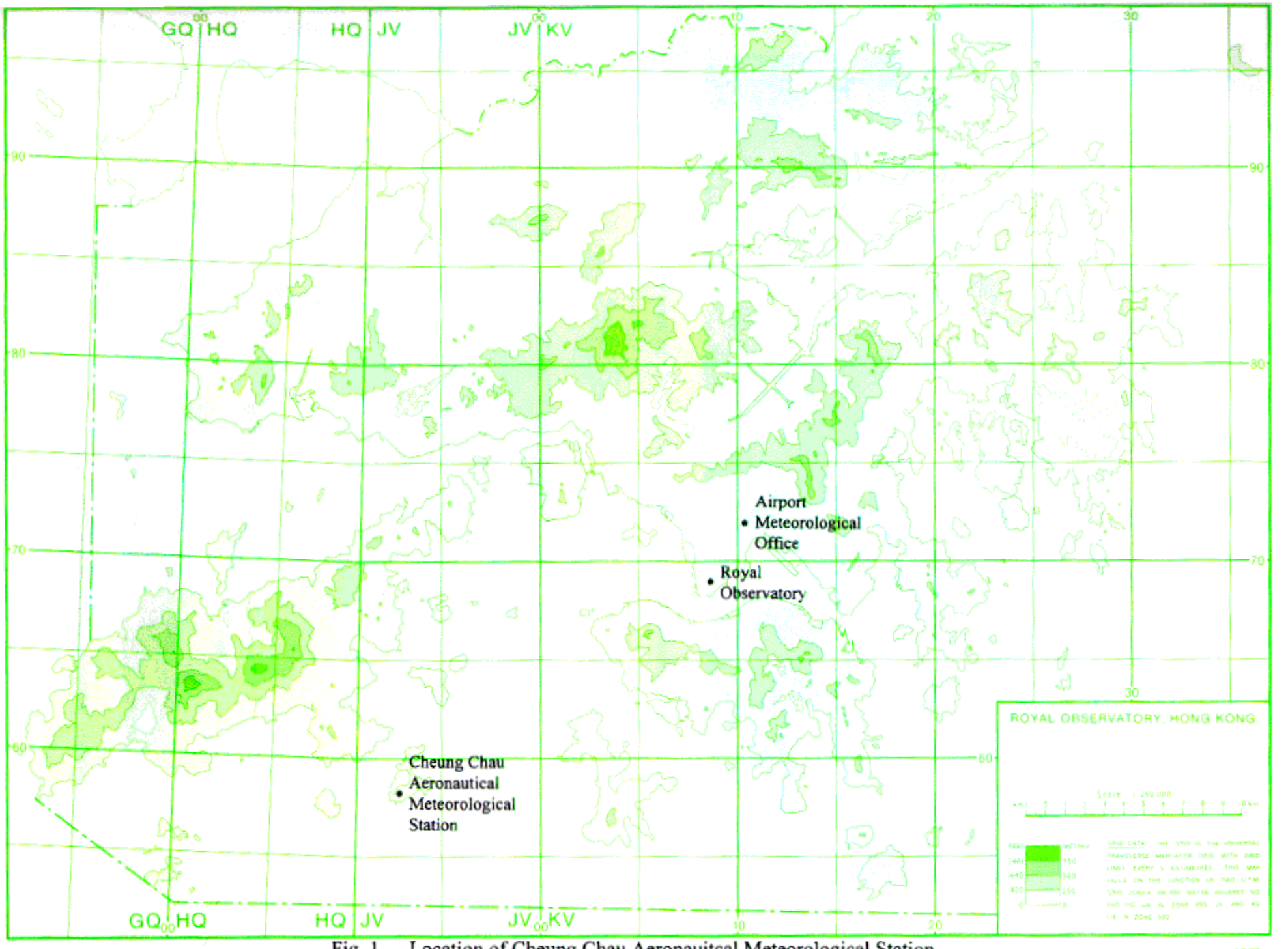


Fig. 1. Location of Cheung Chau Aeronauitcal Meteorological Station.

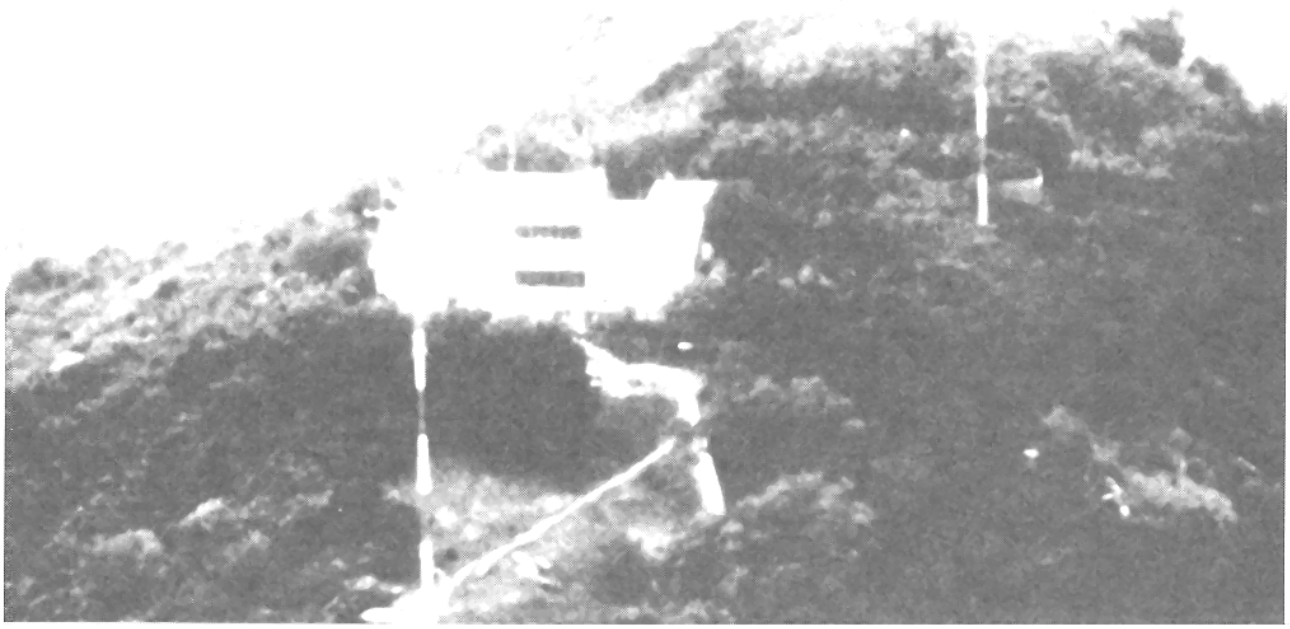


Fig. 2. Top view of Cheung Chau Aeronauitcal Meteorological Station.

Fig. 3. Side view of Cheung Chau Aeronauitcal Meteorological Station.

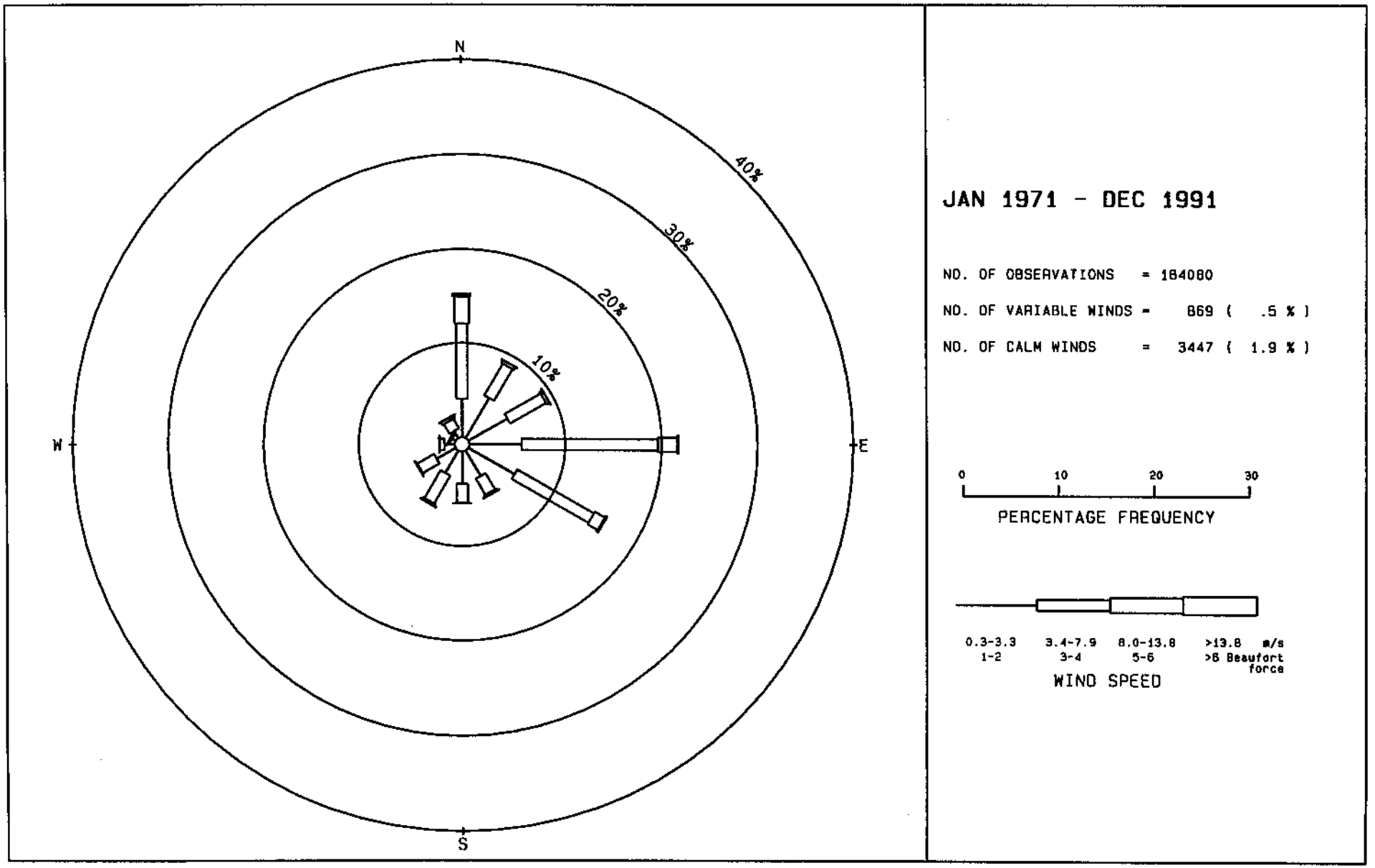


Fig. 4. Annual wind rose for Cheung Chau, 1971-1991.

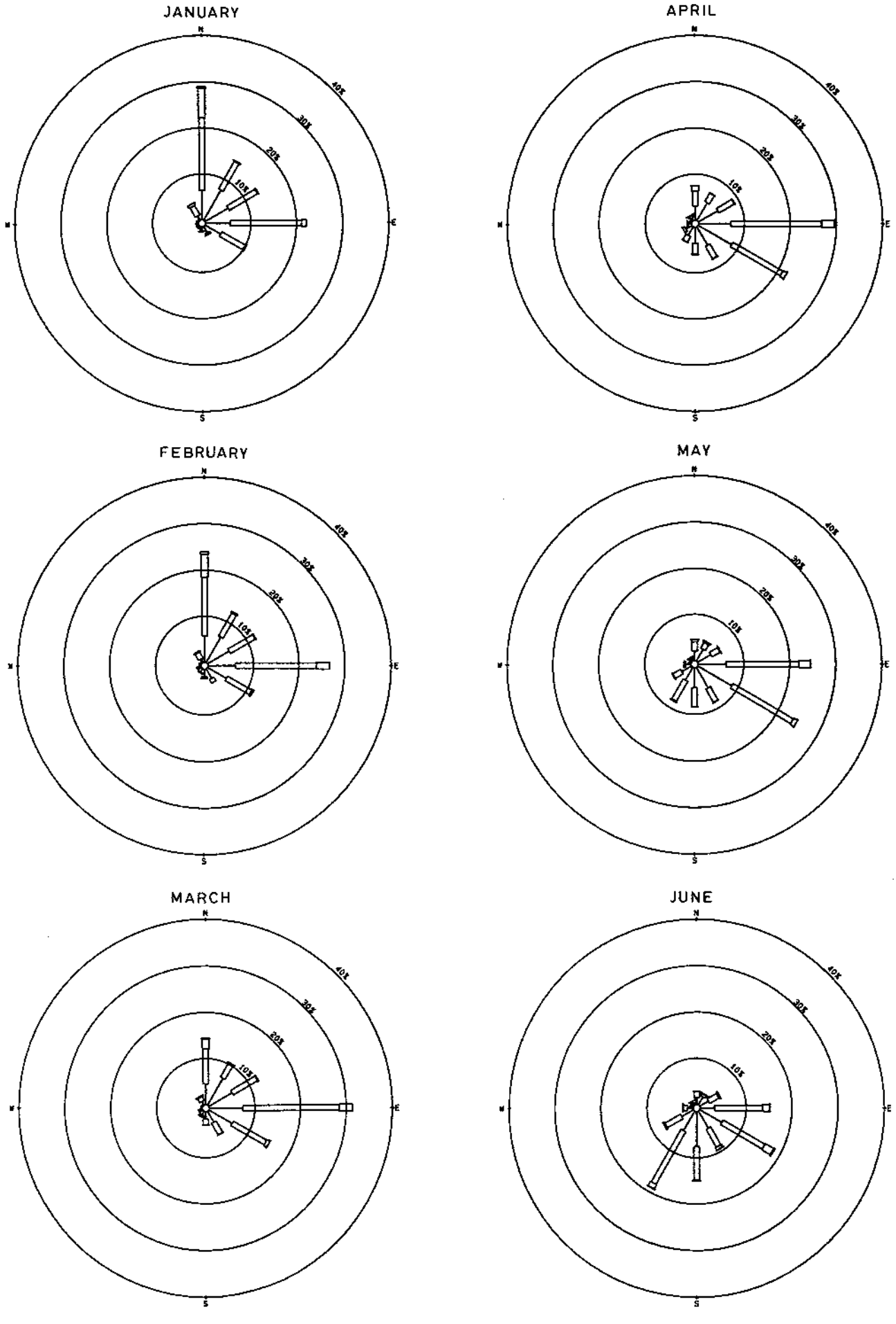


Fig. 5. Monthly wind roses from January to June for Cheung Chau, 1971-1991.

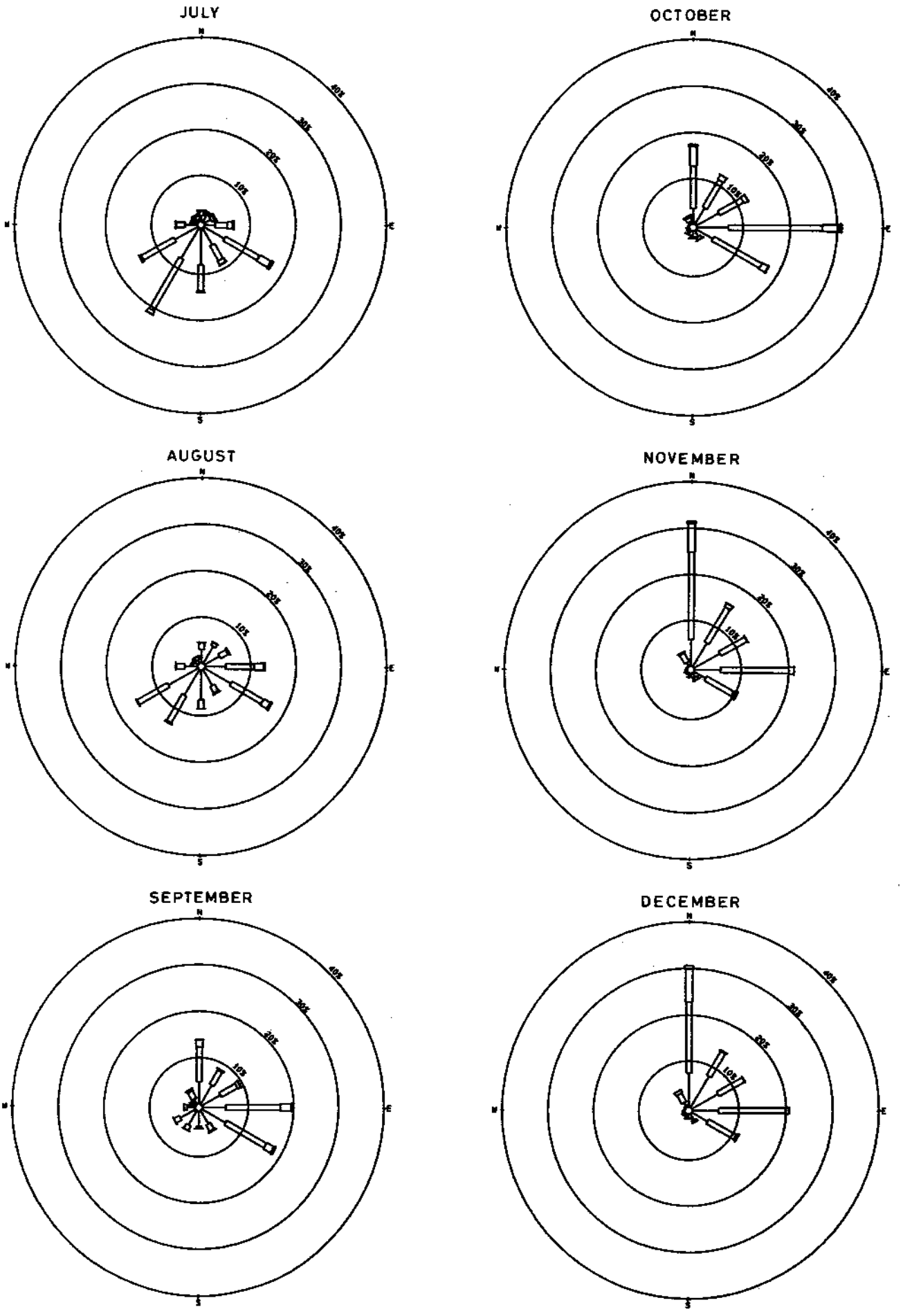


Fig. 6. Monthly wind roses from July to December for Cheung Chau, 1971-1991.

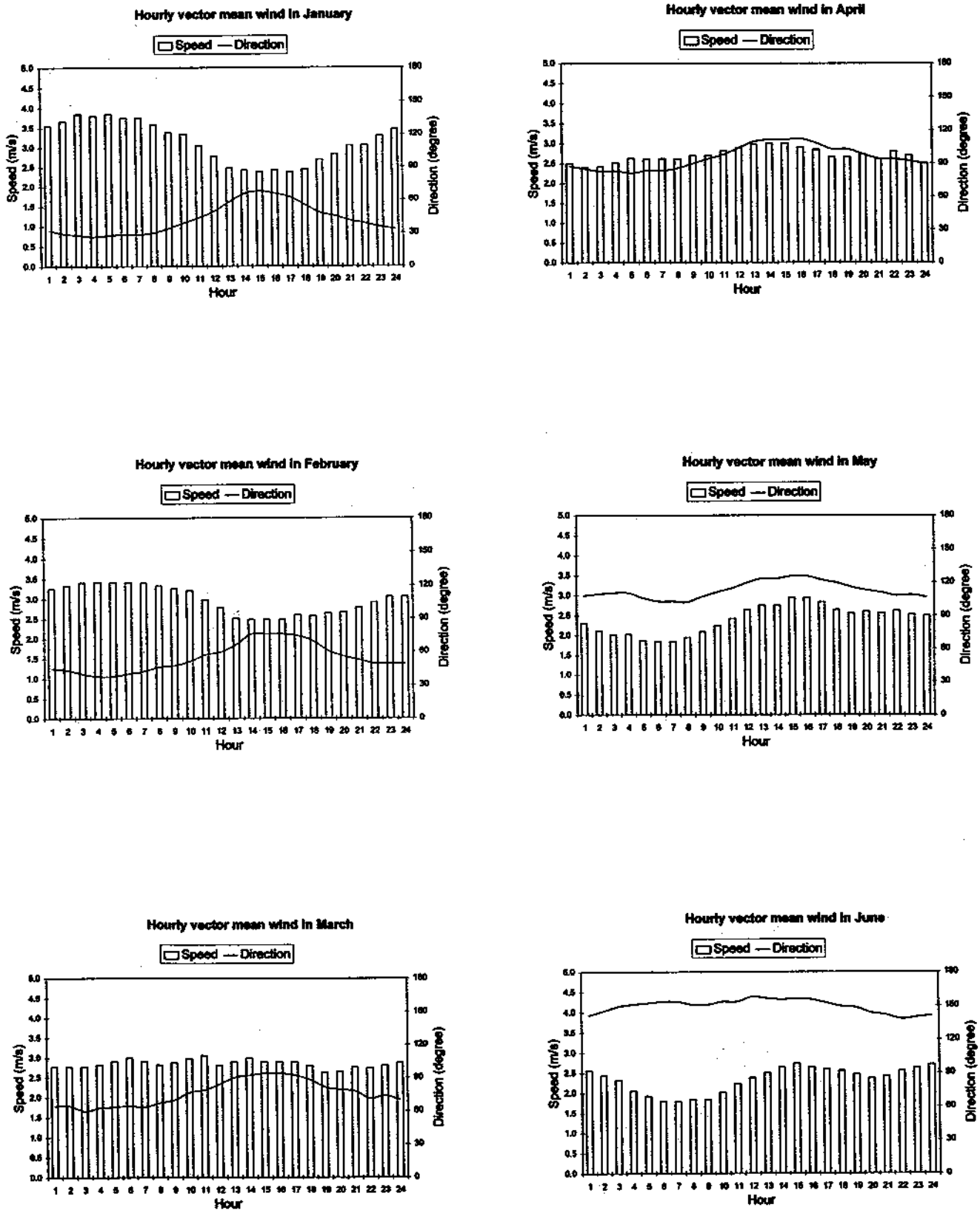


Fig. 7. Hourly vector mean wind from January to June at Cheung Chau, 1971-1991.

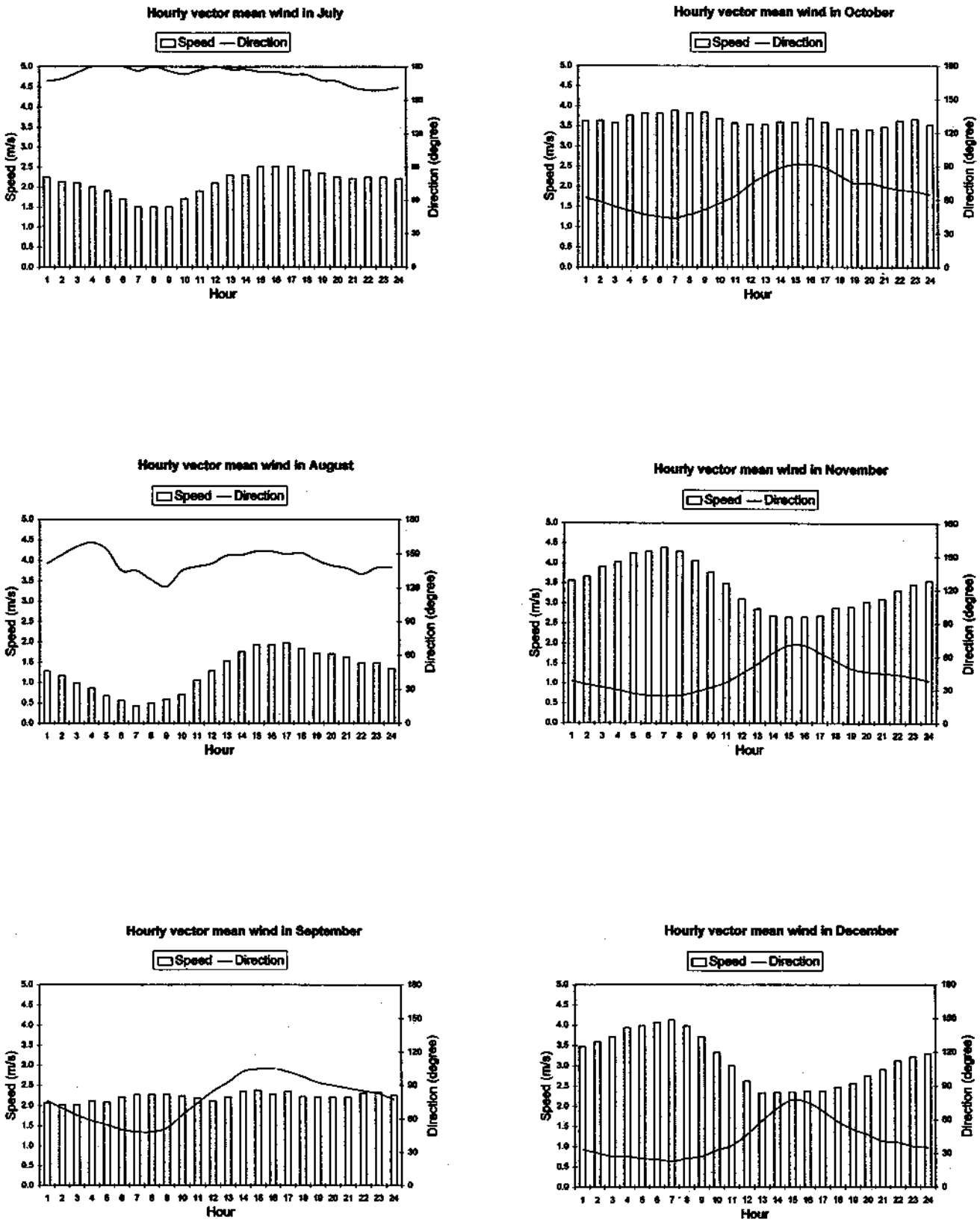


Fig. 8. Hourly vector mean wind from July to December at Cheung Chau, 1971-1991.

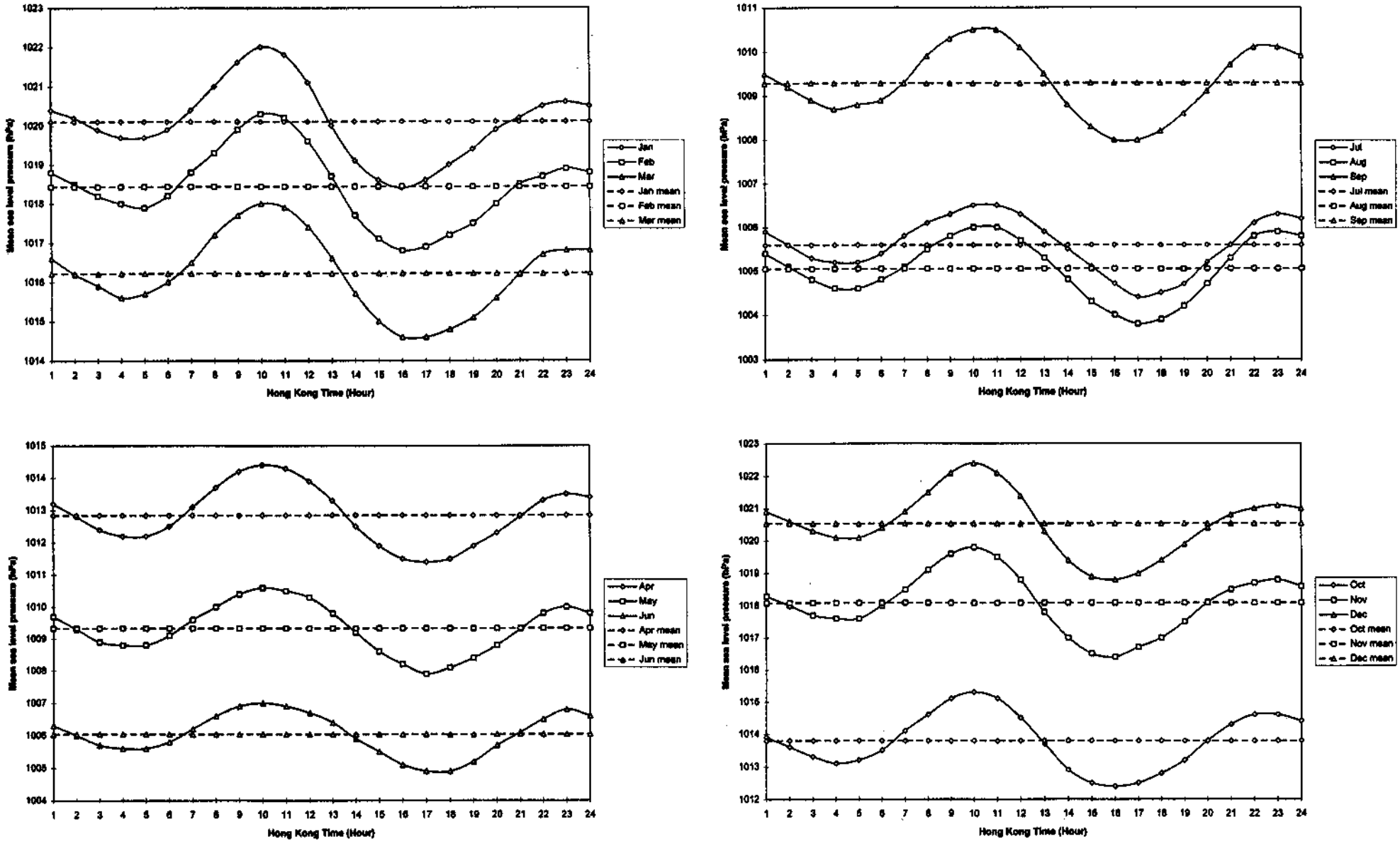
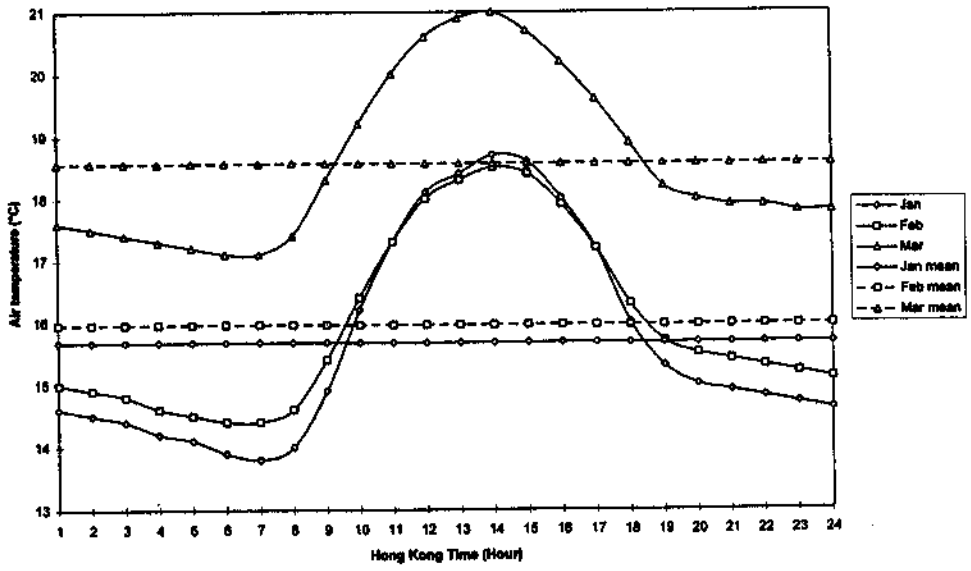
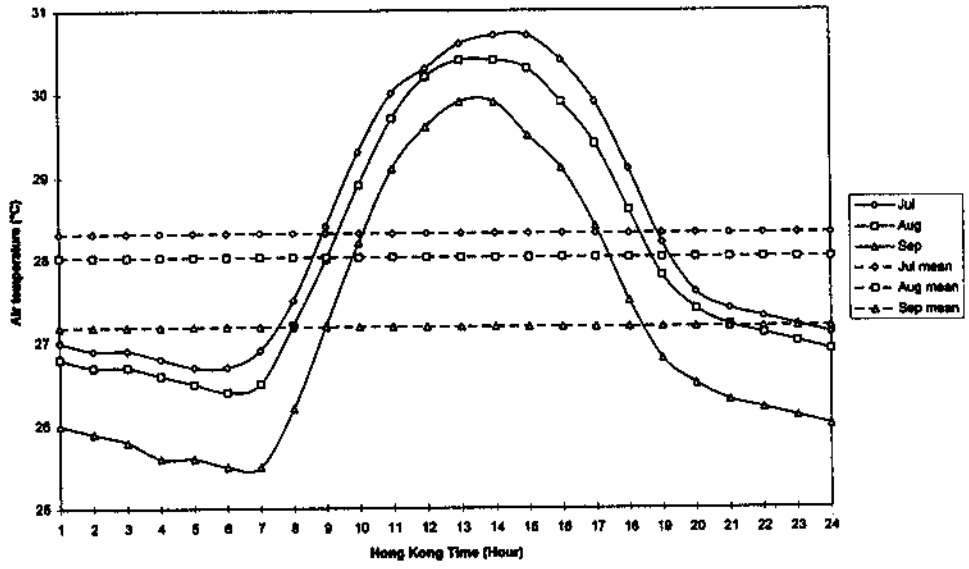
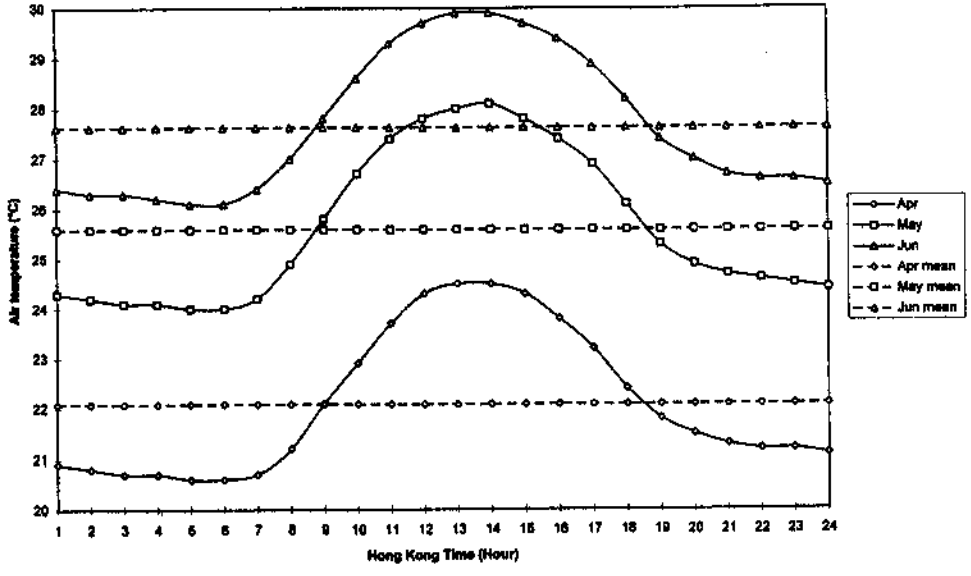
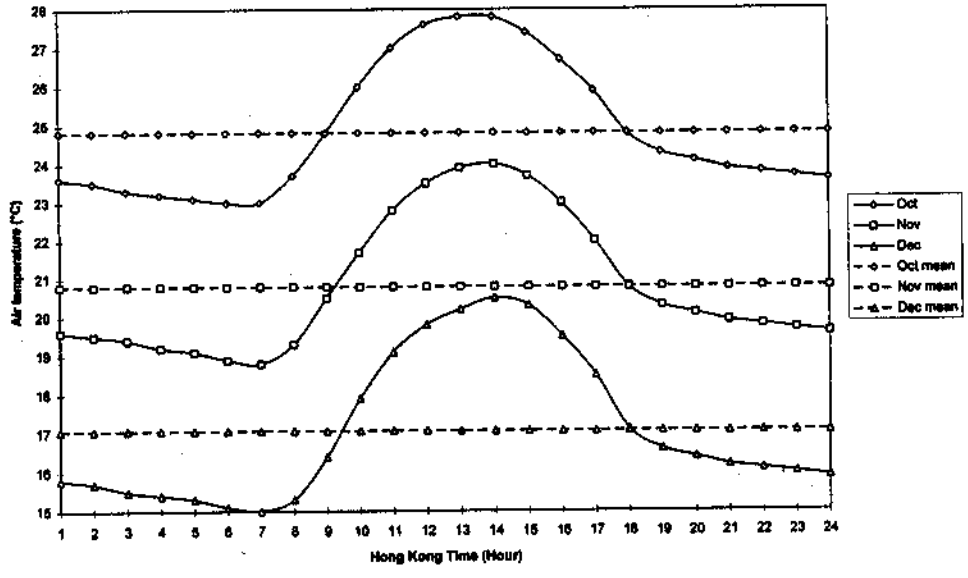


Fig. 9. Diurnal variation of mean sea level pressure at Cheung Chau, 1971-1991.


Air temperature (°C)
Hong Kong Time (Hour)
Jan
Feb
Mar
Jan mean
Feb mean
Mar mean


Air temperature (°C)
Hong Kong Time (Hour)
Jul
Aug
Sep
Jul mean
Aug mean
Sep mean


Air temperature (°C)
Hong Kong Time (Hour)
Apr
May
Jun
Apr mean
May mean
Jun mean


Air temperature (°C)
Hong Kong Time (Hour)
Oct
Nov
Dec
Oct mean
Nov mean
Dec mean

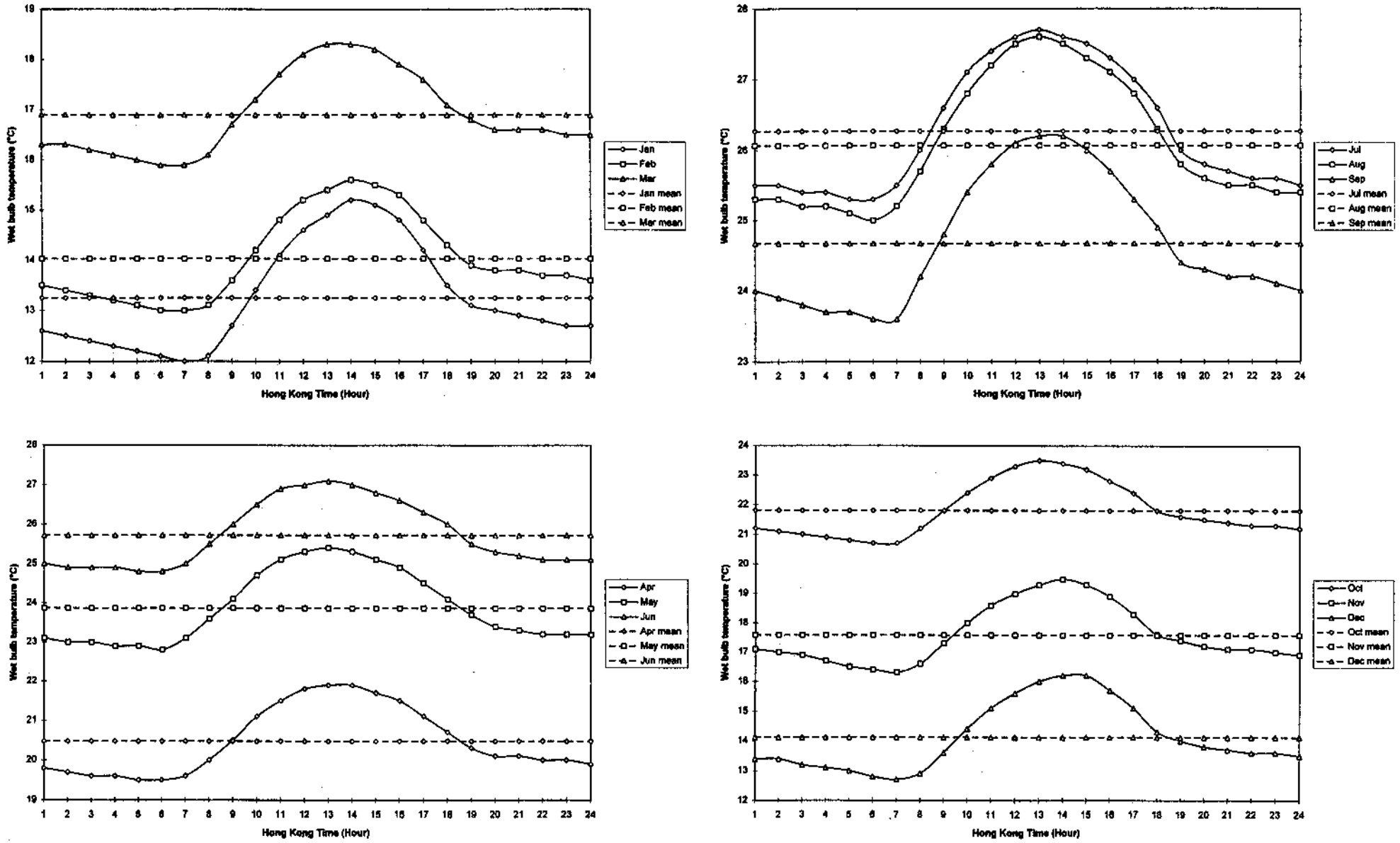


Fig. 11. Diurnal variation of wet bulb temperature at Cheung Chau, 1971-1991.

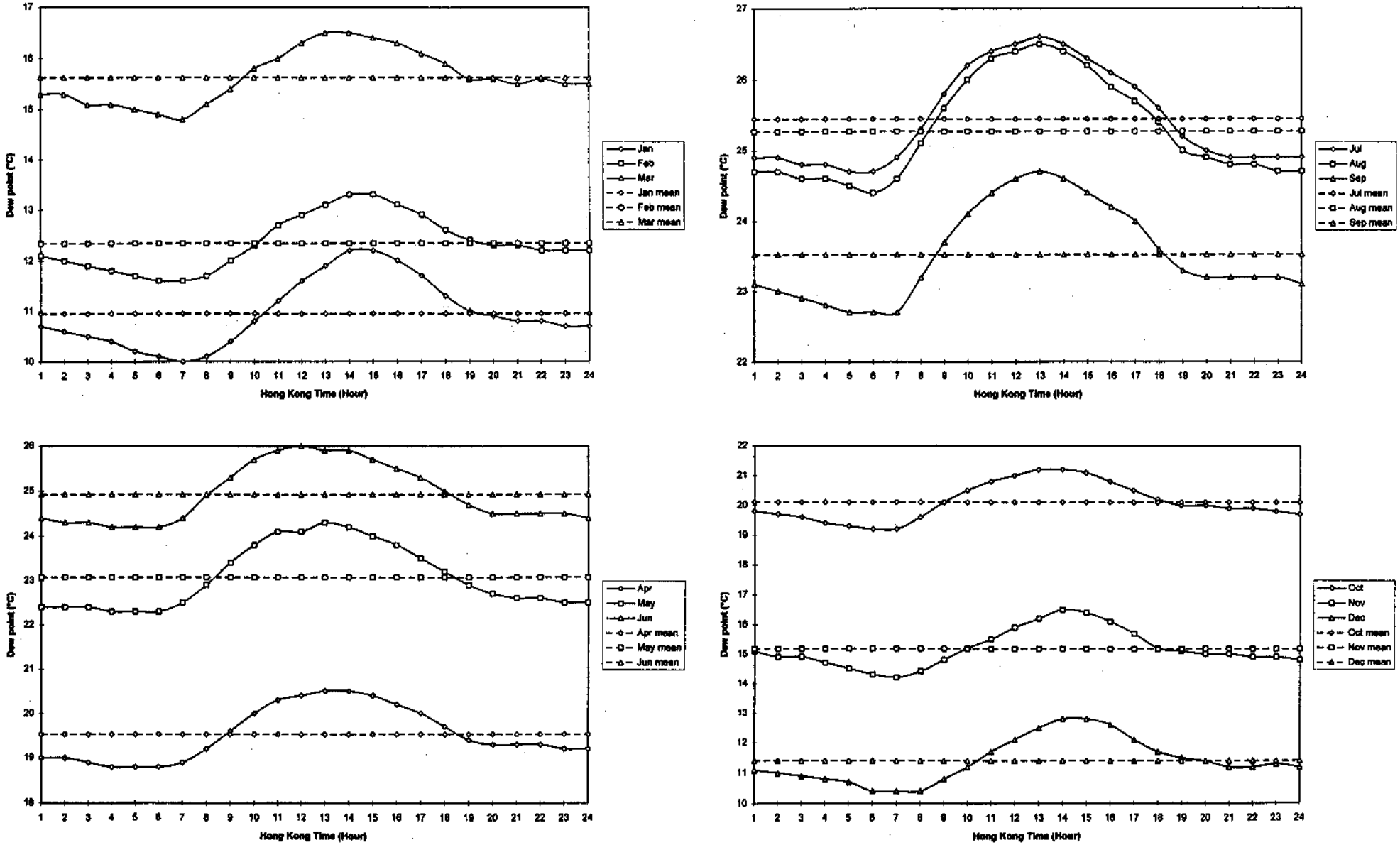


Fig. 12. Diurnal variation of dew point at Cheung Chau, 1971-1991.

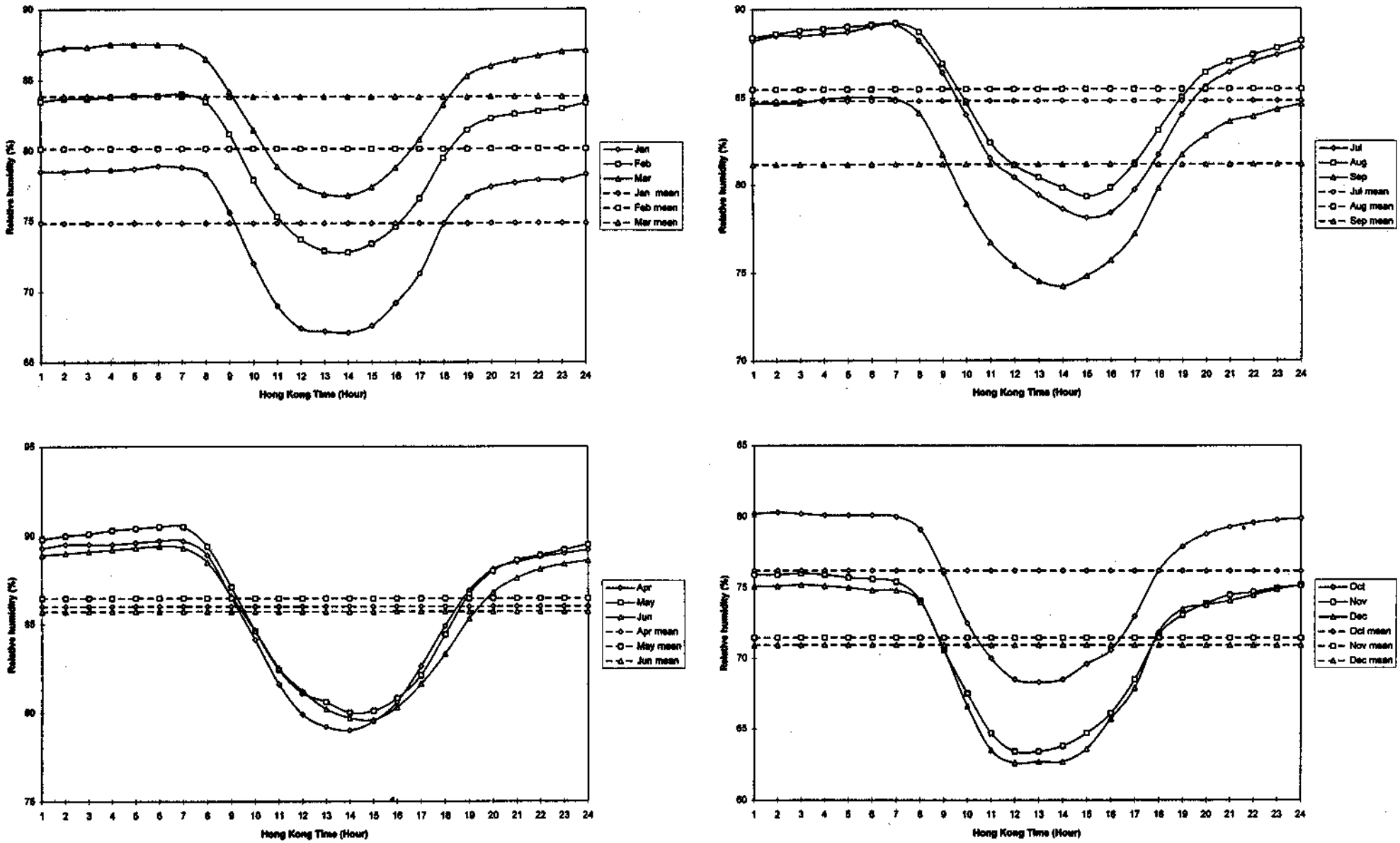


Fig. 13. Diurnal variation of relative humidity at Cheung Chau, 1971-1991.

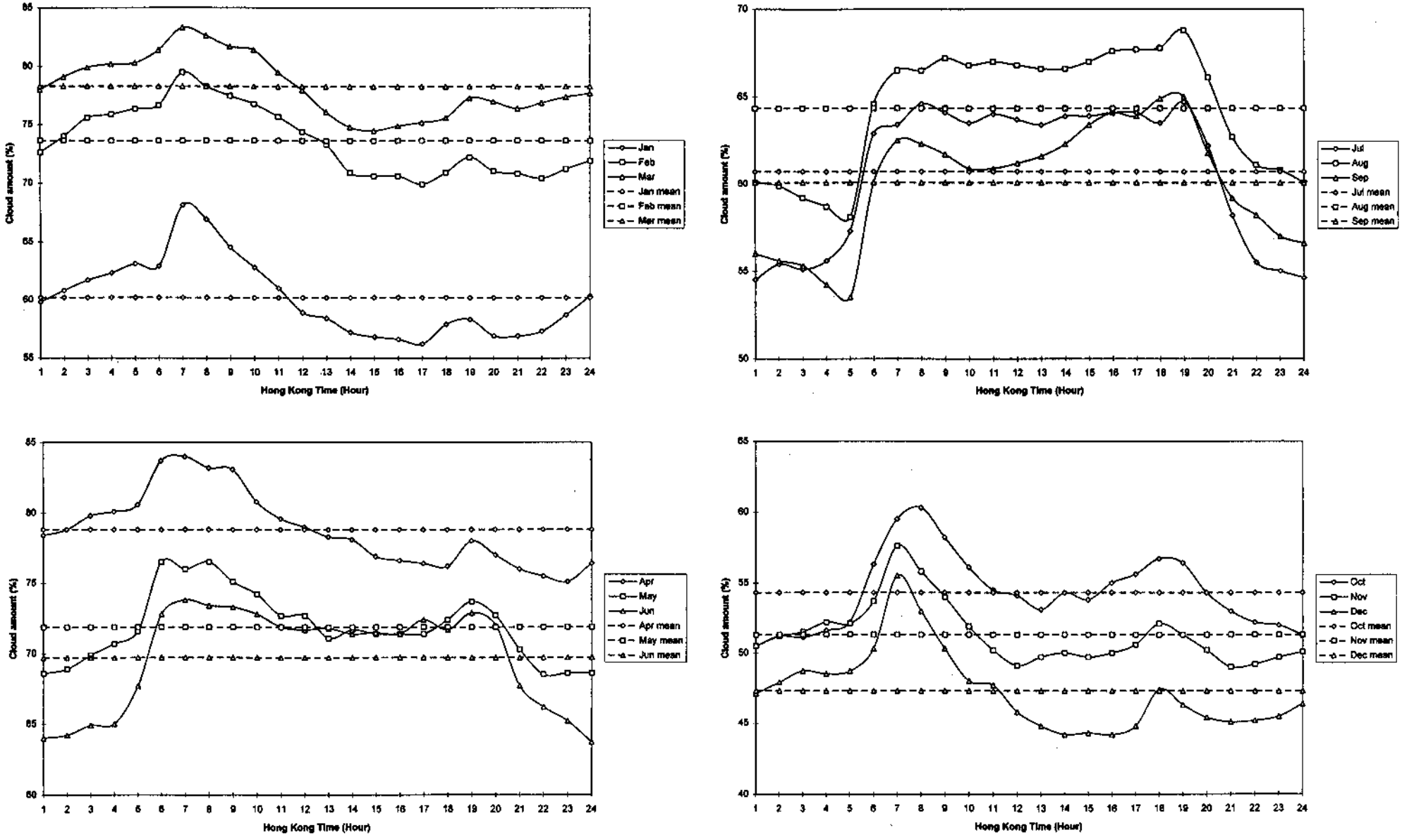


Fig. 14. Diurnal variation of cloud amount at Cheung Chau, 1971-1991.

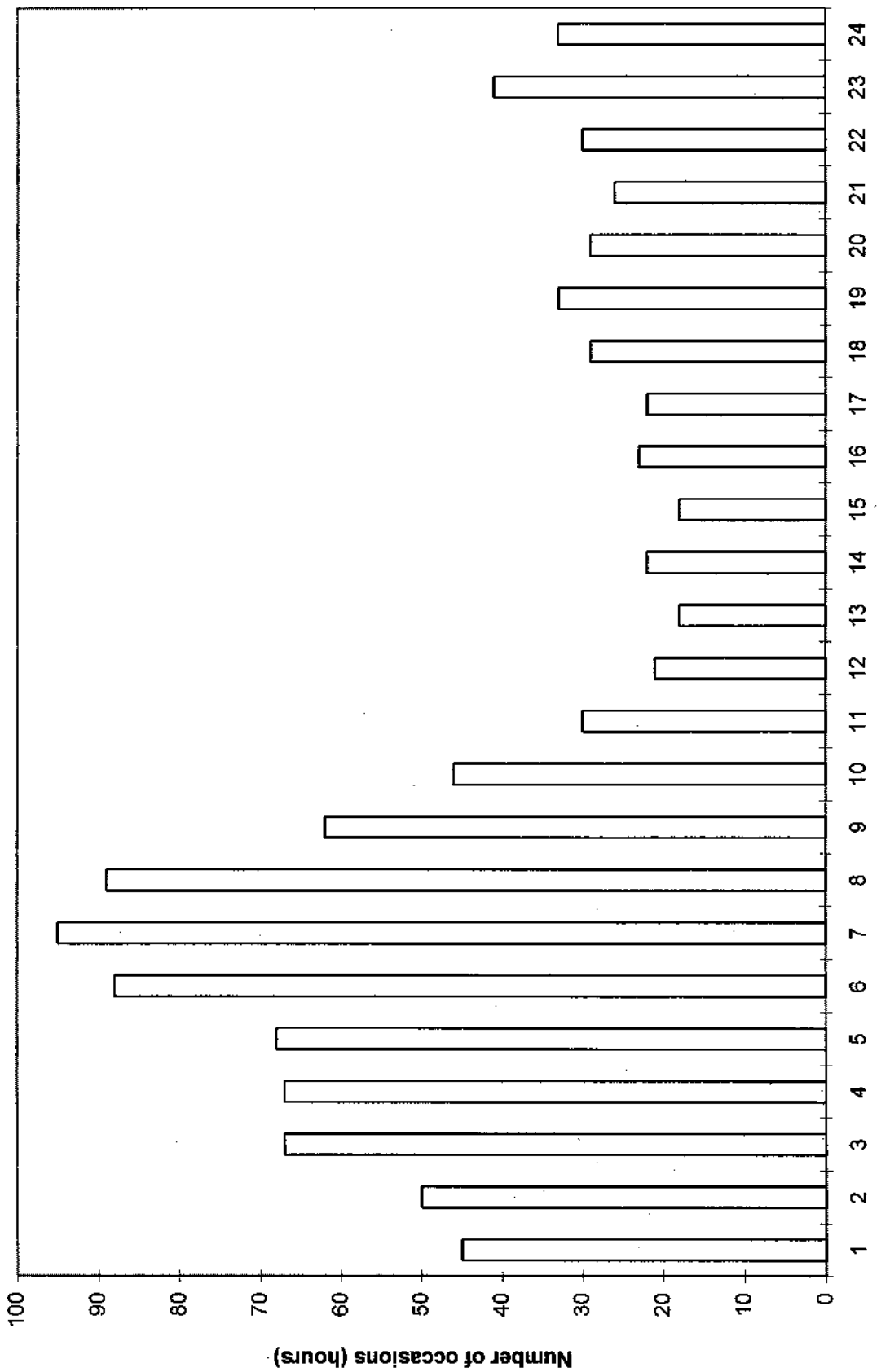


Fig. 15. Diurnal variation of the occurrence of fog at Cheung Chau, 1971-1991.

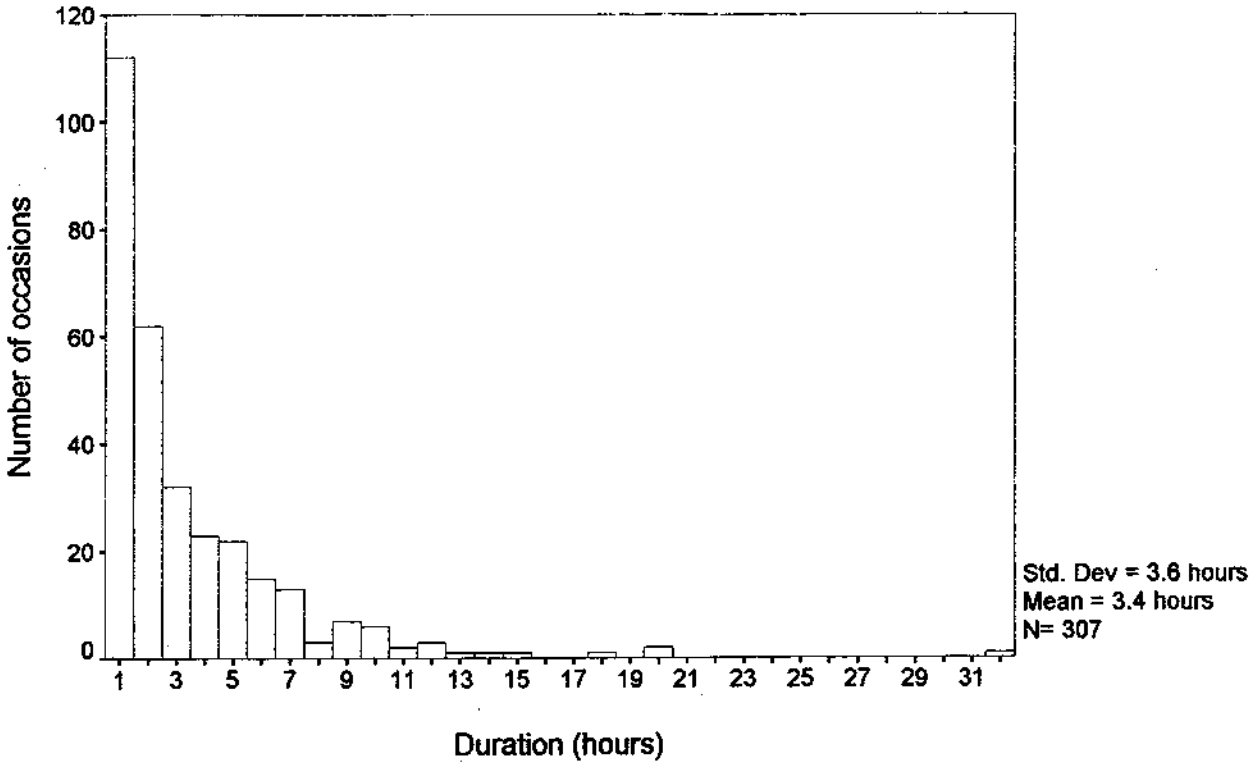


Fig. 16. Frequency distribution of duration of fog at Cheung Chau, 1971-1991.

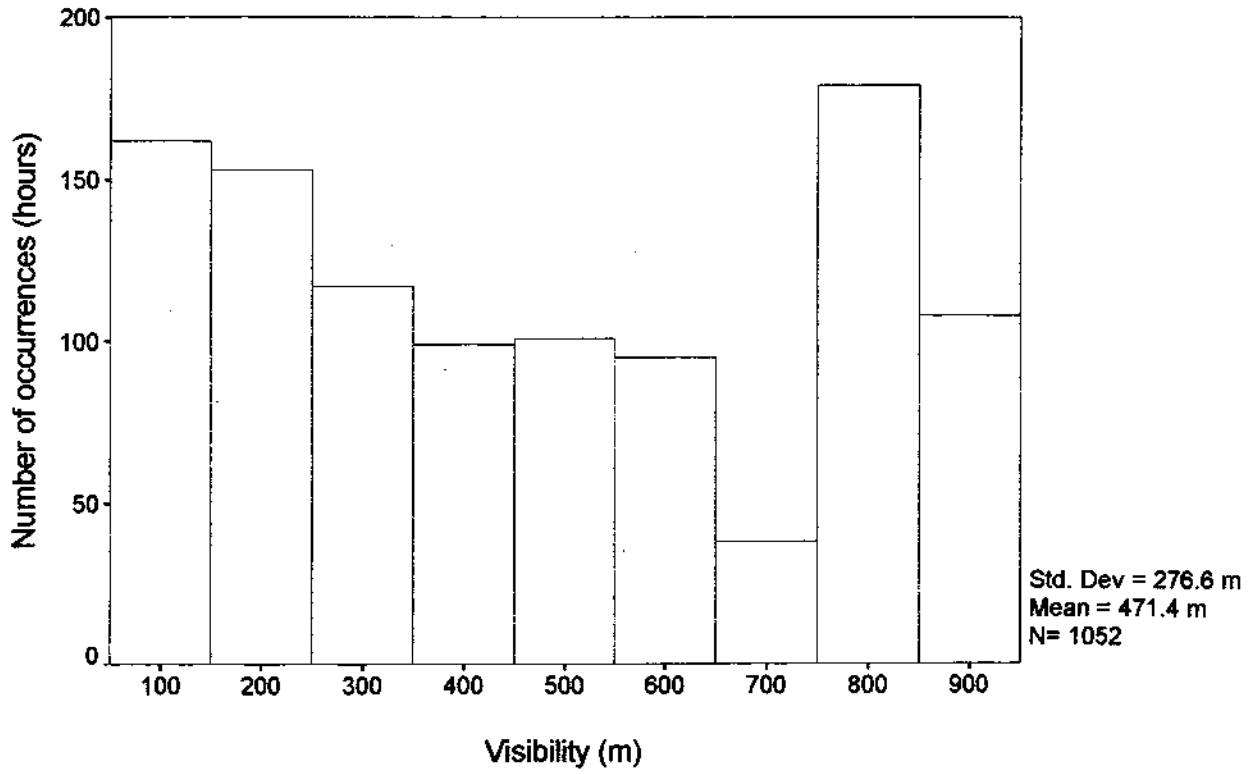


Fig. 17. Frequency distribution of visibility during the occurrence fog at Cheung Chau, 1971-1991.

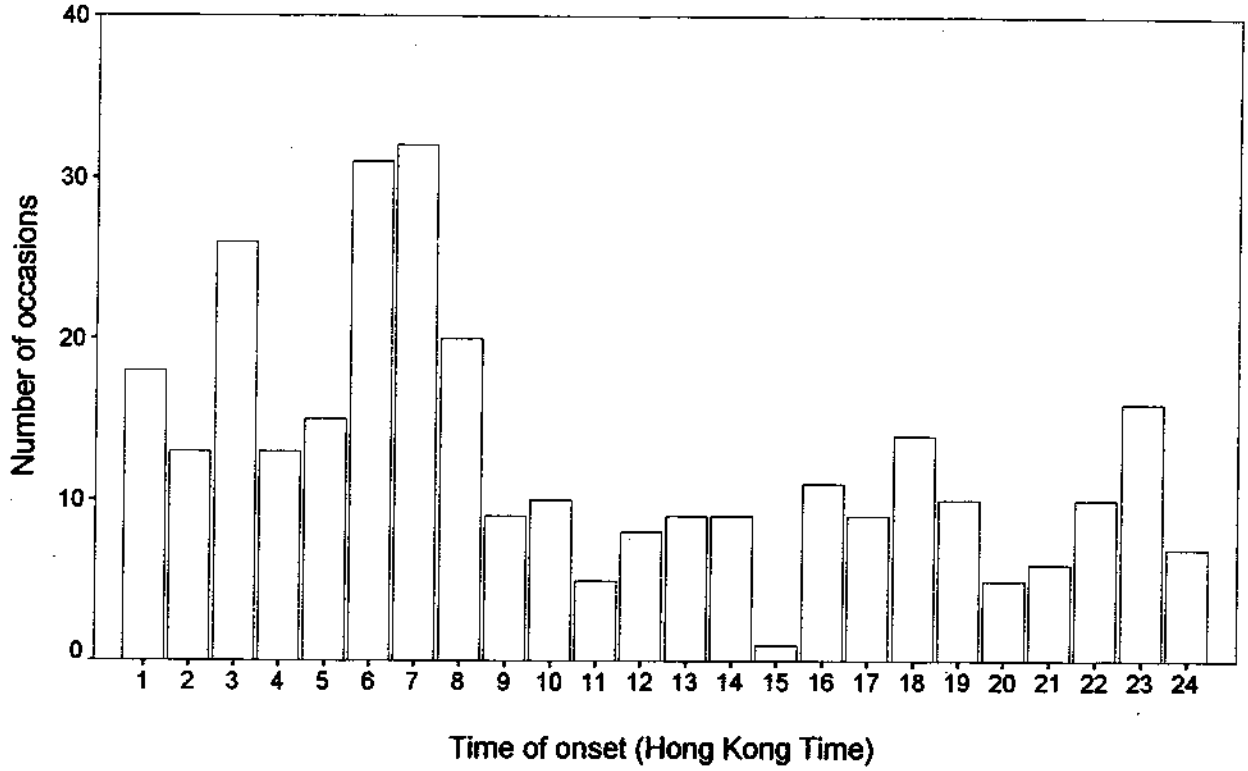


Fig. 18. Frequency distribution of the time of onset of fog at Cheung Chau, 1971-1991.

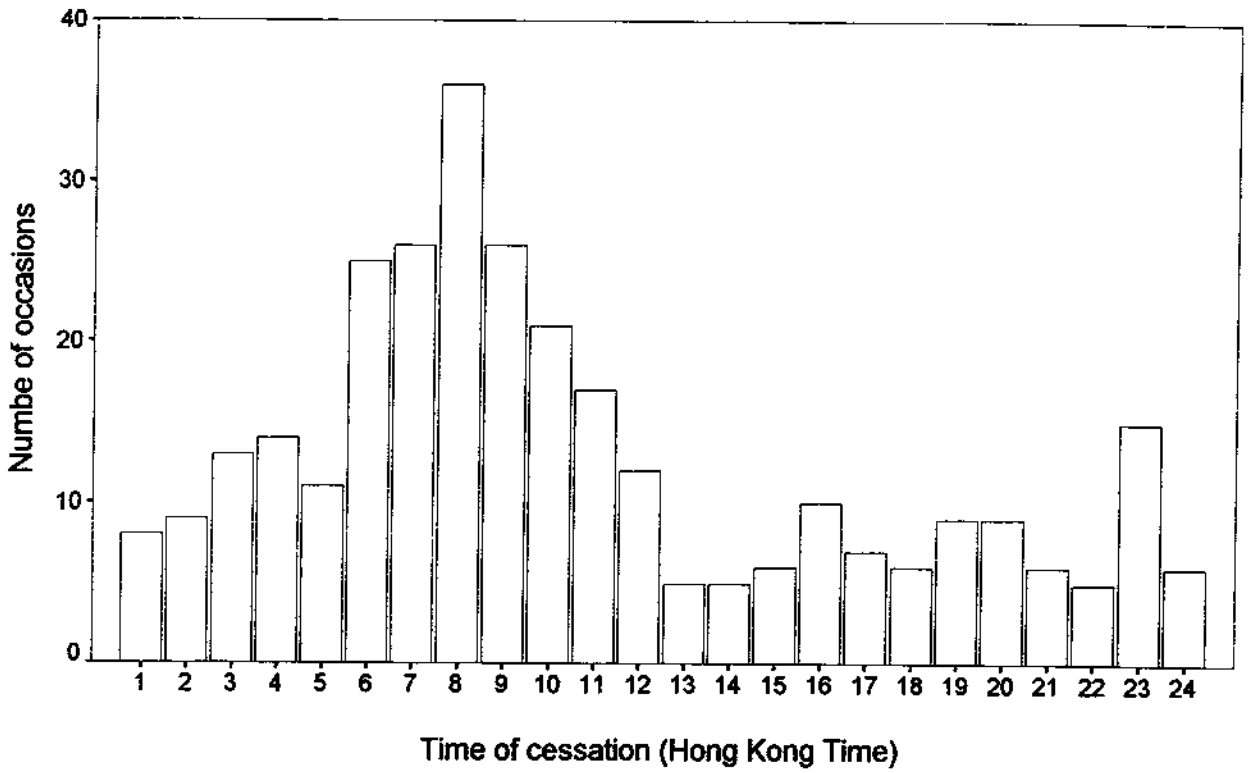


Fig. 19. Frequency distribution of the time of cessation of fog at Cheung Chau, 1971-1991.

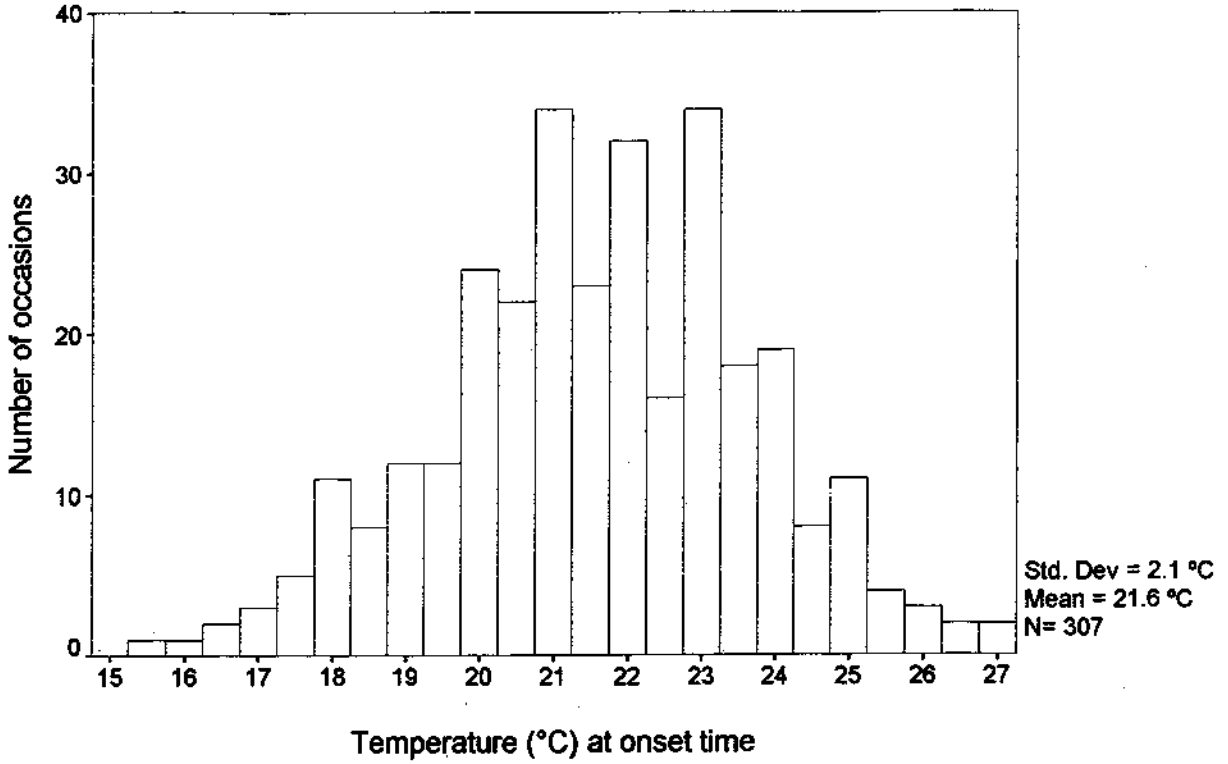


Fig. 20. Frequency distribution of temperature at onset time of fog at Cheung Chau, 1971-1991.

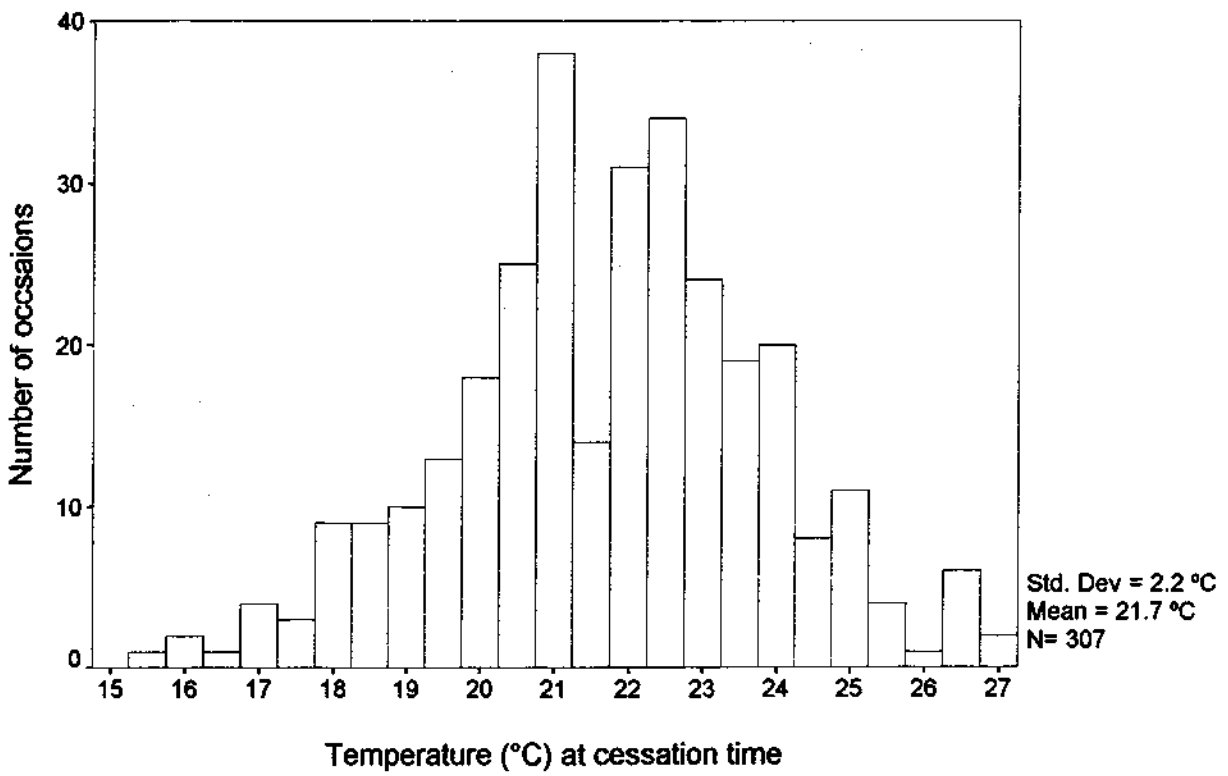


Fig. 21. Frequency distribution of temperature at cessation time of fog at Cheung Chau, 1971-1991.

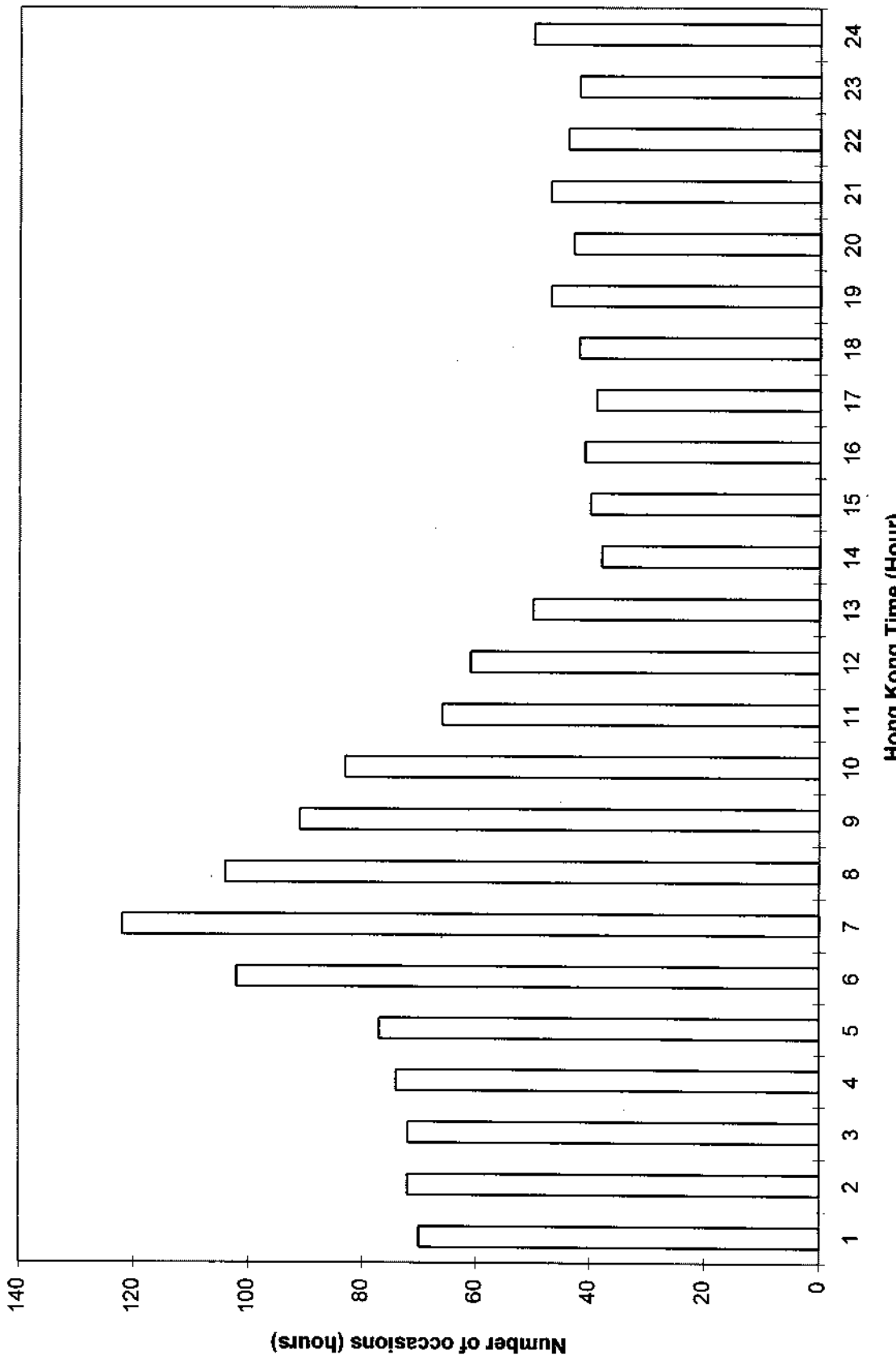


Fig. 22. Diurnal variation of the occurrence of mist at Cheung Chau, 1971-1991.

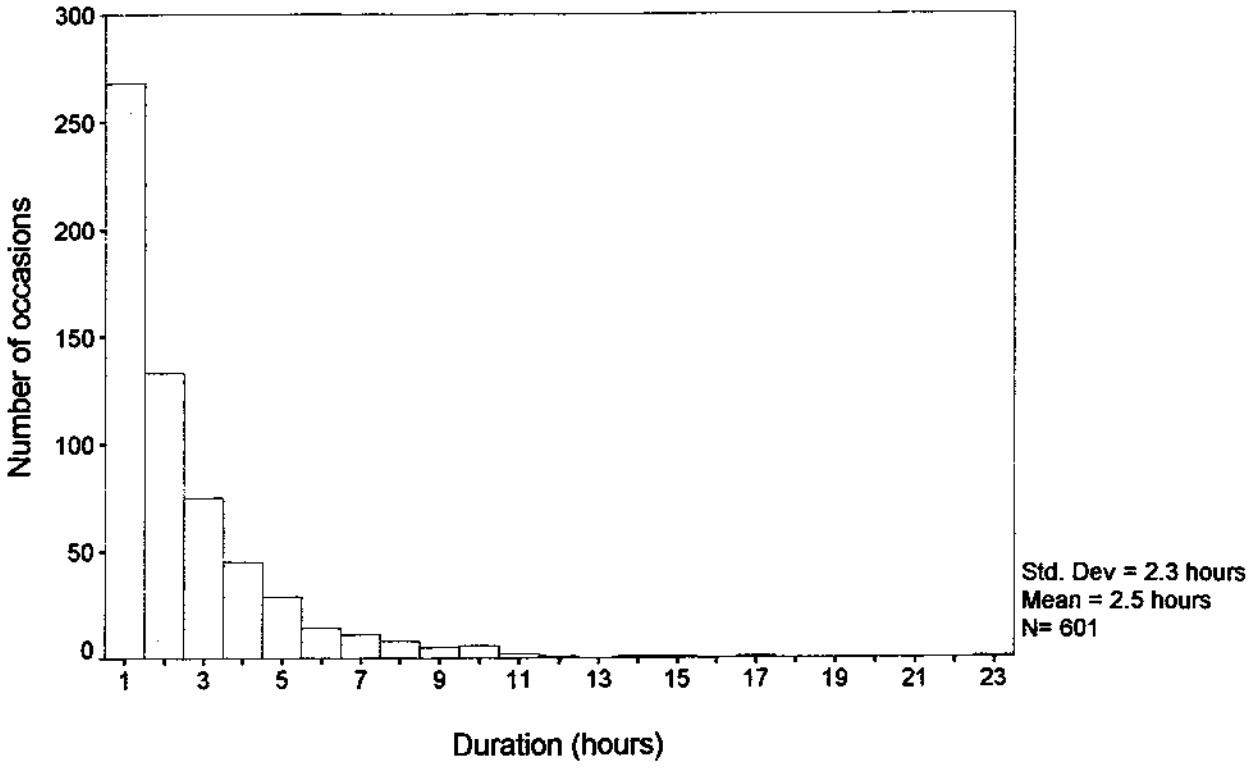


Fig. 23. Frequency distribution of duration of mist at Cheung Chau, 1971-1991.

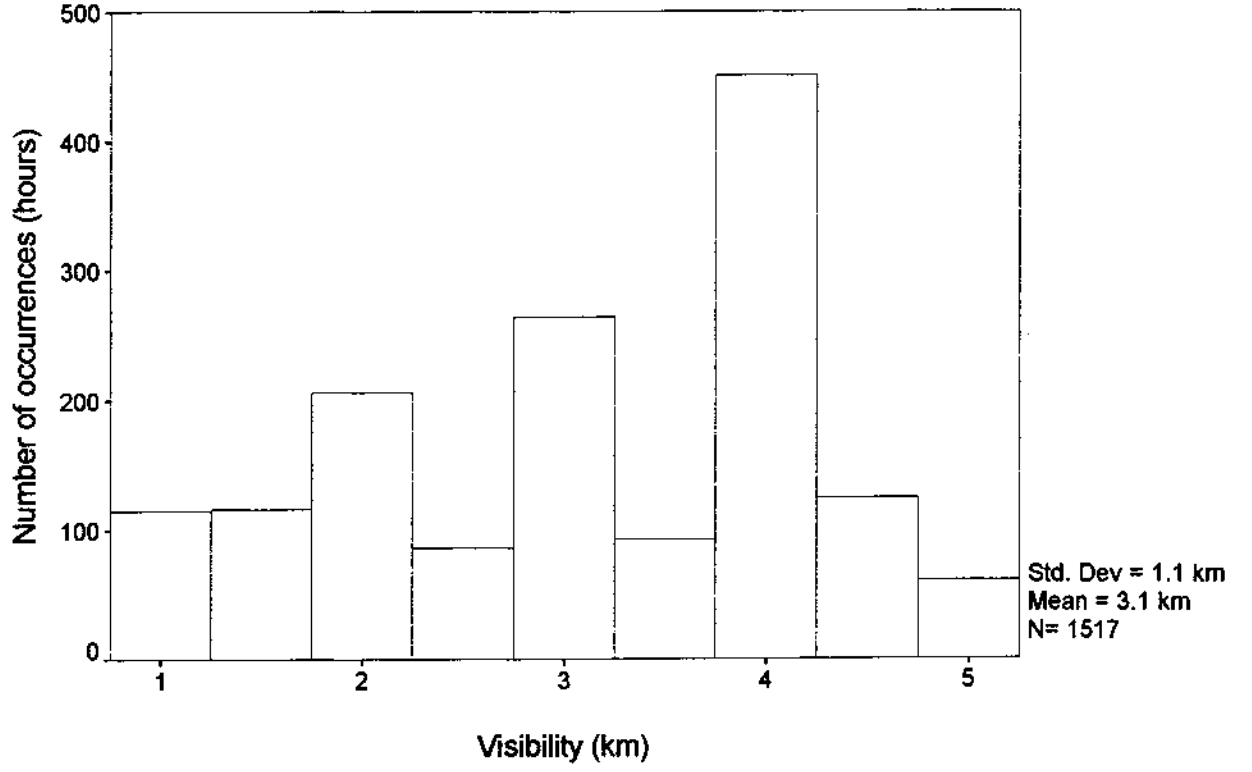


Fig. 24. Frequency distribution of visibility during the occurrence mist at Cheung Chau, 1971-1991.

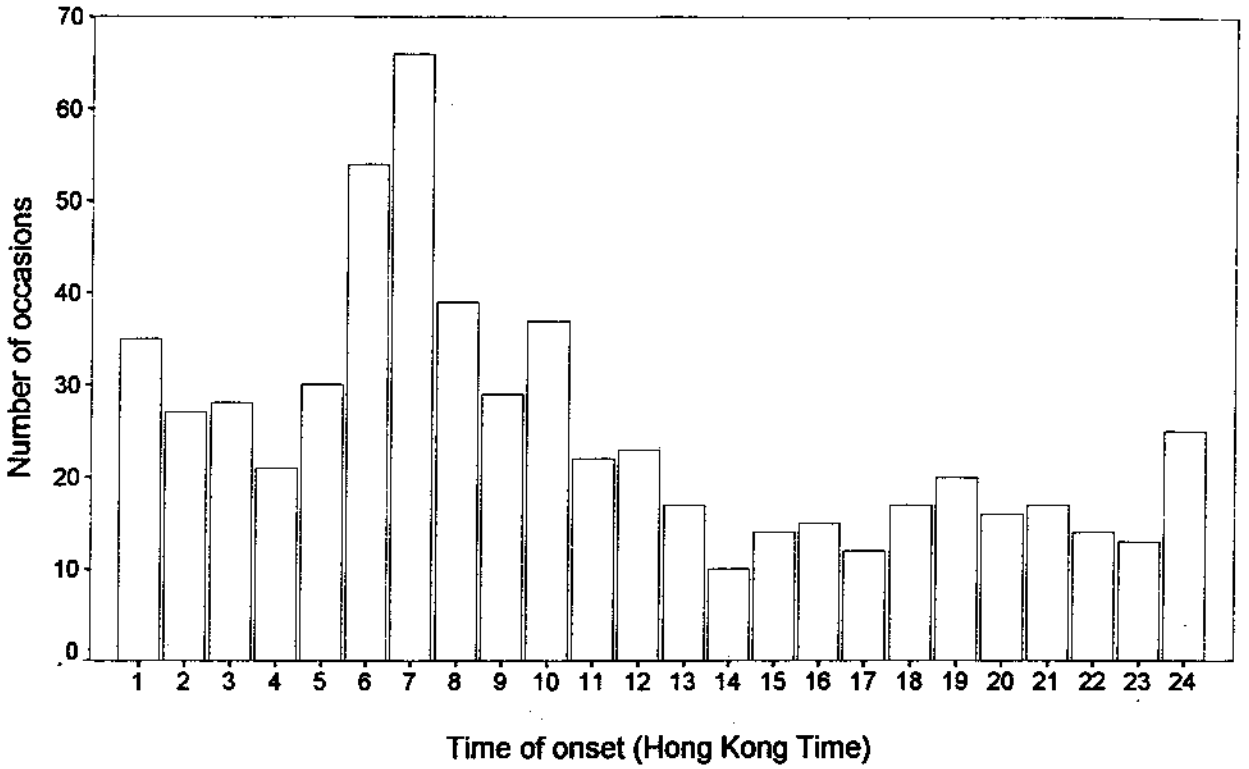


Fig. 25. Frequency distribution of the time of onset of mist at Cheung Chau, 1971-1991.

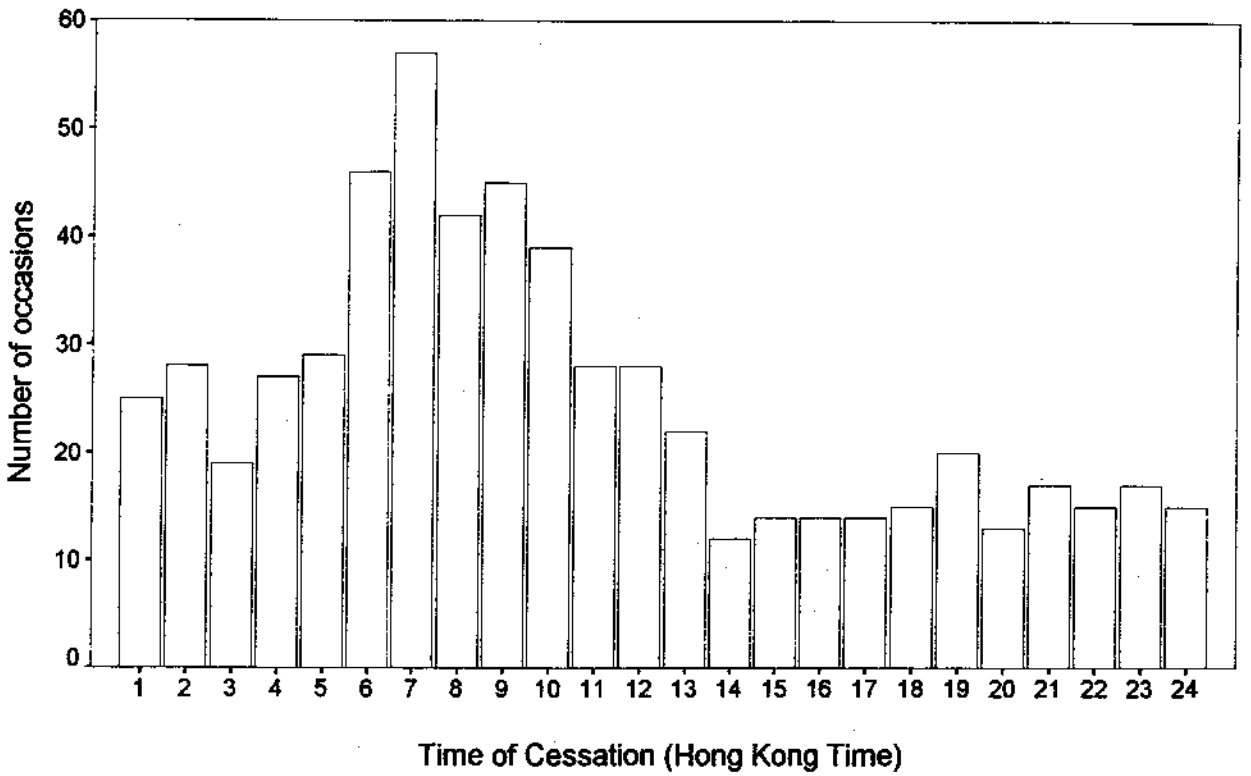


Fig. 26. Frequency distribution of the time of cessation of mist at Cheung Chau, 1971-1991.

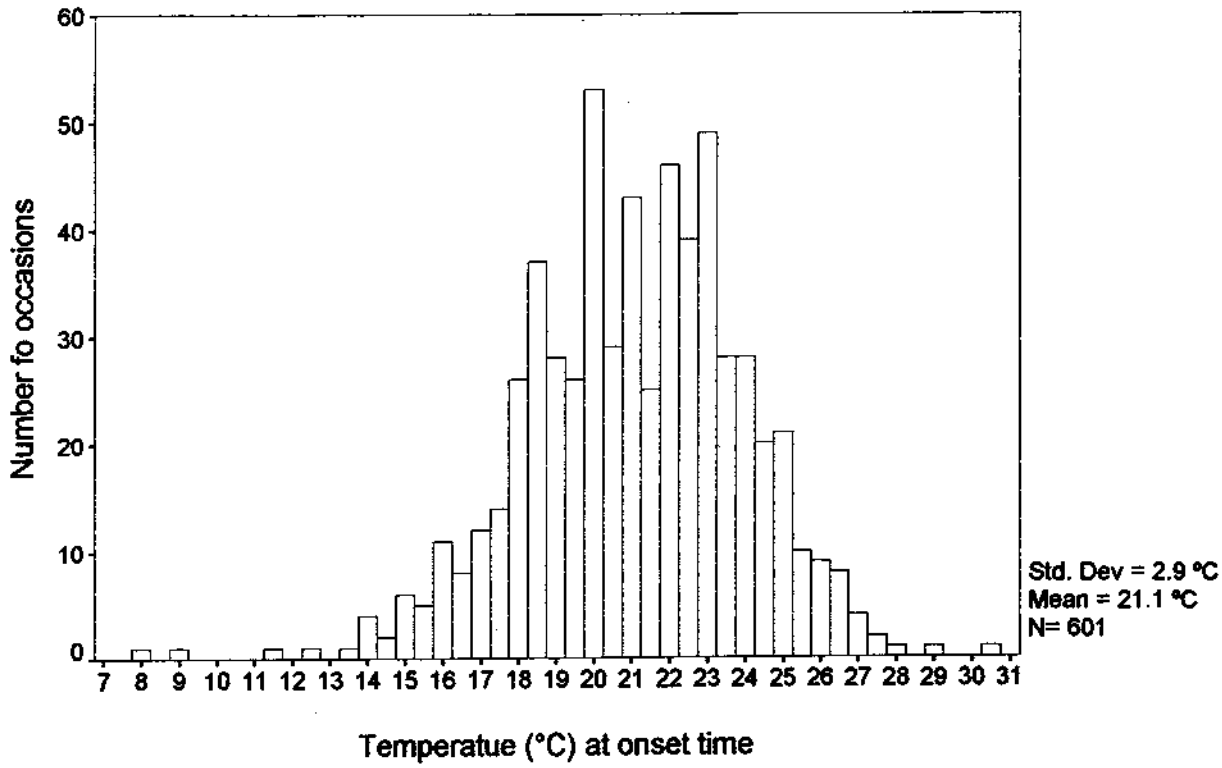


Fig. 27. Frequency distribution of temperature at onset time of mist at Cheung Chau, 1971-1991.

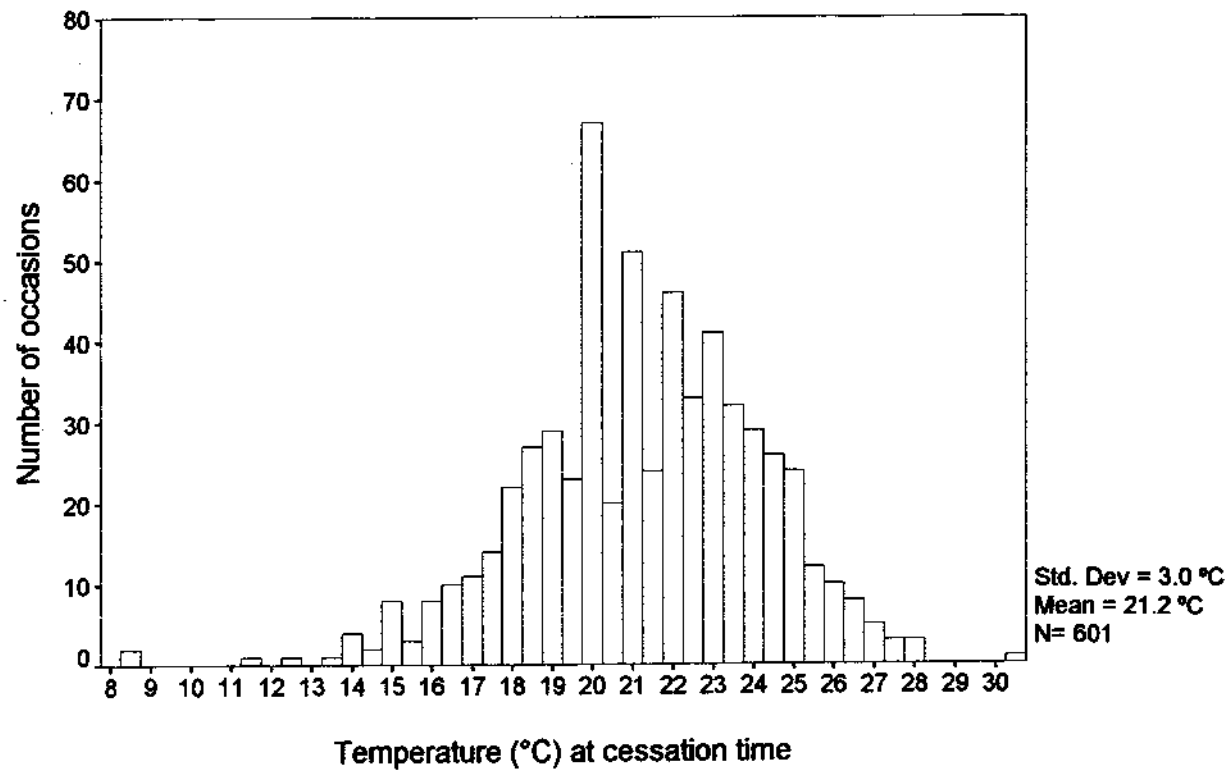


Fig. 28. Frequency distribution of temperature at cessation time of mist at Cheung Chau, 1971-1991.

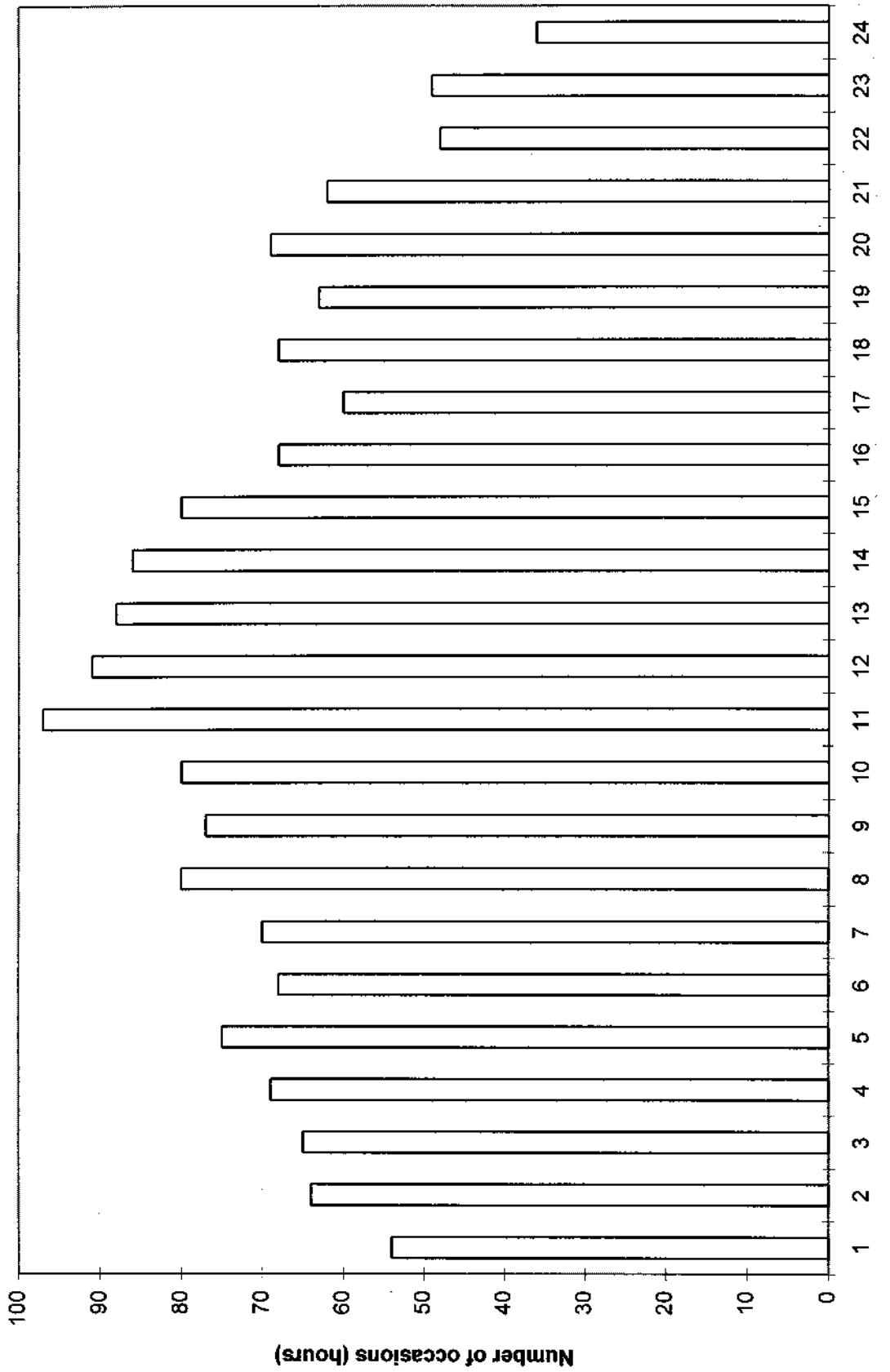


Fig. 29. Diurnal variation of the occurrence of thunderstorm at Cheung Chau, 1971-1991.

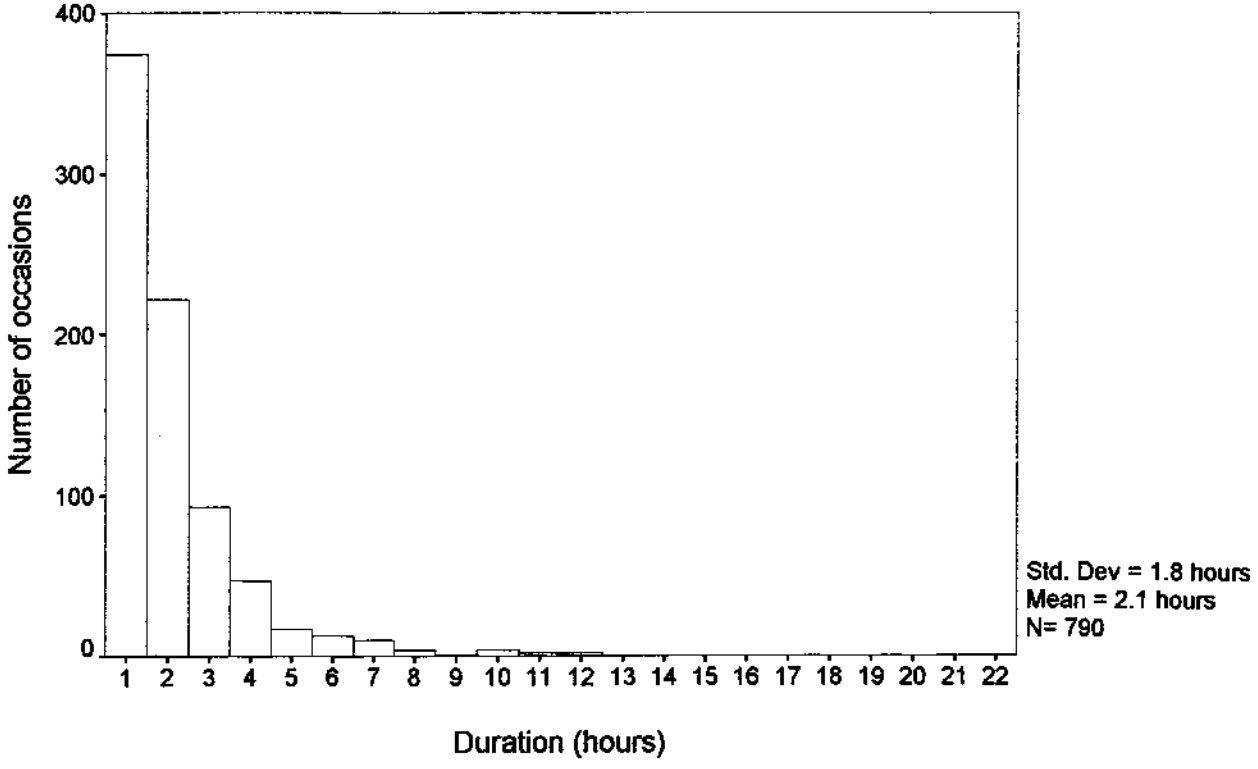


Fig. 30. Frequency distribution of duration of thunderstorm at Cheung Chau, 1971-1991.

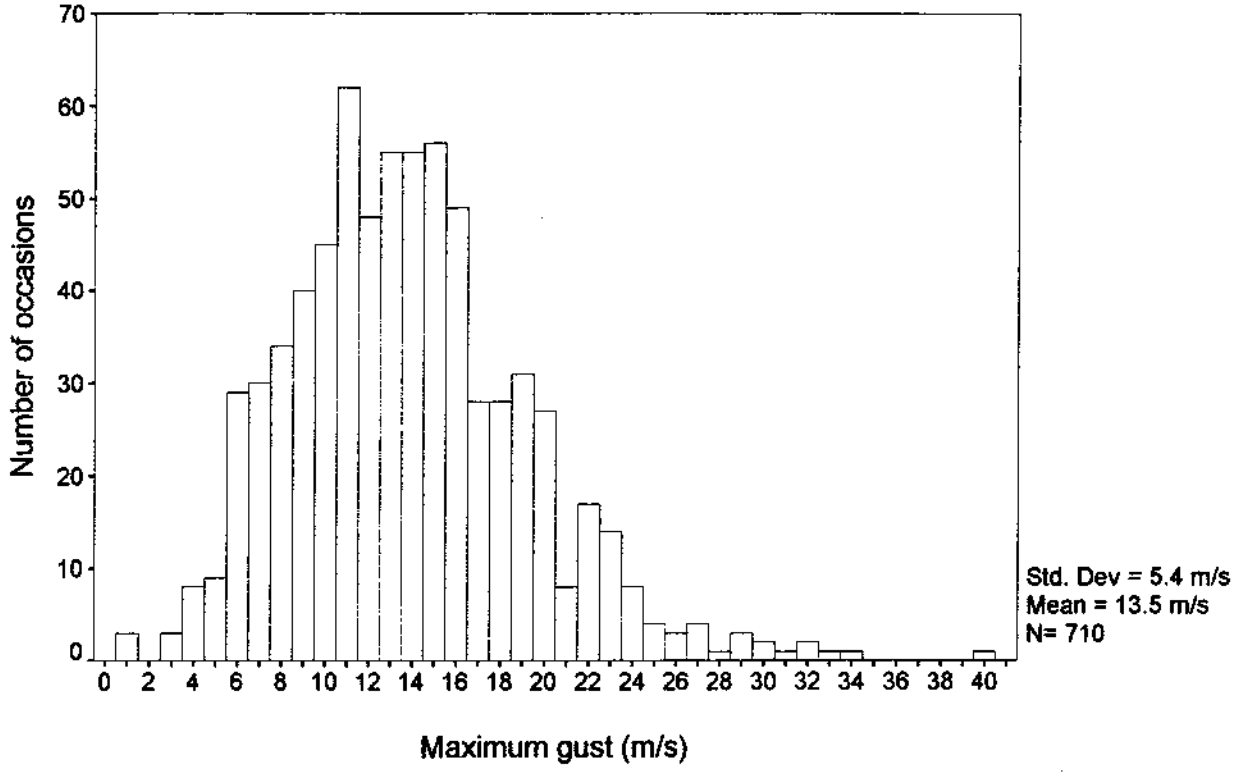


Fig. 31. Frequency distribution of maximum gust during the occurrence of thunderstorm at Cheung Chau, 1971-1991.

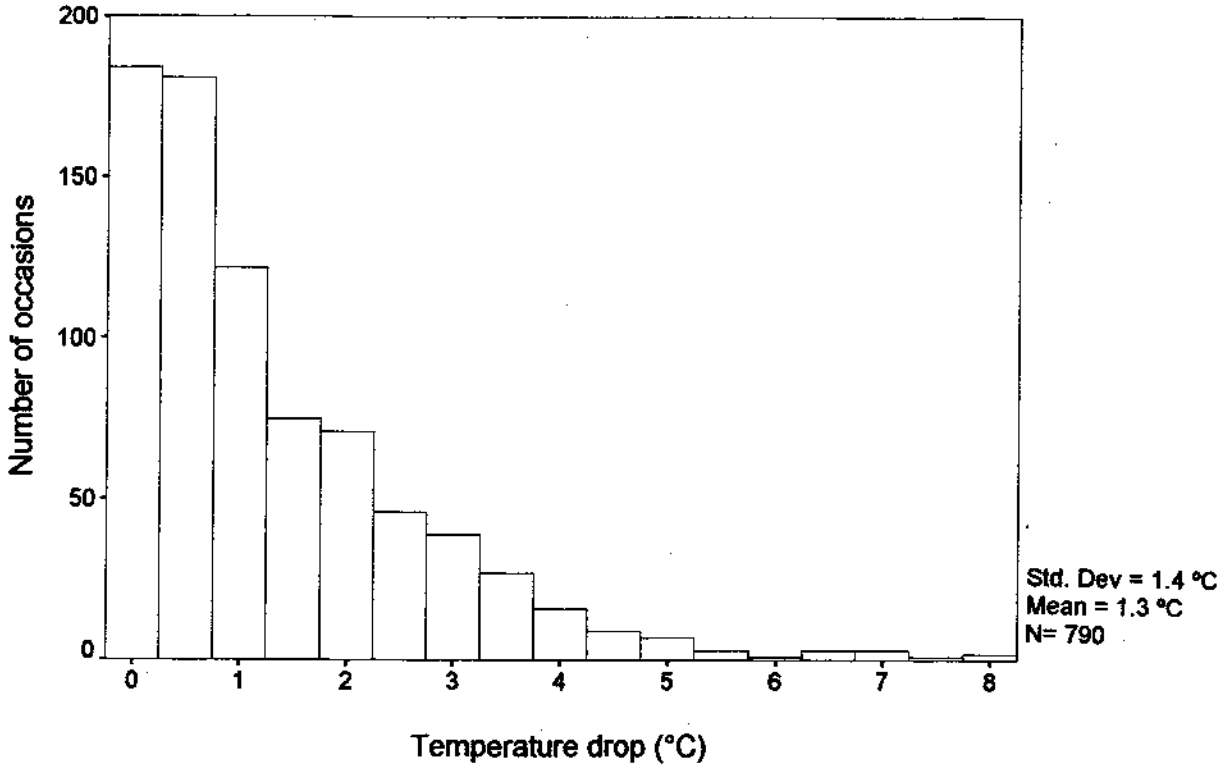


Fig. 32. Frequency distribution of temperature drop during the occurrence of thunderstorm at Cheung Chau, 1971-1991.

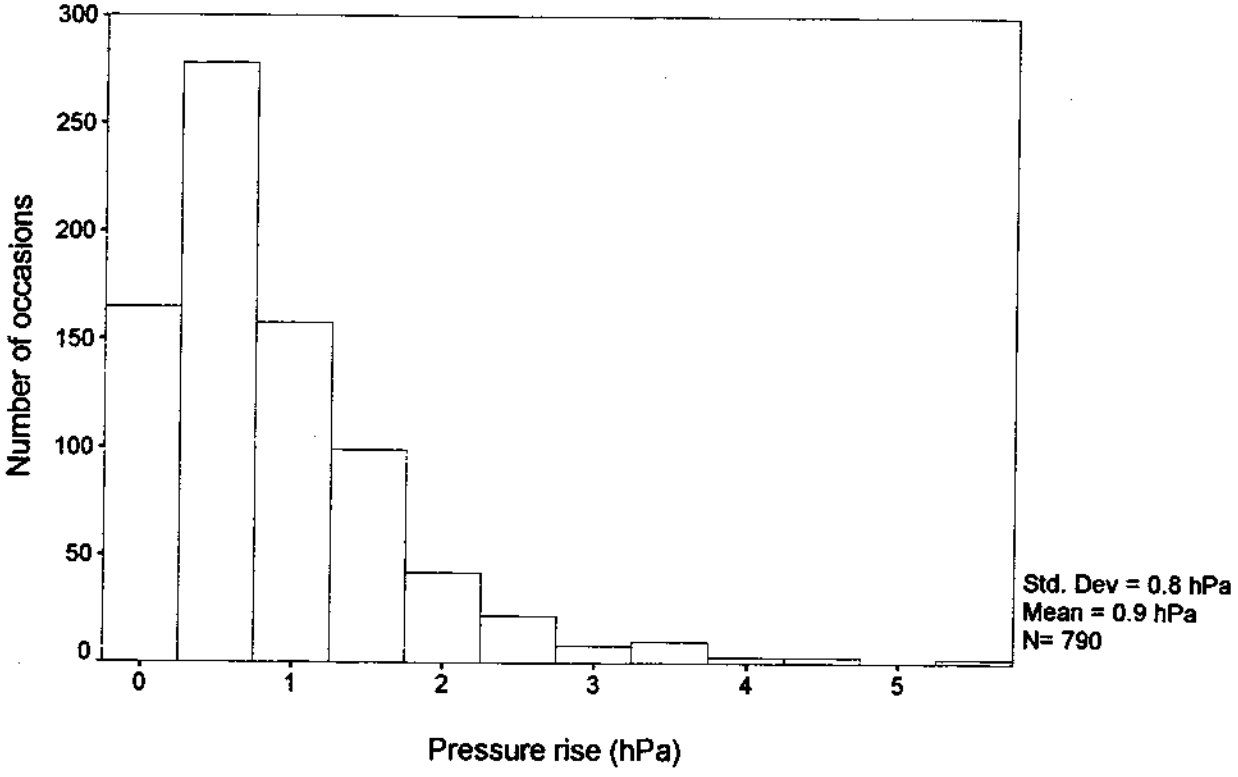


Fig. 33. Frequency distribution of pressure rise during the occurrence of thunderstorm at Cheung Chau, 1971-1991.

TABLE 1.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

JANUARY, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01			0.2	0.2	0.2	0.2	0.3	0.5	5.2
02			0.2	0.2	0.3	0.3	0.3	0.3	5.4
03				0.2	0.3	0.3	0.3	0.3	6.0
04				0.2	0.3	0.3	0.3	0.3	5.5
05				0.2	0.3	0.5	0.5	0.6	5.2
06				0.2	0.2	0.5	0.5	0.5	6.0
07				0.2	0.2	0.3	0.5	0.6	10.1
08					0.2	0.3	0.5	0.9	11.2
09				0.2	0.2	0.2	0.2	0.6	10.1
10					0.2	0.2	0.2	0.5	10.0
11					0.2	0.2	0.3	0.6	9.7
12					0.2	0.2	0.2	0.5	10.1
13						0.2	0.3	0.5	10.4
14							0.2	0.6	10.6
15							0.5	0.8	10.4
16			0.2	0.2	0.3	0.3	0.5	0.5	9.2
17					0.2	0.3	0.3	0.5	7.7
18					0.2	0.2	0.2	0.3	8.6
19					0.2	0.3	0.3	0.3	7.2
20				0.2	0.3	0.5	0.5	0.5	6.8
21				0.2	0.3	0.3	0.3	0.3	6.8
22				0.2	0.2	0.2	0.2	0.2	6.6
23				0.2	0.2	0.3	0.3	0.3	6.5
24				0.2	0.2	0.3	0.3	0.3	6.0
Mean			0.0	0.1	0.2	0.3	0.3	0.5	8.0

0.0 indicates less than 0.05

TABLE 2.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

FEBRUARY, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01					0.7	1.0	1.7	2.7	13.2
02				0.3	1.0	1.3	2.0	3.5	13.8
03			0.2	0.3	1.2	1.5	1.9	2.9	14.7
04			0.2	0.3	1.0	2.0	2.2	3.4	15.0
05				0.7	1.0	1.9	2.4	3.5	15.9
06				0.7	0.8	2.0	2.5	4.0	15.5
07			0.5	1.2	2.4	3.2	4.2	5.2	22.6
08			0.3	1.3	2.2	2.5	3.0	4.2	23.1
09			0.2	0.7	1.2	2.0	2.5	4.4	21.9
10			0.3	0.7	1.2	1.3	1.9	3.2	21.2
11			0.3	0.3	0.7	1.0	1.5	3.2	16.4
12		0.2	0.3	0.3	0.5	0.7	1.2	2.2	17.0
13					0.3	0.7	1.0	1.9	15.2
14				0.2	0.3	1.0	1.3	2.2	15.5
15				0.2	0.5	0.8	1.3	2.0	15.7
16		0.2	0.2	0.2	0.5	0.8	1.0	2.9	16.4
17				0.3	0.5	0.8	1.7	3.5	15.9
18				0.5	0.8	1.5	2.0	3.2	16.9
19			0.2	0.7	1.2	1.5	1.5	2.5	17.0
20				0.3	0.5	0.8	1.0	1.7	15.5
21				0.2	0.3	0.5	0.7	1.7	14.0
22				0.2	0.5	0.7	0.8	1.7	12.8
23				0.2	0.7	1.0	1.0	2.5	13.2
24					0.8	0.8	1.7	2.0	13.2
Mean		0.0	0.1	0.4	0.9	1.3	1.8	2.9	16.3

0.0 indicates less than 0.05

TABLE 3.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

MARCH, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01			0.6	1.5	2.9	3.4	3.5	5.8	17.5
02			0.6	2.3	3.1	3.7	4.8	6.8	18.4
03			1.2	2.9	3.8	4.8	5.2	7.5	18.4
04			1.1	2.6	3.4	4.5	4.8	6.6	18.9
05			0.8	2.2	3.8	4.6	4.9	6.8	20.0
06			1.1	2.0	3.4	5.2	5.7	7.5	21.0
07			1.2	2.8	4.6	5.5	6.3	9.1	28.9
08			1.5	3.7	4.8	6.5	7.4	8.9	30.7
09			1.4	2.5	3.7	5.4	5.8	9.1	27.8
10			1.1	2.0	3.1	4.1	5.1	7.2	24.1
11			0.2	1.2	1.8	2.8	4.0	5.8	22.4
12			0.2	0.6	1.2	2.2	3.5	4.8	20.9
13			0.2	0.8	1.8	2.2	2.9	4.5	19.5
14				0.5	1.5	2.3	2.9	4.0	17.7
15				0.5	1.7	2.0	2.6	3.5	18.9
16			0.2	0.8	1.8	2.2	2.9	4.1	17.5
17			0.3	0.9	1.8	2.3	2.8	4.6	17.5
18			0.9	1.5	2.2	2.8	2.9	4.1	19.7
19			1.2	1.5	2.3	2.9	3.2	4.0	19.7
20			1.1	1.2	2.2	2.9	3.2	3.5	17.8
21			0.8	1.1	2.2	2.6	2.8	3.8	16.6
22			0.8	1.7	2.2	2.8	3.2	4.1	15.7
23			1.2	2.3	3.2	4.0	4.3	5.1	15.7
24			0.9	1.8	2.6	3.2	3.7	4.9	17.8
Mean			0.8	1.7	2.7	3.5	4.1	5.7	20.1

0.0 indicates less than 0.05

TABLE 4.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

APRIL, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01			0.2	1.0	1.9	2.2	2.5	3.7	16.2
02			0.2	0.5	1.6	2.2	2.7	3.8	16.7
03			0.2	1.3	2.4	3.3	4.0	5.1	19.4
04			0.3	0.8	2.4	3.3	4.3	5.6	20.2
05			0.3	1.4	2.4	3.5	3.8	5.6	21.0
06			1.1	3.0	4.3	5.1	6.0	9.0	27.8
07			1.1	3.0	4.3	5.4	6.7	9.5	29.0
08			0.6	2.4	4.3	4.8	5.7	8.1	29.2
09			0.2	1.0	1.9	3.0	3.3	7.1	25.2
10			0.2	0.5	1.4	1.9	2.5	4.6	21.9
11				0.3	1.3	1.6	1.7	3.7	21.1
12				0.2	0.6	1.0	1.0	2.5	17.5
13				0.2	0.2	0.5	0.8	2.7	17.9
14				0.2	0.5	0.6	1.3	2.2	16.3
15				0.3	0.6	0.6	1.1	2.4	16.3
16			0.2	0.3	0.6	1.3	1.7	3.2	16.0
17				0.2	0.5	1.0	1.4	2.5	18.4
18				0.3	1.1	1.4	2.2	3.0	17.9
19				0.2	0.5	1.0	1.3	3.0	19.2
20				0.2	0.5	0.5	1.0	1.9	15.6
21						0.6	1.0	1.4	14.4
22					0.3	1.1	1.4	2.2	14.1
23				0.2	0.6	1.0	1.3	2.4	14.9
24					0.3	1.0	1.4	2.7	14.1
Mean			0.2	0.7	1.4	2.0	2.5	4.1	19.2

0.0 Indicates less than 0.05

TABLE 5.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

MAY, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01					0.2	0.5	0.5	1.1	7.8
02				0.3	0.3	0.6	0.9	1.4	8.4
03			0.2	0.5	0.9	1.2	1.4	2.0	9.5
04				0.3	0.9	1.2	1.2	1.8	10.8
05				0.3	0.6	1.2	1.2	1.5	11.8
06			0.2	0.8	1.1	2.2	2.2	3.5	15.7
07			0.2	1.1	1.4	1.8	2.0	2.5	15.7
08			0.2	0.5	1.1	1.1	1.4	2.9	14.1
09			0.2	0.5	0.6	0.6	0.9	1.8	13.8
10				0.2	0.5	0.8	1.1	2.3	12.4
11					0.5	0.6	0.6	0.9	10.4
12							0.2	0.6	11.4
13						0.2	0.3	0.8	8.9
14					0.2	0.2	0.2	0.6	9.5
15						0.2	0.2	0.3	8.3
16					0.2	0.2	0.2	0.8	8.6
17				0.2	0.2	0.2	0.2	0.6	8.1
18							0.2	0.5	8.6
19						0.2	0.2	0.5	7.8
20					0.2	0.2	0.2	0.3	7.1
21			0.2	0.2	0.2	0.2	0.2	0.2	6.6
22			0.2	0.2	0.2	0.2	0.2	0.2	6.3
23					0.3	0.3	0.3	0.5	6.1
24					0.3	0.6	0.6	0.6	6.6
Mean			0.1	0.2	0.4	0.6	0.7	1.2	9.8

0.0 indicates less than 0.05

TABLE 6.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

JUNE, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									2.9
02									3.0
03									3.0
04									3.3
05									4.3
06								0.3	8.1
07								0.3	7.6
08								0.5	8.4
09								0.2	7.8
10							0.2	0.3	6.7
11								0.3	6.0
12					0.2	0.3	0.3	0.6	5.9
13								0.3	6.3
14								0.3	5.6
15								0.2	6.7
16								0.3	4.8
17								0.2	3.8
18									3.3
19								0.2	4.8
20									4.3
21									3.7
22									2.9
23									2.5
24									2.4
Mean					0.0	0.0	0.0	0.2	4.9

0.0 indicates less than 0.05

TABLE 7.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

JULY, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									2.2
02								0.2	2.2
03									2.8
04									2.3
05				0.2	0.2	0.2	0.2	0.2	3.4
06									4.1
07							0.3	0.9	4.8
08					0.2	0.2	0.2	0.3	4.8
09								0.3	4.6
10								0.5	4.5
11								0.5	5.4
12									4.9
13								0.3	3.5
14						0.2	0.2	0.2	4.1
15									4.0
16					0.2	0.2	0.2	0.3	3.4
17							0.2	0.3	3.1
18								0.2	3.2
19									2.8
20									2.0
21									1.8
22									1.8
23									1.5
24									1.7
Mean				0.0	0.0	0.0	0.1	0.2	3.3

0.0 indicates less than 0.05

TABLE 8.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

AUGUST, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									3.8
02								0.2	4.5
03								0.2	4.5
04								0.2	4.5
05								0.2	4.5
06								0.2	6.5
07								0.2	6.1
08					0.2	0.2	0.2	0.5	6.5
09					0.2	0.2	0.2	0.5	6.9
10								0.3	8.3
11								0.3	6.9
12									5.7
13							0.2	0.5	4.9
14								0.3	5.1
15								0.2	6.6
16									4.8
17							0.2	0.3	5.1
18								0.2	3.8
19								0.2	4.1
20								0.3	4.1
21								0.2	3.5
22								0.2	3.4
23								0.2	3.5
24									2.6
Mean					0.0	0.0	0.0	0.2	5.0

0.0 indicates less than 0.05

TABLE 9.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

SEPTEMBER, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									1.9
02								0.2	2.1
03									2.1
04									2.4
05									2.7
06						0.2	0.2	0.2	3.2
07					0.2	0.2	0.2	0.3	4.8
08					0.2	0.2	0.2	0.5	4.0
09					0.2	0.2	0.2	0.2	4.9
10					0.2	0.2	0.2	0.5	5.1
11					0.2	0.2	0.2	0.5	4.3
12						0.2	0.2	0.2	4.6
13								0.2	3.5
14								0.3	3.5
15								0.2	3.0
16								0.2	3.3
17								0.2	3.5
18							0.3	0.5	2.7
19								0.2	2.4
20								0.2	1.7
21								0.2	0.8
22									1.6
23									1.1
24									1.6
Mean					0.0	0.1	0.1	0.2	3.0

0.0 indicates less than 0.05

TABLE 10.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

OCTOBER, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									1.4
02								0.2	1.5
03								0.2	1.4
04								0.2	1.7
05								0.2	1.7
06									1.4
07							0.2	0.2	2.0
08									3.7
09									3.8
10									4.0
11									4.3
12								0.2	3.4
13								0.3	3.4
14							0.2	0.3	2.8
15									3.5
16								0.2	2.8
17								0.2	3.2
18								0.2	3.5
19									2.9
20									2.6
21									2.0
22								0.2	2.2
23								0.2	1.4
24									1.8
Mean						0.0	0.0	0.1	2.6

0.0 indicates less than 0.05

TABLE 11.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

NOVEMBER, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									0.6
02									0.5
03									0.8
04									0.6
05									0.5
06									0.2
07									2.5
08									3.3
09								0.2	2.7
10								0.2	2.4
11									2.1
12									2.9
13									3.0
14									3.8
15									3.0
16								0.2	3.0
17									2.5
18									3.0
19									2.1
20									1.7
21									1.9
22									1.7
23									1.6
24									0.8
Mean								0.0	2.0

0.0 indicates less than 0.05

TABLE 12.

PERCENTAGE FREQUENCIES OF THE OCCURRENCE OF VISIBILITY AND/OR HEIGHT OF THE BASE OF THE LOWEST CLOUD LAYER COVERING 5 OCTAS OR MORE OF THE SKY BELOW SPECIFIED VALUES AT SPECIFIED TIMES AT CHEUNG CHAU AERONAUTICAL METEOROLOGICAL STATION

DECEMBER, 1971-1991

Time	Visibility (m)	<100	<200	<400	<800	<1000	<1500	<3000	<8000
(HKT)	Cloud base (m)	-	-	<30	<60	<90	<150	<300	<600
01									2.2
02									2.2
03									2.2
04									2.2
05									2.3
06									2.3
07									5.1
08								0.2	6.5
09								0.3	6.3
10									6.5
11								0.2	6.8
12								0.2	7.2
13						0.2	0.3	0.5	6.5
14					0.2	0.3	0.3	0.5	5.7
15							0.2	0.5	6.0
16								0.3	5.4
17								0.3	4.6
18									5.1
19									4.0
20									3.2
21									2.6
22									2.8
23							0.2	0.2	2.9
24									2.5
Mean					0.0	0.0	0.0	0.1	4.3

0.0 indicates less than 0.05

TABLE 13.

CLIMATOLOGICAL SUMMARY FOR CHEUNG CHAU, 1971-1991

Month	Air Temperature							Wet Bulb Temperature	Dew Point	Relative Humidity
	24-hour Mean	Mean		Absolute Extremes						
		Maximum	Minimum	Maximum	Date	Minimum	Date			
	°C	°C	°C	°C		°C		°C	°C	%
January	15.7	19.5	13.7	27.1	23/1/87	4.0	30/1/71	13.2	11.0	75
February	16.0	19.4	14.1	27.3	27/2/73	3.1	9/2/72	14.0	12.3	80
March	18.6	21.9	16.9	30.0	14/3/87 27/3/91	3.3	1/3/86	16.9	15.6	84
April	22.1	25.4	20.6	32.9	26/4/77	12.5	1/4/91	20.5	19.5	86
May	25.6	29.0	24.0	35.5	13/5/77 28/5/91	14.6	12/5/86	23.9	23.1	86
June	27.6	30.8	26.1	36.2	16,17/6/88 4,5/6/91	20.4	8/6/87	25.7	24.9	86
July	28.3	31.6	26.7	35.9	23/7/72	21.7	30/7/89	26.3	25.4	85
August	28.0	31.3	26.4	35.4	20,22/8/76	23.0	16/8/71	26.1	25.3	85
September	27.2	30.7	25.5	35.5	14/9/72	20.5	26/9/87	24.7	23.5	81
October	24.8	28.6	23.0	35.3	2/10/75	13.8	30/10/78	21.8	20.1	76
November	20.8	24.8	18.8	31.4	2/11/90	6.1	30/11/87	17.6	15.2	71
December	17.1	21.2	15.0	29.0	10/12/90	3.4	28,29/12/91	14.1	11.4	71
Year	22.7	26.2	20.9	36.2	16,17/6/88 4,5/6/91	3.1	9/2/72	20.4	18.9	81

TABLE 13. (cont'd)

Month	Rainfall			Number of Days with Rainfall						Number of Hours with Rainfall					
	Total mm	Maximum Daily mm	Maximum Hourly mm	>=0.1 mm	>=1.0 mm	>=10.0 mm	>=25.0 mm	>=50.0 mm	>=100.0 mm	>=0.1 mm	>=1.0 mm	>=10.0 mm	>=25.0 mm	>=50.0 mm	>=100.0 mm
January	22.3	30.0	14.5	5.33	3.48	0.57	0.14	-	-	28.05	6.19	0.19	-	-	-
February	40.8	58.2	21.2	6.71	4.52	1.24	0.33	0.10	-	32.62	11.33	0.43	-	-	-
March	69.4	89.2	33.8	9.19	5.67	1.81	0.90	0.33	-	40.14	13.81	1.67	0.24	-	-
April	149.9	156.0	47.0	9.67	7.33	3.71	2.29	0.71	0.14	51.71	24.19	4.10	0.86	-	-
May	276.5	188.7	100.5	13.62	10.57	5.76	3.19	1.62	0.62	79.43	42.67	6.81	1.81	0.24	0.05
June	273.8	419.6	82.0	15.43	12.43	5.95	2.95	1.38	0.33	82.67	44.81	6.29	1.71	0.29	-
July	250.5	179.3	102.5	14.90	12.24	5.90	3.33	1.29	0.19	78.19	44.00	6.00	1.05	0.10	0.05
August	309.7	212.9	68.7	15.52	13.24	7.48	4.10	1.76	0.29	92.57	53.24	7.57	1.29	0.24	-
September	171.8	150.7	48.1	12.33	10.00	5.19	2.24	0.67	0.14	65.00	32.95	4.19	0.52	-	-
October	111.3	157.1	73.2	7.00	5.38	2.43	1.14	0.57	0.33	41.24	20.76	2.48	0.38	0.05	-
November	36.2	71.7	20.4	5.00	3.33	0.90	0.33	0.14	-	26.76	9.05	0.52	-	-	-
December	28.1	128.6	20.7	3.62	2.62	0.62	0.24	0.14	0.05	23.29	7.86	0.43	-	-	-
Year	1740.3	419.6	102.5	118.32	90.81	41.56	21.18	8.71	2.09	641.67	310.86	40.68	7.86	0.92	0.10

TABLE 13. (cont'd)

Month	Mean Sea Level Pressure hPa	Cloud Amount %	Prevailing Wind Direction degrees	Wind Speed m/s	Maximum Gust m/s	Number of Days with			
						Thunderstorm	Fog	Mist	Haze
January	1020.1	60	360	4.5	32.0	0.05	0.38	1.29	0.19
February	1018.4	74	090	4.4	39.5	0.76	1.81	3.62	0.29
March	1016.2	78	090	4.2	33.0	1.52	4.24	6.14	0.14
April	1012.8	79	100	3.9	26.5	4.05	3.81	6.52	0.19
May	1009.3	72	100	4.0	38.5	4.90	1.14	1.52	0.05
June	1006.0	70	200	4.4	42.0	4.00	-	0.05	0.05
July	1005.6	61	200	4.3	38.5	4.24	-	0.05	-
August	1005.1	64	110	3.5	54.0	4.90	0.05	0.33	0.24
September	1009.3	60	100	4.4	66.0	3.19	-	-	-
October	1013.8	54	090	5.1	44.0	0.52	-	-	-
November	1018.1	51	010	4.9	33.5	0.19	-	-	-
December	1020.5	47	360	4.5	28.5	-	0.10	0.29	0.14
Year	1012.9	64	100	4.3	66.0	28.32	11.53	19.81	1.29

Prevailing wind directions are computed using hourly 10-minute mean wind data.

TABLE 14.

HOURLY MEAN OF MEAN SEA LEVEL PRESSURE (hPa) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	1020.4	1018.8	1016.6	1013.2	1009.7	1006.3	1005.9	1005.4	1009.5	1013.9	1018.3	1020.9
0200	1020.2	1018.5	1016.2	1012.8	1009.3	1006.0	1005.6	1005.1	1009.2	1013.6	1018.0	1020.6
0300	1019.9	1018.2	1015.9	1012.4	1008.9	1005.7	1005.3	1004.8	1008.9	1013.3	1017.7	1020.3
0400	1019.7	1018.0	1015.6	1012.2	1008.8	1005.6	1005.2	1004.6	1008.7	1013.1	1017.6	1020.1
0500	1019.7	1017.9	1015.7	1012.2	1008.8	1005.6	1005.2	1004.6	1008.8	1013.2	1017.6	1020.1
0600	1019.9	1018.2	1016.0	1012.5	1009.1	1005.8	1005.4	1004.8	1008.9	1013.5	1018.0	1020.4
0700	1020.4	1018.8	1016.5	1013.1	1009.6	1006.2	1005.8	1005.1	1009.3	1014.1	1018.5	1020.9
0800	1021.0	1019.3	1017.2	1013.7	1010.0	1006.6	1006.1	1005.5	1009.9	1014.6	1019.1	1021.5
0900	1021.6	1019.9	1017.7	1014.2	1010.4	1006.9	1006.3	1005.8	1010.3	1015.1	1019.6	1022.1
1000	1022.0	1020.3	1018.0	1014.4	1010.6	1007.0	1006.5	1006.0	1010.5	1015.3	1019.8	1022.4
1100	1021.8	1020.2	1017.9	1014.3	1010.5	1006.9	1006.5	1006.0	1010.5	1015.1	1019.5	1022.1
1200	1021.1	1019.6	1017.4	1013.9	1010.3	1006.7	1006.3	1005.7	1010.1	1014.5	1018.8	1021.4
1300	1020.0	1018.7	1016.6	1013.3	1009.8	1006.4	1005.9	1005.3	1009.5	1013.7	1017.8	1020.3
1400	1019.1	1017.7	1015.7	1012.5	1009.2	1005.9	1005.5	1004.8	1008.8	1012.9	1017.0	1019.4
1500	1018.6	1017.1	1015.0	1011.9	1008.6	1005.5	1005.1	1004.3	1008.3	1012.5	1016.5	1018.9
1600	1018.4	1016.8	1014.6	1011.5	1008.2	1005.1	1004.7	1004.0	1008.0	1012.4	1016.4	1018.8
1700	1018.6	1016.9	1014.6	1011.4	1007.9	1004.9	1004.4	1003.8	1008.0	1012.5	1016.7	1019.0
1800	1019.0	1017.2	1014.8	1011.5	1008.1	1004.9	1004.5	1003.9	1008.2	1012.8	1017.0	1019.4
1900	1019.4	1017.5	1015.1	1011.9	1008.4	1005.2	1004.7	1004.2	1008.6	1013.2	1017.5	1019.9
2000	1019.9	1018.0	1015.6	1012.3	1008.8	1005.7	1005.2	1004.7	1009.1	1013.8	1018.1	1020.4
2100	1020.2	1018.5	1016.2	1012.8	1009.3	1006.1	1005.6	1005.3	1009.7	1014.3	1018.5	1020.8
2200	1020.5	1018.7	1016.7	1013.3	1009.8	1006.5	1006.1	1005.8	1010.1	1014.6	1018.7	1021.0
2300	1020.6	1018.9	1016.8	1013.5	1010.0	1006.8	1006.3	1005.9	1010.1	1014.6	1018.8	1021.1
2400	1020.5	1018.8	1016.8	1013.4	1009.8	1006.6	1006.2	1005.8	1009.9	1014.4	1018.6	1021.0
Mean	1020.1	1018.4	1016.2	1012.8	1009.3	1006.0	1005.6	1005.1	1009.3	1013.8	1018.1	1020.5

TABLE 15.

HOURLY MEAN OF AIR TEMPERATURE (°C) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	14.6	15.0	17.6	20.9	24.3	26.4	27.0	26.8	26.0	23.6	19.6	15.8
0200	14.5	14.9	17.5	20.8	24.2	26.3	26.9	26.7	25.9	23.5	19.5	15.7
0300	14.4	14.8	17.4	20.7	24.1	26.3	26.9	26.7	25.8	23.3	19.4	15.5
0400	14.2	14.6	17.3	20.7	24.1	26.2	26.8	26.6	25.6	23.2	19.2	15.4
0500	14.1	14.5	17.2	20.6	24.0	26.1	26.7	26.5	25.6	23.1	19.1	15.3
0600	13.9	14.4	17.1	20.6	24.0	26.1	26.7	26.4	25.5	23.0	18.9	15.1
0700	13.8	14.4	17.1	20.7	24.2	26.4	26.9	26.5	25.5	23.0	18.8	15.0
0800	14.0	14.6	17.4	21.2	24.9	27.0	27.5	27.2	26.2	23.7	19.3	15.3
0900	14.9	15.4	18.3	22.1	25.8	27.8	28.4	28.0	27.2	24.8	20.5	16.4
1000	16.2	16.4	19.2	22.9	26.7	28.6	29.3	28.9	28.2	26.0	21.7	17.9
1100	17.3	17.3	20.0	23.7	27.4	29.3	30.0	29.7	29.1	27.0	22.8	19.1
1200	18.1	18.0	20.6	24.3	27.8	29.7	30.3	30.2	29.6	27.6	23.5	19.8
1300	18.4	18.3	20.9	24.5	28.0	29.9	30.6	30.4	29.9	27.8	23.9	20.2
1400	18.7	18.5	21.0	24.5	28.1	29.9	30.7	30.4	29.9	27.8	24.0	20.5
1500	18.6	18.4	20.7	24.3	27.8	29.7	30.7	30.3	29.5	27.4	23.7	20.3
1600	18.0	17.9	20.2	23.8	27.4	29.4	30.4	29.9	29.1	26.7	23.0	19.5
1700	17.2	17.2	19.6	23.2	26.9	28.9	29.9	29.4	28.4	25.9	22.0	18.5
1800	16.0	16.3	18.9	22.4	26.1	28.2	29.1	28.6	27.5	24.8	20.8	17.1
1900	15.3	15.7	18.2	21.8	25.3	27.4	28.2	27.8	26.8	24.3	20.3	16.6
2000	15.0	15.5	18.0	21.5	24.9	27.0	27.6	27.4	26.5	24.1	20.1	16.4
2100	14.9	15.4	17.9	21.3	24.7	26.7	27.4	27.2	26.3	23.9	19.9	16.2
2200	14.8	15.3	17.9	21.2	24.6	26.6	27.3	27.1	26.2	23.8	19.8	16.1
2300	14.7	15.2	17.8	21.2	24.5	26.6	27.2	27.0	26.1	23.7	19.7	16.0
2400	14.6	15.1	17.8	21.1	24.4	26.5	27.1	26.9	26.0	23.6	19.6	15.9
Mean	15.7	16.0	18.6	22.1	25.6	27.6	28.3	28.0	27.2	24.8	20.8	17.1

TABLE 16.

HOURLY MEAN OF WET BULB TEMPERATURE (°C) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	12.6	13.5	16.3	19.8	23.1	25.0	25.5	25.3	24.0	21.2	17.1	13.4
0200	12.5	13.4	16.3	19.7	23.0	24.9	25.5	25.3	23.9	21.1	17.0	13.4
0300	12.4	13.3	16.2	19.6	23.0	24.9	25.4	25.2	23.8	21.0	16.9	13.2
0400	12.3	13.2	16.1	19.6	22.9	24.9	25.4	25.2	23.7	20.9	16.7	13.1
0500	12.2	13.1	16.0	19.5	22.9	24.8	25.3	25.1	23.7	20.8	16.5	13.0
0600	12.1	13.0	15.9	19.5	22.8	24.8	25.3	25.0	23.6	20.7	16.4	12.8
0700	12.0	13.0	15.9	19.6	23.1	25.0	25.5	25.2	23.6	20.7	16.3	12.7
0800	12.1	13.1	16.1	20.0	23.6	25.5	26.0	25.7	24.2	21.2	16.6	12.9
0900	12.7	13.6	16.7	20.5	24.1	26.0	26.6	26.3	24.8	21.8	17.3	13.6
1000	13.4	14.2	17.2	21.1	24.7	26.5	27.1	26.8	25.4	22.4	18.0	14.4
1100	14.1	14.8	17.7	21.5	25.1	26.9	27.4	27.2	25.8	22.9	18.6	15.1
1200	14.6	15.2	18.1	21.8	25.3	27.0	27.6	27.5	26.1	23.3	19.0	15.6
1300	14.9	15.4	18.3	21.9	25.4	27.1	27.7	27.6	26.2	23.5	19.3	16.0
1400	15.2	15.6	18.3	21.9	25.3	27.0	27.6	27.5	26.2	23.4	19.5	16.2
1500	15.1	15.5	18.2	21.7	25.1	26.8	27.5	27.3	26.0	23.2	19.3	16.2
1600	14.8	15.3	17.9	21.5	24.9	26.6	27.3	27.1	25.7	22.8	18.9	15.7
1700	14.2	14.8	17.6	21.1	24.5	26.3	27.0	26.8	25.3	22.4	18.3	15.1
1800	13.5	14.3	17.1	20.7	24.1	26.0	26.6	26.3	24.9	21.8	17.6	14.3
1900	13.1	13.9	16.8	20.3	23.7	25.5	26.0	25.8	24.4	21.6	17.4	14.0
2000	13.0	13.8	16.6	20.1	23.4	25.3	25.8	25.6	24.3	21.5	17.2	13.8
2100	12.9	13.8	16.6	20.1	23.3	25.2	25.7	25.5	24.2	21.4	17.1	13.7
2200	12.8	13.7	16.6	20.0	23.2	25.1	25.6	25.5	24.2	21.3	17.1	13.6
2300	12.7	13.7	16.5	20.0	23.2	25.1	25.6	25.4	24.1	21.3	17.0	13.6
2400	12.7	13.6	16.5	19.9	23.2	25.1	25.5	25.4	24.0	21.2	16.9	13.5
Mean	13.2	14.0	16.9	20.5	23.9	25.7	26.3	26.1	24.7	21.8	17.6	14.1

TABLE 17.

HOURLY MEAN OF DEW POINT (°C) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	10.7	12.1	15.3	19.0	22.4	24.4	24.9	24.7	23.1	19.8	15.1	11.1
0200	10.6	12.0	15.3	19.0	22.4	24.3	24.9	24.7	23.0	19.7	14.9	11.0
0300	10.5	11.9	15.1	18.9	22.4	24.3	24.8	24.6	22.9	19.6	14.9	10.9
0400	10.4	11.8	15.1	18.8	22.3	24.2	24.8	24.6	22.8	19.4	14.7	10.8
0500	10.2	11.7	15.0	18.8	22.3	24.2	24.7	24.5	22.7	19.3	14.5	10.7
0600	10.1	11.6	14.9	18.8	22.3	24.2	24.7	24.4	22.7	19.2	14.3	10.4
0700	10.0	11.6	14.8	18.9	22.5	24.4	24.9	24.6	22.7	19.2	14.2	10.4
0800	10.1	11.7	15.1	19.2	22.9	24.9	25.3	25.1	23.2	19.6	14.4	10.4
0900	10.4	12.0	15.4	19.6	23.4	25.3	25.8	25.6	23.7	20.1	14.8	10.8
1000	10.8	12.3	15.8	20.0	23.8	25.7	26.2	26.0	24.1	20.5	15.2	11.2
1100	11.2	12.7	16.0	20.3	24.1	25.9	26.4	26.3	24.4	20.8	15.5	11.7
1200	11.6	12.9	16.3	20.4	24.1	26.0	26.5	26.4	24.6	21.0	15.9	12.1
1300	11.9	13.1	16.5	20.5	24.3	25.9	26.6	26.5	24.7	21.2	16.2	12.5
1400	12.2	13.3	16.5	20.5	24.2	25.9	26.5	26.4	24.6	21.2	16.5	12.8
1500	12.2	13.3	16.4	20.4	24.0	25.7	26.3	26.2	24.4	21.1	16.4	12.8
1600	12.0	13.1	16.3	20.2	23.8	25.5	26.1	25.9	24.2	20.8	16.1	12.6
1700	11.7	12.9	16.1	20.0	23.5	25.3	25.9	25.7	24.0	20.5	15.7	12.1
1800	11.3	12.6	15.9	19.7	23.2	25.0	25.6	25.4	23.6	20.2	15.2	11.7
1900	11.0	12.4	15.6	19.4	22.9	24.7	25.2	25.0	23.3	20.0	15.1	11.5
2000	10.9	12.3	15.6	19.3	22.7	24.5	25.0	24.9	23.2	20.0	15.0	11.4
2100	10.8	12.3	15.5	19.3	22.6	24.5	24.9	24.8	23.2	19.9	15.0	11.2
2200	10.8	12.2	15.6	19.3	22.6	24.5	24.9	24.8	23.2	19.9	14.9	11.2
2300	10.7	12.2	15.5	19.2	22.5	24.5	24.9	24.7	23.2	19.8	14.9	11.3
2400	10.7	12.2	15.5	19.2	22.5	24.4	24.9	24.7	23.1	19.7	14.8	11.2
Mean	11.0	12.3	15.6	19.5	23.1	24.9	25.4	25.3	23.5	20.1	15.2	11.4

TABLE 18.

HOURLY MEAN OF RELATIVE HUMIDITY (%) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	79	84	87	89	90	89	88	88	85	80	76	75
0200	79	84	87	90	90	89	89	89	85	80	76	75
0300	79	84	87	90	90	89	89	89	85	80	76	75
0400	79	84	88	90	90	89	89	89	85	80	76	75
0500	79	84	88	90	90	89	89	89	85	80	76	75
0600	79	84	88	90	91	89	89	89	85	80	76	75
0700	79	84	87	90	91	89	89	89	85	80	75	75
0800	78	84	87	89	89	89	88	89	84	79	74	74
0900	76	81	84	87	87	87	86	87	82	76	71	71
1000	72	78	82	84	85	85	84	85	79	73	68	67
1100	69	75	79	82	82	83	82	82	77	70	65	64
1200	67	74	78	80	81	81	80	81	75	69	63	63
1300	67	73	77	79	81	80	79	80	75	68	63	63
1400	67	73	77	79	80	80	79	80	74	69	64	63
1500	68	73	77	80	80	80	78	79	75	70	65	64
1600	69	75	79	81	81	80	78	80	76	71	66	66
1700	71	77	81	83	82	82	80	81	77	73	69	68
1800	75	80	83	85	84	83	82	83	80	76	72	72
1900	77	82	85	87	87	85	84	85	82	78	73	74
2000	77	82	86	88	88	87	86	86	83	79	74	74
2100	78	83	86	89	89	88	86	87	84	79	75	74
2200	78	83	87	89	89	88	87	87	84	80	75	75
2300	78	83	87	89	89	88	87	88	84	80	75	75
2400	78	83	87	89	90	89	88	88	85	80	75	75
Mean	75	80	84	86	86	86	85	85	81	76	71	71

TABLE 19.

HOURLY MEAN OF CLOUD AMOUNT (%) AT CHEUNG CHAU, 1971-1991

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0100	60	73	78	78	69	64	55	60	56	51	51	47
0200	61	74	79	79	69	64	55	60	56	51	51	48
0300	62	76	80	80	70	65	55	59	55	51	52	49
0400	62	76	80	80	71	65	56	59	54	52	52	49
0500	63	76	80	81	72	68	57	58	54	52	52	49
0600	63	77	81	84	77	73	63	65	60	56	54	50
0700	68	80	83	84	76	74	63	67	63	60	58	56
0800	67	78	83	83	77	73	65	67	62	60	56	53
0900	65	78	82	83	75	73	64	67	62	58	54	50
1000	63	77	81	81	74	73	64	67	61	56	52	48
1100	61	76	80	80	73	72	64	67	61	55	50	48
1200	59	74	78	79	73	72	64	67	61	54	49	46
1300	58	73	76	78	71	72	63	67	62	53	50	45
1400	57	71	75	78	72	71	64	67	62	54	50	44
1500	57	71	75	77	71	72	64	67	63	54	50	44
1600	57	71	75	77	71	71	64	68	64	55	50	44
1700	56	70	75	76	71	72	64	68	64	56	51	45
1800	58	71	76	76	72	72	64	68	65	57	52	47
1900	58	72	77	78	74	73	65	69	65	56	51	46
2000	57	71	77	77	73	72	62	66	62	54	50	45
2100	57	71	76	76	70	68	58	63	59	53	49	45
2200	57	70	77	76	69	66	56	61	58	52	49	45
2300	59	71	77	75	69	65	55	61	57	52	50	46
2400	60	72	78	76	69	64	55	60	57	51	50	46
Mean	60	74	78	79	72	70	61	64	60	54	51	47

TABLE 20.

FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED DURING FOG
AT CHEUNG CHAU, 1971-1991

Speed (m/s)	Direction in degrees 010	020	030	040	050	060	070	080	090	100	110	120	130	140	150	160	170	180	190
0.3 - 1.5	9	11	12	1	7	2	7	9	15	19	20	35	29	33	26	20	17	15	17
1.6 - 3.3	1	3	0	1	1	0	1	1	2	4	15	28	17	12	11	14	9	17	11
3.4 - 5.4	0	0	0	0	0	0	0	3	1	2	18	24	36	29	28	13	10	8	6
5.5 - 7.9	0	0	0	0	0	0	0	1	2	2	1	29	17	10	13	20	21	2	1
8.0 - 11	0	0	0	0	0	0	0	0	2	1	1	6	2	1	0	1	3	0	0
10.8 - 14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13.9 - 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.2 - 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.8 - 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.5 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5 - 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32.7 - 100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	10	14	12	2	8	2	8	14	22	28	56	122	101	85	78	68	60	42	35

Speed (m/s)	Direction in degrees 200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	Var.	Total
0.3 - 1.5	17	16	7	11	10	11	7	6	1	1	4	2	3	3	2	4	12	10	431
1.6 - 3.3	10	14	10	6	5	3	0	1	2	0	0	0	0	0	1	1	3	0	204
3.4 - 5.4	9	10	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	204
5.5 - 7.9	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125
8.0 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
10.8 - 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
13.9 - 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.2 - 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.8 - 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.5 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5 - 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32.7 - 100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	37	45	21	19	16	14	7	7	3	1	4	2	3	3	3	5	15	10	982

Number of calm wind occasions = 70
Total number of observations = 1052

TABLE 21.

FREQUENCY DISTRIBUTION OF WIND DIRECTION AND SPEED DURING MIST
AT CHEUNG CHAU, 1971-1991

Speed (m/s)	Direction in degrees																		
	010	020	030	040	050	060	070	080	090	100	110	120	130	140	150	160	170	180	190
0.3 - 1.5	34	28	30	20	25	11	23	15	22	25	23	42	21	30	18	21	14	11	15
1.6 - 3.3	15	18	17	11	10	12	11	11	17	16	17	25	14	25	18	5	10	3	4
3.4 - 5.4	3	6	6	2	6	4	15	16	24	17	29	41	26	17	14	20	20	14	8
5.5 - 7.9	6	2	0	0	1	3	3	13	34	12	10	28	20	10	12	10	12	6	3
8.0 - 11	0	0	0	0	0	1	1	1	12	4	10	6	5	0	0	2	2	0	0
10.8 - 14	0	0	0	0	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0
13.9 - 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.2 - 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.8 - 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.5 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5 - 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32.7 - 100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	58	54	53	33	42	31	53	56	113	76	89	142	86	82	62	58	58	34	30

Speed (m/s)	Direction in degrees																		
	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	Var.	Total
0.3 - 1.5	6	10	5	5	7	7	3	4	1	3	3	1	0	4	7	14	17	12	537
1.6 - 3.3	11	7	6	5	2	4	1	1	0	1	1	0	0	2	6	8	22	0	336
3.4 - 5.4	5	5	6	1	2	0	0	0	0	0	0	0	1	2	6	17	2	0	335
5.5 - 7.9	3	4	3	0	1	0	0	0	0	0	0	1	1	1	2	2	1	0	204
8.0 - 11	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	48
10.8 - 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
13.9 - 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.2 - 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.8 - 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.5 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5 - 33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32.7 - 100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	25	26	22	11	12	11	4	5	1	4	4	2	2	11	21	41	42	12	1466

Number of calm wind occasions = 51
Total number of observations = 1517

TABLE 22.

EXTREME VALUES OF TEMPERATURE, RAINFALL AND GUST AT CHEUNG CHAU, 1971-1991

Rank	Temperature				Maximum Rainfall						Maximum Gust		
	Maximum °C	Date	Minimum °C	Date	Hourly mm	Time	Daily mm	Date	Monthly mm	Month	Hourly m/s	Time	
1	36.2	16/6/88	3.1	9/2/72	102.5	08 12/7/86	419.6	17/6/83	841.7	Jun-72	66.0	07	9/9/83
2	36.2	17/6/88	3.3	1/3/86	100.5	06 21/5/89	410.2	16/6/72	601.9	Aug-72	59.5	06	9/9/83
3	36.2	4/6/91	3.4	28/12/91	82.0	09 17/6/83	212.9	24/8/76	579.3	Aug-76	58.0	08	9/9/83
4	36.2	5/6/91	3.4	29/12/91	73.3	16 17/6/83	192.4	25/8/76	576.6	May-82	56.0	05	9/9/83
5	36.1	14/6/88	3.6	14/12/75	73.2	01 11/10/84	188.7	30/5/84	528.0	May-72	55.5	09	9/9/83
6	36.1	6/6/91	3.9	29/12/76	68.7	06 1/8/75	179.3	19/7/88	521.1	Jul-87	54.0	01	17/8/71
7	36.0	7/6/91	4.0	30/1/71	68.5	08 23/8/74	175.3	12/7/88	490.3	Jun-75	53.0	22	16/8/71
8	35.9	23/7/72	4.0	28/12/76	68.5	21 21/8/86	169.0	29/5/82	488.4	May-73	52.5	04	9/9/83
9	35.8	22/6/80	4.3	30/12/83	64.0	05 2/5/74	161.8	4/6/73	488.2	Aug-75	52.0	24	16/8/71
10	35.5	14/9/72	4.6	26/2/74	61.8	10 17/6/83	161.2	17/6/72	483.2	Aug-88	51.5	15	2/8/79
11	35.5	10/6/88	4.6	9/2/80	61.6	08 16/6/72	159.7	20/5/75	472.5	Aug-73	50.5	13	2/8/79
12	35.5	15/6/88	4.8	8/2/72	59.4	01 5/5/78	157.1	17/10/78	471.8	May-75	49.5	23	16/8/71
13	35.5	28/5/91	5.0	25/2/74	55.9	08 25/8/76	156.2	21/5/89	466.1	Aug-85	47.0	21	16/8/71
14	35.5	13/5/77	5.0	13/12/75	55.1	09 16/6/72	156.0	6/4/87	463.1	Jun-83	47.0	14	2/8/79
15	35.4	7/7/72	5.0	15/12/75	51.7	07 30/5/84	150.7	23/9/79	442.8	May-84	45.5	02	17/8/71
16	35.4	11/6/88	5.0	4/1/77	51.4	06 30/5/84	150.1	20/8/72	432.4	Aug-79	45.5	16	2/8/79
17	35.4	13/6/88	5.0	31/12/83	50.4	10 16/6/72	147.7	2/5/74	429.0	Oct-74	44.5	20	16/8/71
18	35.4	20/8/76	5.3	31/1/71	50.2	04 19/7/88	143.1	15/10/91	409.4	Jun-91	44.0	16	14/10/75
19	35.4	22/8/76	5.3	8/2/80	50.0	04 22/8/74	139.4	8/4/74	403.0	May-85	44.0	12	9/9/83
20	35.3	2/10/75	5.4	16/12/75	48.3	15 20/5/83	137.7	6/5/73	402.8	Jul-73	43.5	13	9/9/83
*	36.1	18/8/90	3.8	9/2/72	104.8	13 2/5/89	346.7	17/6/83	872.0	Aug-82	62.0	01	17/8/71

* : extreme values recorded at the Royal Observatory during 1971-1991