

**COASTAL OBSERVATION PROGRAMME - ENGINEERING (COPE)**

**MISSION BEACH - JOHNSTONE SHIRE**

**For the Years 1976 to 1979**

All reasonable care and attention has been exercised in the collection, processing and compilation of the COPE data included in this report. However the accuracy and reliability of this information is not guaranteed in any way by the Beach Protection Authority and the Authority accepts no responsibility for the use of this information in any way whatsoever.

## DOCUMENTATION PAGE

REPORT NO.: C 11.1

TITLE: REPORT - COASTAL OBSERVATION PROGRAMME - ENGINEERING (COPE),  
MISSION BEACH, JOHNSTONE SHIRE

DATE: November 1984

TYPE OF REPORT: Technical Memorandum

ISSUING ORGANISATION: Beach Protection Authority  
G.P.O. Box 2195  
BRISBANE QLD 4001

DISTRIBUTION: Public Distribution

### ABSTRACT:

This report provides a summary of primary analyses of COPE data on wind, wave and beach processes observed at Mission Beach in the Johnstone Shire in northern Queensland. The data were recorded by volunteer observer Mr. Eric Bull, assisted by Miss Cheryl Bull, during the period April 1976 to May 1979. The recordings were made daily during the three year period and the information published is considered representative and reliable.

### OTHERS AVAILABLE IN THIS SERIES:

Coastal Observation Program - Engineering (COPE), Machans Beach - Mulgrave Shire, (Report C 01.1).

Coastal Observation Program - Engineering (COPE), Baffle Creek - Miriam Vale Shire, (Report C 02.1).

Coastal Observation Program - Engineering (COPE), Flying Fish Point - Johnstone Shire, (Report C 03.1).

Coastal Observation Program - Engineering (COPE), Woodgate - Isis Shire, (Report C 04.1).

Coastal Observation Programme - Engineering (COPE), Shelly Beach - Landsborough Shire, (Report C 05.1).

Coastal Observation Programme - Engineering (COPE), Eurong - Maryborough City, (Report C 06.1).

Coastal Observation Programme - Engineering (COPE), Lammermoor Beach - Livingstone Shire, (Report C 07.1).

Coastal Observation Programme - Engineering (COPE), Noah Creek - Douglas Shire, (Report C 08.1).

Coastal Observation Programme - Engineering (COPE), Cardwell - Cardwell Shire, (Report C 09.1).

Coastal Observation Programme - Engineering (COPE), Surfers Paradise - City of Gold Coast (Report C 10.1).

**REFERENCES:**

1. **ROBINSON D.A. and JONES C.M.**

Queensland Volunteer Coastal Observation Program - Engineering (COPE). 3rd  
Australian Conference on Coastal and Ocean Engineering, Melbourne, April 1979.

# CONTENTS

PAGE

## 1.0 INTRODUCTION

1.1 The Programme	1
1.2 Site Selection	1
1.3 Instrumentation	1
1.4 Observers	1
1.5 Accuracy	1
1.6 Presentation of Data	2

## 2.0 STATION PARTICULARS

2.1 Location	2
2.2 Observers	2
2.3 Observed Parameters	2
2.4 Tidal Information	3
2.5 Description of Beach	3
2.6 Supervision of Station	4

## 3.0 DATA

3.1 General	4
3.2 Wind	4
3.3 Waves	4
3.4 Longshore Current	5
3.5 Beach Profile Parameters	5
3.6 Monthly Beach Profiles	5

## 4.0 ATTACHMENTS

Tables (see over for List of Tables)  
Figures (see over for List of Figures)

## LIST OF TABLES

Table No.	Title	
1	Monthly and Annual Wave Parameters Summary	1976
2	Monthly and Annual Wave Parameters Summary	1977
3	Monthly and Annual Wave Parameters Summary	1978
4	Monthly and Annual Wave Parameters Summary	1979

## LIST OF FIGURES

Figure No.	Title	
1	Locality Plan	
2	Wind Data	
3	Wave Height % Exceedance	
4	Wave Height and Period % Occurrence	
5	Wave Direction Analysis	
6	Surf Zone Width – Morning	1976
7	Surf Zone Width – Morning	1977
8	Surf Zone Width – Morning	1978
9	Surf Zone Width – Morning	1979
10	Littoral Currents – Morning	1976
11	Littoral Currents – Morning	1977
12	Littoral Currents – Morning	1978
13	Littoral Currents – Morning	1979
14	Beach Profile Parameters	1976
15	Beach Profile Parameters	1977
16	Beach Profile Parameters	1978
17	Beach Profile Parameters	1979
18	Monthly Beach Profiles	1976 to 1979

## **1.0 INTRODUCTION**

### **1.1 The Programme**

The Beach Protection Authority requires basic data on the behaviour of Queensland's beaches in order to provide well founded advice on coastal management to local Authorities. The COPE project aims to collect information on wind, waves and beach behaviour in areas where extensive investigations are not practical and where otherwise little or no data exist.

The project is based on the recruitment of volunteer observers who are prepared to record a series of basic parameters once or twice daily for at least a three year period.

### **1.2 Site Selection**

In selecting a site for a COPE station, consideration is given to:-

- (a) the general shoreline configuration and the possibility of extrapolation of data to other adjacent beaches;
- (b) the distribution of stations along Queensland's coastline;
- (c) the need to correlate the COPE data with planned or existing data collection programmes.

### **1.3 Instrumentation**

Each COPE observer is supplied with a basic kit of recording instruments including:-

- 30 metre Tape
- Wind Meter
- Abney Level
- 1.5 metre Sighting Support
- Recording Forms
- Fluorescent Dye.

A graduated reference pole is installed on the beach to serve as the base point for all plan measurements and the control for vertical levelling.

### **1.4. Observers**

The majority of COPE observers are volunteers who may be local business people, local residents or school children. Some stations are manned by Government employees who carry out the observations as part of their official duties.

### **1.5 Accuracy**

Individual observers differ in their subjective assessment of the various parameters recorded as part of the COPE programme. Wave parameters such as type, height, and angle of approach together with surf zone width and the location of the vegetation line all require visual assessment, the accuracy of which will vary from observer to observer and from recording to recording.



Although the Authority is confident that all observers make their observations to the best of their ability and accepts these observations without adjustment, the existence of random and non - random errors in the recorded data is to be expected.

Problems associated with the use of data containing these errors are minimised in two ways. Firstly, regular visits are made to the COPE stations by the Authority's COPE Field Officer to provide a check on any bias introduced into the recordings by incorrect observation procedures. Secondly, it has been found that, with a large number of observations taken on a regular basis, a reasonable assessment can be made of the average climatologies of the observed parameters provided the observation errors are random. A minimum recording period of three years has been adopted for the analysis and publication of the data. Five day moving averages are applied to observations of the various beach width and foreshore slope parameters to smooth out random errors.

For these reasons, the Authority is of the opinion that published COPE data can be used with confidence provided the above inherent limitations are recognised.

### **1.6 Presentation of Data**

The purpose of this report is to present COPE data for the three year period 1976 to 1979 in a useful statistical form. No attempt has been made to interpret the observed data.

If this three year period is representative of the long term average meteorological conditions, the wind, wave and beach movement climatologies presented can be regarded as typical. However, this recording period is too short to be representative in terms of the average occurrence of extreme events such as cyclones and floods, and this should be taken into account when consideration is being given to the influence of such events on trends of long term beach behaviour.

## **2.0 STATION PARTICULARS**

### **2.1 Location**

Mission Beach is located within the Johnstone Shire and is 44 kilometres north of Cardwell on the northern Queensland coast. It is a 12 kilometre stretch of the coastline between Clump Point and Tam O'Shanter Point and lies in the lee of Dunk Island. The small settlement of Mission Beach is immediately adjacent to the COPE station. The location of the Mission Beach COPE station is shown in Figure 1.

### **2.2 Observers**

This station has been manned by Mr. Eric Bull, assisted by Miss Cheryl Bull, during the period April 1976 to May 1979. Mr. Bull and Miss Bull are residents of Mission Beach.

### **2.3 Observed Parameters**

The observers at this station recorded at 7.30 a.m. daily during the three year period 1976 to 1979.

This station has recorded:

- Wave Period
- Wave Height
- Wave Angle
- Wave Type
- Surf Zone Width
- Presence of Offshore Bar
- Wind Speed
- Wind Direction
- State of Tide
- Distance to Fixed Contour
- Distance to Vegetation
- Foreshore Slope
- Longshore Current Speed
- Longshore Current Direction

In addition, a sand sample was collected at the station each month and since December 1976 a profile of the beach has usually been recorded monthly also.

#### 2.4 Tidal Information

Tidal information for this station as presented below is essentially the same as that for Dunk Island. Datum is Low Water Datum.

M.H.W.S. : 3.0 metres  
 M.H.W.N. : 2.3 metres  
 M.S.L. : 2.01 metres  
 M.L.W.S. : 1.0 metres  
 M.L.W.N. : 1.8 metres

#### 2.5 Description of the Beach

The beach at the Mission Beach station exhibits the following characteristics:-

- Typical beach slopes: foreshore slope 1 in 30 ( $2^{\circ}$ ).
- Beach width: typical 20 to 45 metres from vegetation line.
- D50 sand size: 0.21 mm averaged over three years.
- Adjoining Landform: low frontal beach ridge, which is backed by relatively flat hind ridges.
- Vegetation: Beach spinifex (*Spinifex hirsutus*) open-grassland occurs on the seaward slope of the frontal beach ridge. Beach bean (*Canavalia rosea*) is also present. Horsetail She-oak (*Casuarina equisetifolia* var. *incana*) low closed-forest occurs on the crest and landward slope. Coconut palms (*Cocos nucifera*) are also present. The hind ridges support rain forest vegetation.

## 2.6 Supervision of Station

The observers were instructed in the recording program by the COPE Field Officer and the initial instruction period was followed up with visits to the station during the period of recordings presented in this report.

Installation and maintenance of the reference pole for this station has been carried out by the Johnstone Shire Council, and the Authority wishes to thank the Council for its assistance in all matters associated with the COPE project.

## 3.0 DATA

### 3.1 General

COPE data for this station for the three year period April 1976 to May 1979 are presented on the attached figures. The data have been analysed statistically and/or smoothed to reveal long term averages or trends. A brief description of each of the observed parameters is given below with the relevant figure references.

### 3.2 Wind

The observers recorded the wind speed at the beach using a hand held wind meter at 1.5 metres above beach level. Wind direction is estimated to the nearest compass sector.

A summary of annual wind speed and direction percentage occurrences are shown as a wind rose in Figure 2. Where applicable, morning and afternoon readings as well as the overall average are shown.

### 3.3 Waves

The average breaker height (trough to crest) is usually estimated to the nearest 0.1 metre. From experience this estimate has been found to be comparable with the equivalent deep water significant wave height.

The observer estimates the wave period by recording the time taken for eleven wave crests (the duration of 10 waves) to pass a point.

The wave direction is estimated as one of five direction sectors indicating the angle to the shoreline alignment from which the waves are approaching the beach. These sectors have been selected as:-

Sector 1	-	0°	to	60°
Sector 2	-	60°	to	85°
Sector 3	-	85°	to	95°
Sector 4	-	95°	to	120°
Sector 5	-	120°	to	180°

Note: 0° is the beach alignment to the left of the observer when facing seaward.

Statistical representations of the observed wave data include:-

- (a) the percentage of wave height recordings which exceed any given wave height for all directions combined (Figure 3).

- (b) the percentage occurrence of various combinations of wave heights and periods and directions (Figure 4 and Figure 5).
- (c) surf zone width with an indication of the existence or otherwise of an offshore bar in Figures 6 to 9.
- (d) tabulation of the occurrence of various wave heights, periods, types and directions (Tables 1 to 4).

### 3.4 Longshore Currents

The observer measured the distance parallel to the shoreline that a dye patch in the surf zone moved in one minute. Current direction is either upcoast or downcoast, upcoast being to the left when facing the sea from the beach.

The readings are converted to a velocity which is plotted on a daily basis (Figure 10 to Figure 13). Mean upcoast and downcoast components and the overall annual means are also presented.

### 3.5 Beach Profile Parameters

Beach profile parameters were measured using an Abney level, tape measure and reference pole. These include:

- distance from the reference pole to the 1.5 metre, relative to A.H.D., fixed contour level
- distance from reference pole to the vegetation line (usually front face of fore-dune).
- the foreshore slope.

Changes in these parameters with time indicate how the beach moves in response to varying wave attack. Plots of these parameters are shown in Figures 14 to 17.

### 3.6 Monthly Beach Profiles

Beach profiles are normally taken at the beginning of each month. However should the beach undergo appreciable erosion or accretion during the month, then the observer is requested to take another beach profile. Monthly beach profiles are shown in Figure 18.

TABLE 1.

MONTHLY AND ANNUAL

MEAN WAVE HEIGHT / MEAN WAVE PERIOD AND WAVE TYPE / WAVE DIRECTION OCCURRENCES

MISSION BEACH

YEAR 1976.

MONTH	MEAN WAVE PERIOD (Secs)	MEAN WAVE HEIGHT (Metres)	Percentage Occurrences - Wave Type / Wave Direction											
			Wave Type					Wave Direction						
			SP	PL	Surge	SP/PL	Calm	1	2	3	4	5	Calm	
JANUARY														
FEBRUARY														
MARCH														
APRIL	5.2	0.58	18.5	-	-	70.4	11.1	-	-	88.9	-	-	11.1	
MAY	5.1	0.55	3.2	-	-	80.6	16.1	-	-	83.9	-	-	16.1	
JUNE	5.2	0.45	3.3	-	-	73.3	23.3	-	-	76.7	-	-	23.3	
JULY	4.8	0.57	36.7	-	-	50.0	13.3	-	-	86.7	-	-	13.3	
AUGUST	5.2	0.21	30.0	-	-	26.7	43.3	-	-	56.7	-	-	43.3	
SEPTEMBER	5.3	0.06	3.3	-	-	10.0	86.7	-	-	13.3	-	-	86.7	
OCTOBER	4.1	0.13	3.3	-	-	16.7	80.0	-	-	20.0	-	-	80.0	
NOVEMBER	4.4	0.04	3.3	-	-	6.7	90.0	-	-	10.0	-	-	90.0	
DECEMBER	3.7	0.12	9.7	-	-	16.1	74.2	-	-	25.8	-	-	74.2	
WHOLE YEAR	4.9	0.30	12.2	0.0	0.0	38.7	49.1	0.0	0.0	50.9	0.0	0.0	49.1	

SP - Spilling  
 PL - Plunging  
 SP/PL - Combined Spilling and Plunging

TABLE 2.

MONTHLY AND ANNUAL

MEAN WAVE HEIGHT /MEAN WAVE PERIOD AND WAVE TYPE / WAVE DIRECTION OCCURRENCES

MISSION BEACH

YEAR 1977.

MONTH	MEAN WAVE PERIOD (Secs)	MEAN WAVE HEIGHT (Metres)	Percentage Occurrences - Wave Type /Wave Direction										
			Wave Type					Wave Direction					
			SP	PL	Surge	SP/PL	Calm	1	2	3	4	5	Calm
JANUARY	4.2	0.21	12.9	-	3.2	29.0	54.8	-	-	41.9	3.3	-	54.8
FEBRUARY	4.8	0.43	17.9	-	-	50.0	32.1	-	-	67.9	-	-	32.1
MARCH	4.4	0.11	6.5	-	-	12.9	80.6	-	-	19.4	-	-	80.6
APRIL	4.4	0.53	13.3	-	-	86.7	-	-	100.0	-	-	-	-
MAY	4.5	0.24	13.8	-	-	37.9	48.3	-	3.4	48.3	-	-	48.3
JUNE	4.6	0.31	13.3	-	-	45.4	41.3	-	-	44.8	13.8	-	41.3
JULY	4.3	0.38	13.3	-	-	56.7	30.0	-	-	56.7	13.3	-	30.0
AUGUST	4.3	0.37	9.7	-	-	51.6	38.7	-	-	54.8	3.2	3.3	38.7
SEPTEMBER	3.7	0.28	3.3	6.7	3.3	50.0	36.7	-	-	60.0	3.3	-	36.7
OCTOBER	3.7	0.28	25.8	-	-	45.2	29.0	-	3.2	64.6	3.2	-	29.0
NOVEMBER	4.5	0.08	3.4	-	-	10.3	86.2	-	-	13.8	-	-	86.2
DECEMBER	4.1	0.15	3.2	-	-	22.6	74.2	-	-	25.8	-	-	74.2
WHOLE YEAR	4.3	0.28	11.1	0.6	0.6	41.6	46.1	0.0	1.1	49.2	3.3	0.3	46.1

SP - Spilling

PL - Plunging

SP/PL - Combined Spilling and Plunging

**TABLE 3.**

**MONTHLY AND ANNUAL**

**MEAN WAVE HEIGHT / MEAN WAVE PERIOD AND WAVE TYPE / WAVE DIRECTION OCCURRENCES**

MISSION BEACH

YEAR 1978.

MONTH	MEAN WAVE PERIOD (Secs)	MEAN WAVE HEIGHT (Metres)	Percentage Occurrences - Wave Type / Wave Direction										
			Wave Type					Wave Direction					
			SP	PL	Surge	SP/PL	Calm	1	2	3	4	5	Calm
JANUARY	4.5	0.17	6.5	-	-	35.5	58.1	-	-	41.9	-	-	58.1
FEBRUARY	3.8	0.30	14.3	-	3.6	39.3	42.9	-	-	53.6	3.5	-	42.9
MARCH	4.1	0.37	16.1	-	-	45.2	38.7	-	-	61.3	-	-	38.7
APRIL	4.0	0.28	16.7	-	-	43.3	40.0	-	-	60.0	-	-	40.0
MAY	4.2	0.33	6.5	-	-	48.4	45.2	-	3.2	51.6	-	-	45.2
JUNE	4.2	0.13	3.4	-	-	23.3	73.3	-	-	26.7	-	-	73.3
JULY	4.3	0.15	12.9	-	-	22.6	64.5	-	-	25.5	9.9	-	64.6
AUGUST	3.9	0.23	22.6	3.2	3.2	25.8	45.2	-	3.2	45.2	6.4	-	45.2
SEPTEMBER	3.3	0.11	26.7	-	-	13.3	60.0	-	30.0	10.0	-	-	60.0
OCTOBER	3.9	0.32	6.5	-	3.2	45.2	45.2	-	9.6	45.2	-	-	45.2
NOVEMBER	4.1	0.23	6.7	-	-	40.0	53.3	-	-	43.4	3.3	-	53.3
DECEMBER	3.7	0.14	3.2	-	-	25.8	71.0	-	12.9	16.1	-	-	71.0
WHOLE YEAR	4.0	0.23	11.8	0.3	0.8	33.9	53.2	0.0	4.9	40.0	1.9	0.0	53.2

SP - Spilling

PL - Plunging

SP/PL - Combined Spilling and Plunging

**TABLE 4.**

**MONTHLY AND ANNUAL**

**MEAN WAVE HEIGHT / MEAN WAVE PERIOD AND WAVE TYPE / WAVE DIRECTION OCCURRENCES**

MISSION BEACH

YEAR 1979.

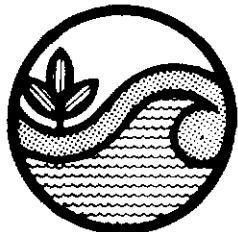
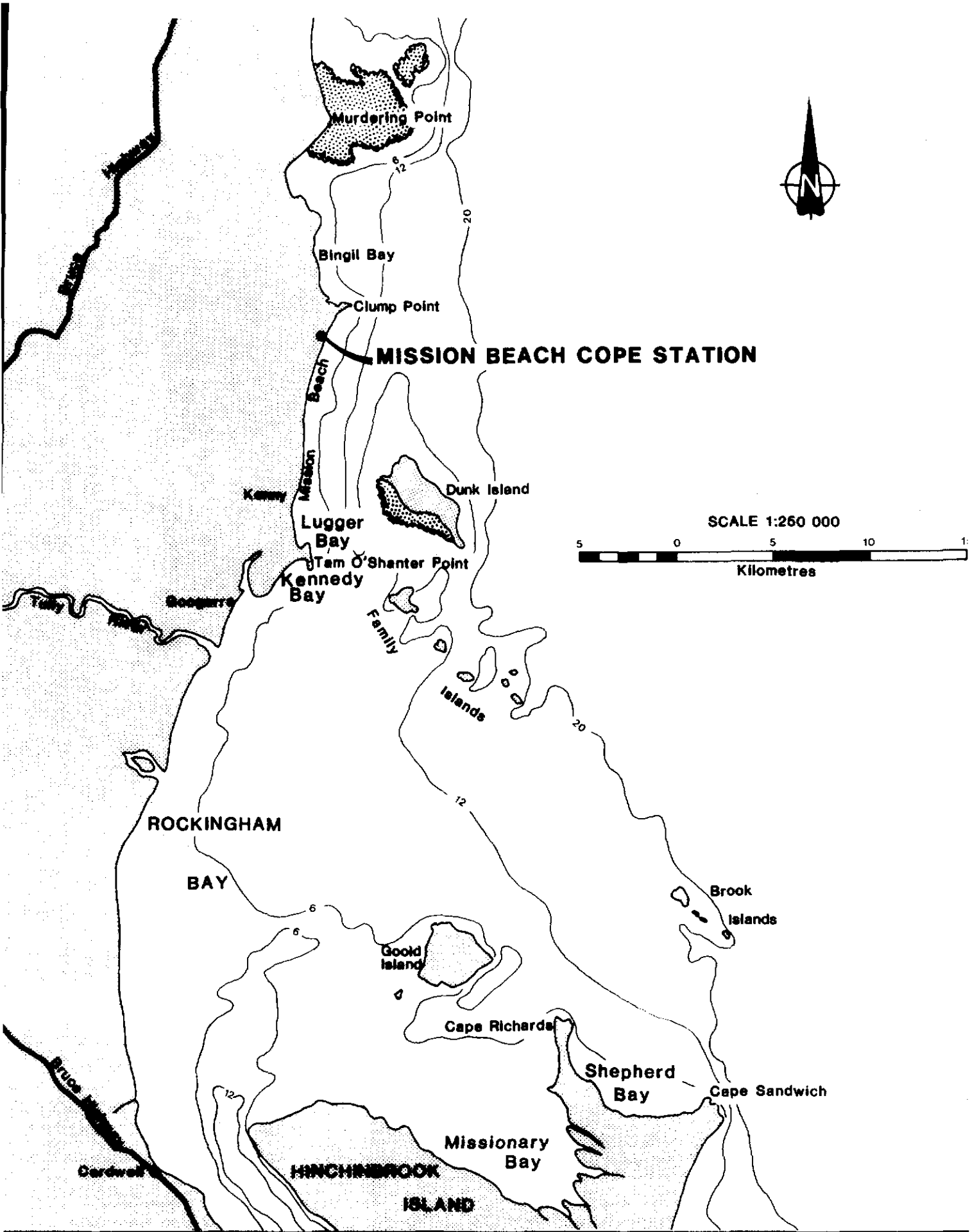
MONTH	MEAN WAVE PERIOD (Secs)	MEAN WAVE HEIGHT (Metres)	Percentage Occurrences - Wave Type / Wave Direction										
			Wave Type					Wave Direction					
			SP	PL	Surge	SP/PL	Calm	1	2	3	4	5	Calm
JANUARY	3.9	0.47	3.2	3.2	3.2	51.6	38.7	-	9.7	51.6	-	-	38.7
FEBRUARY	3.8	0.29	7.1	-	-	35.7	57.1	-	3.6	39.3	-	-	57.1
MARCH	3.7	0.18	3.2	-	-	22.6	74.2	-	-	25.8	-	-	74.2
APRIL	4.0	0.16	6.7	-	-	20.0	73.3	-	6.7	20.0	-	-	73.3
MAY	3.6	0.35	16.1	-	-	51.6	32.3	-	3.2	64.5	-	-	32.3
JUNE													
JULY													
AUGUST													
SEPTEMBER													
OCTOBER													
NOVEMBER													
DECEMBER													
WHOLE YEAR	3.8	0.29	7.3	0.7	0.7	36.3	55.0	0.0	4.6	40.4	0.0	0.0	55.0

SP – Spilling

PL – Plunging

SP/PL – Combined Spilling and Plunging





Beach Protection Authority

## LOCALITY PLAN

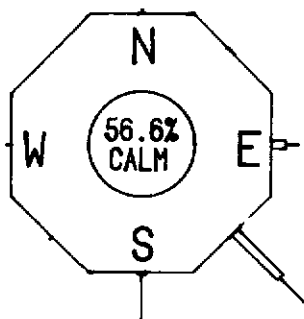
**COPE**

Mission Beach

**Figure 1**

C 11.1

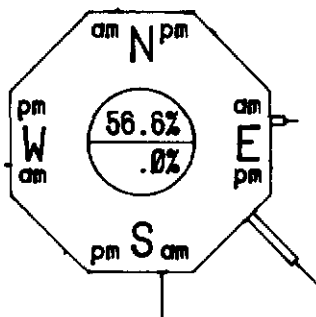
ALL OBSERVATIONS



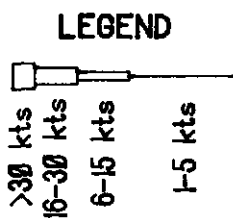
Total No. of Observations : 1113

MORNING - AFTERNOON OBSERVATIONS

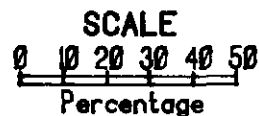
**NOTES :**  
 Figures in Central Circle  
 Represent Percentage  
 of CALM Observations.  
 Upper Figure for AM  
 Lower Figure for PM



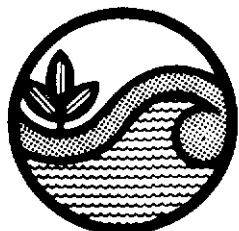
No. of Morning Observations : 1113  
 No. of Afternoon Observations : 0

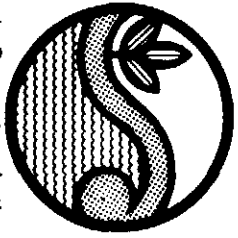


Mean Time :- Morning Obs : 0730 hrs



WIND DATA - APR 1976 to APR 1979





**WAVE HEIGHT % EXCEEDANCE**

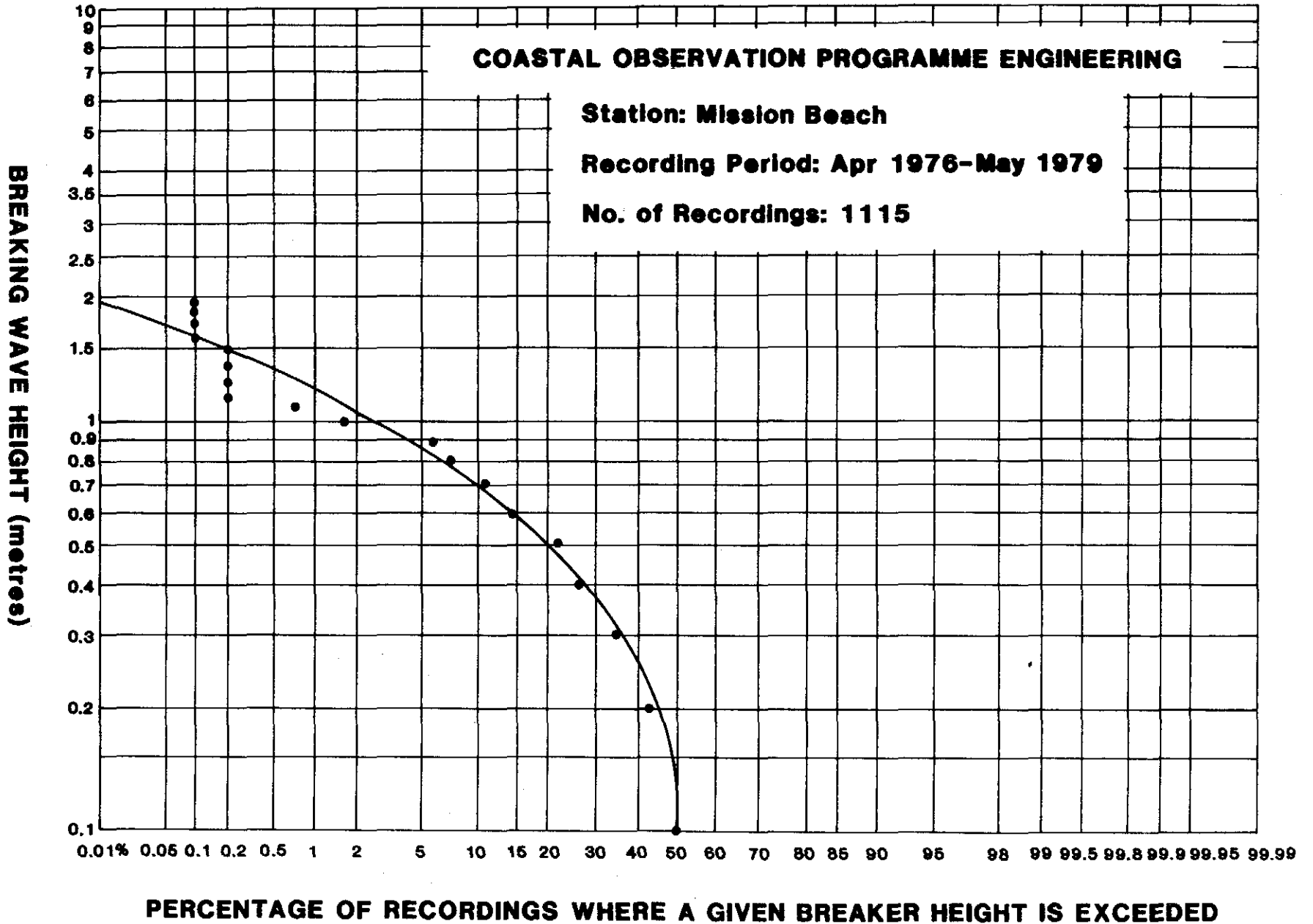
**ALL DATA**

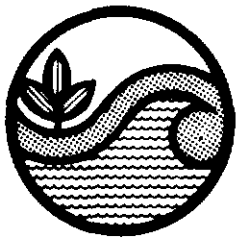
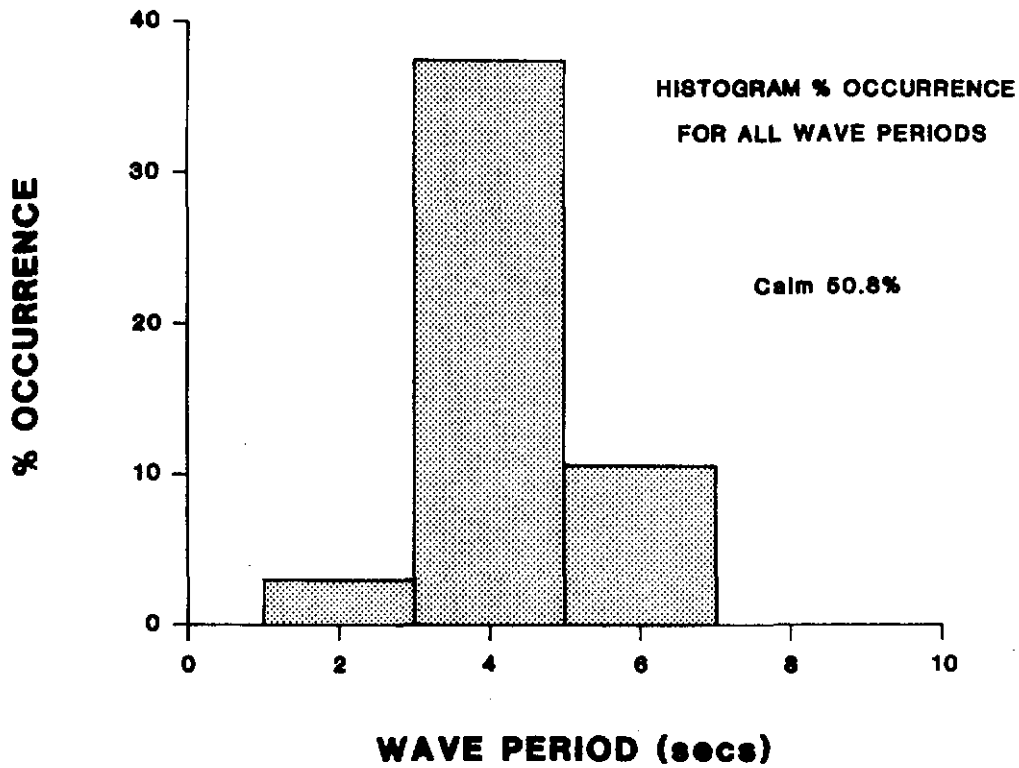
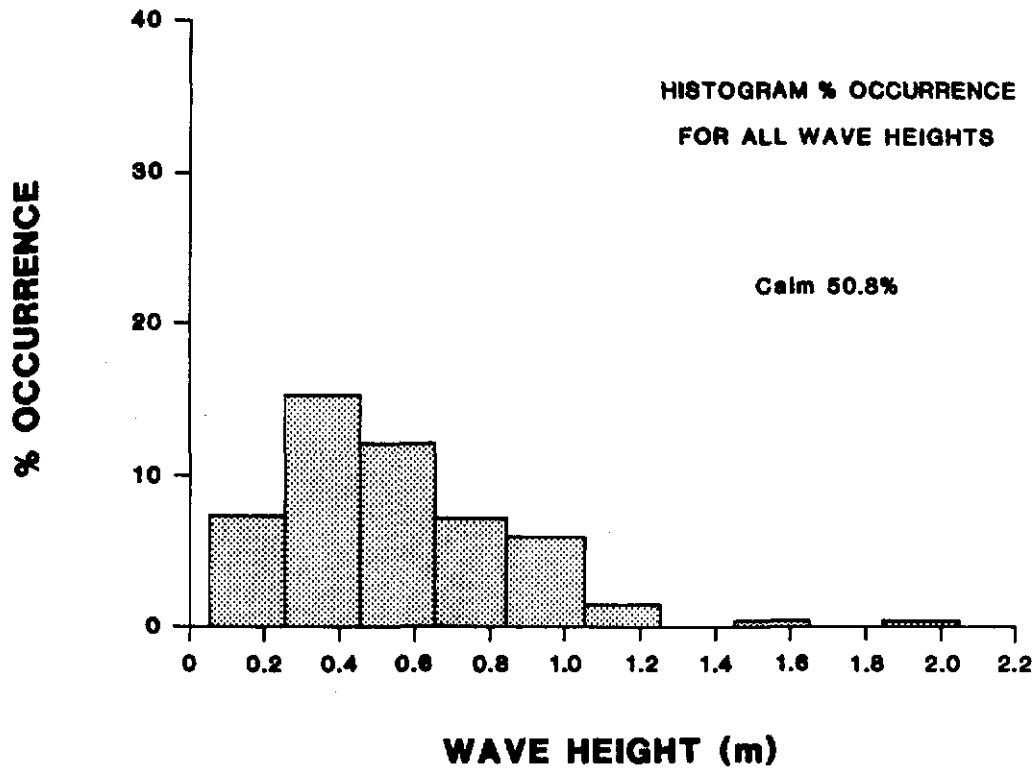
**COPE**

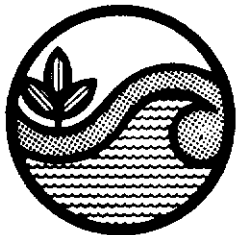
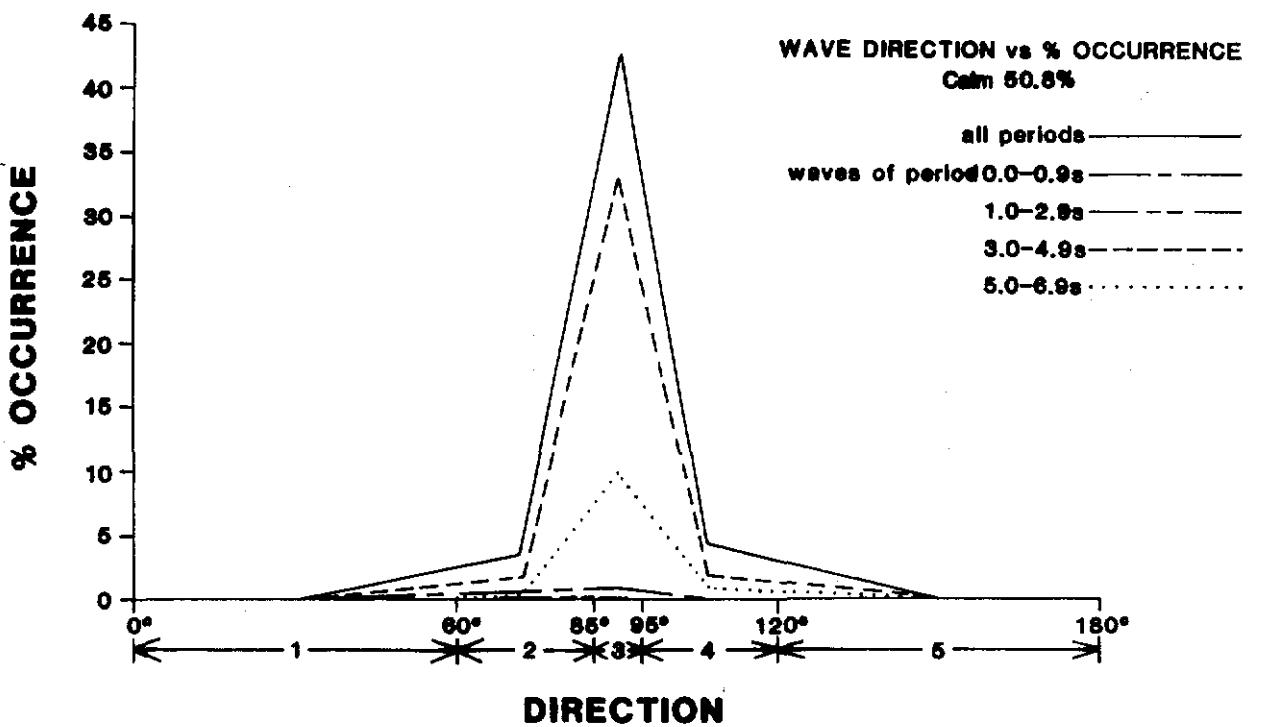
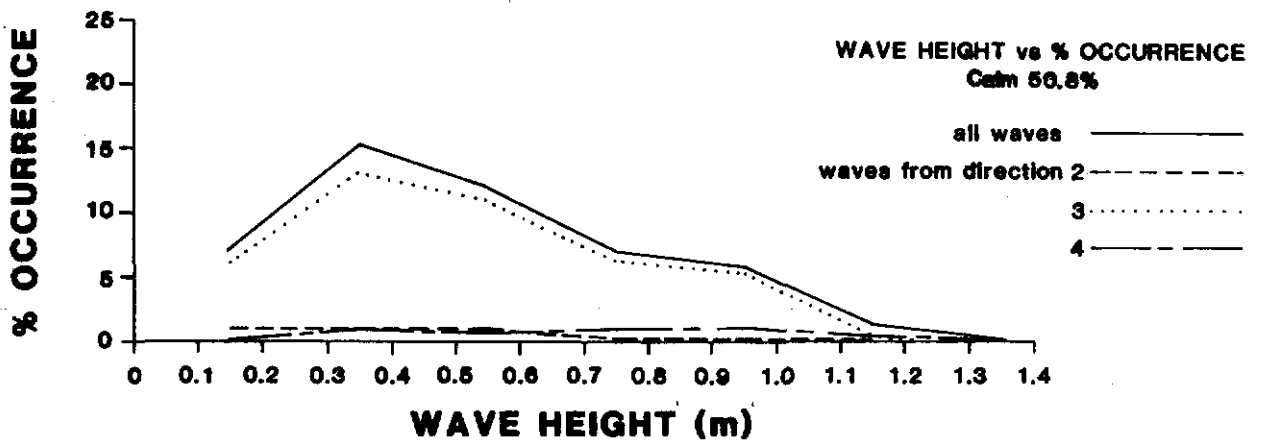
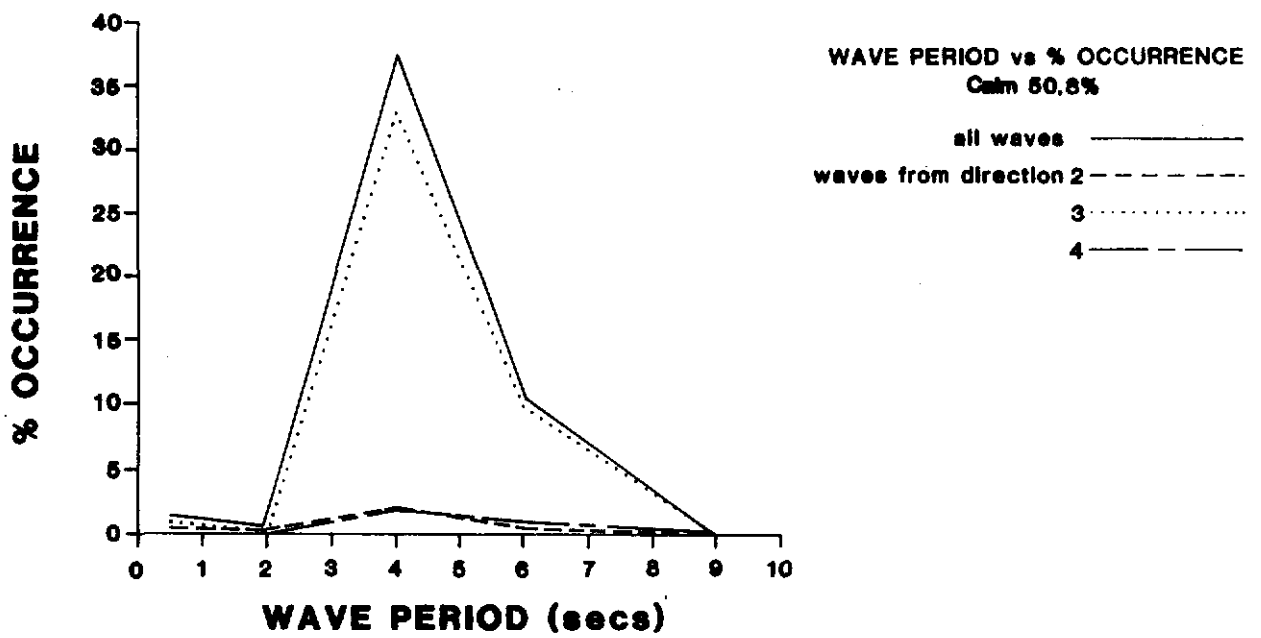
Mission Beach

**Figure 3**

C 11.1

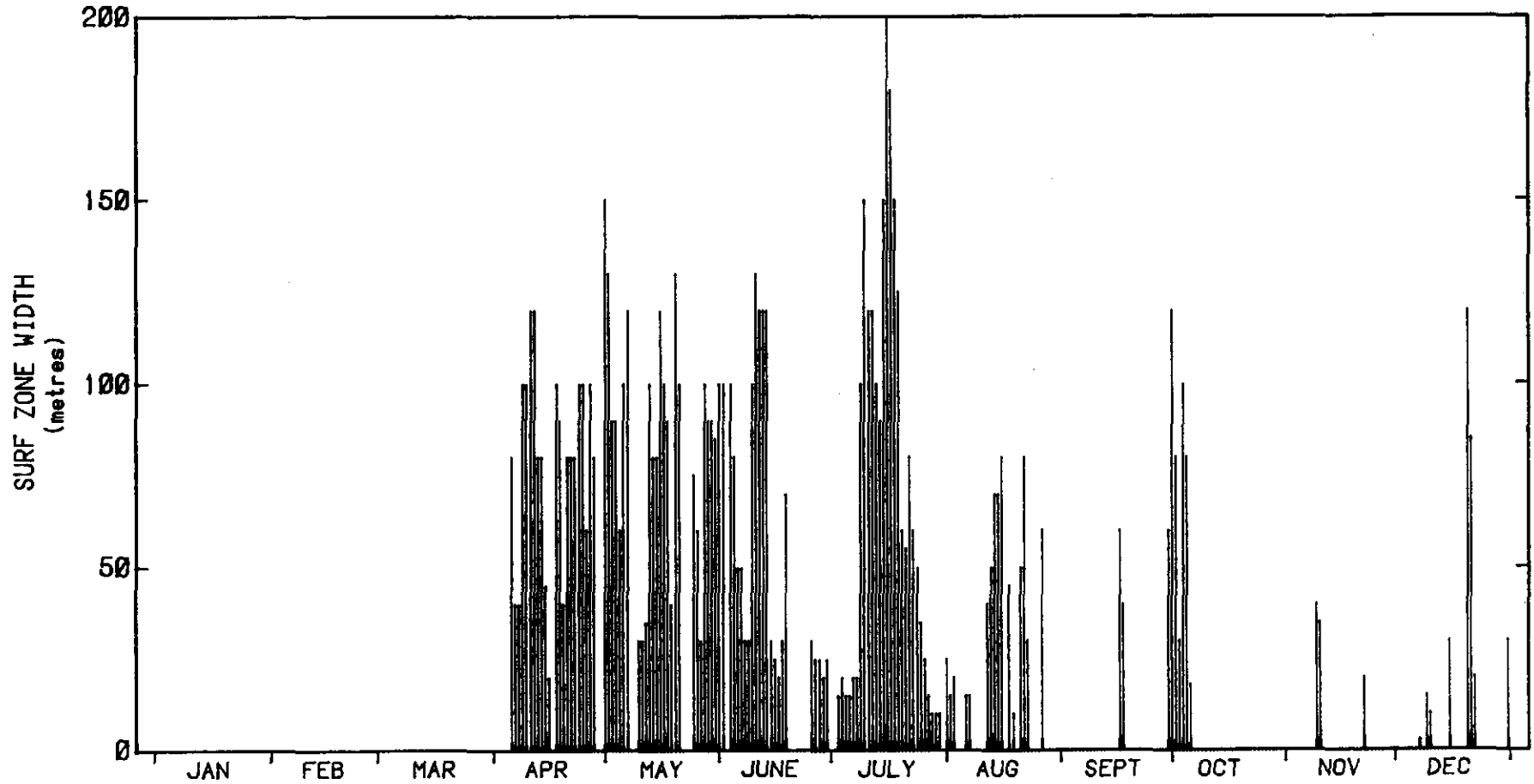








SURF ZONE WIDTH - MORNING 1976



SURF ZONE WIDTH SUMMARY - 1976

No. of Observations : 268

MORNING OBSERVATIONS

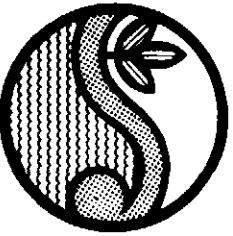
Mean Surf Zone Width = 33.7 m

COPE

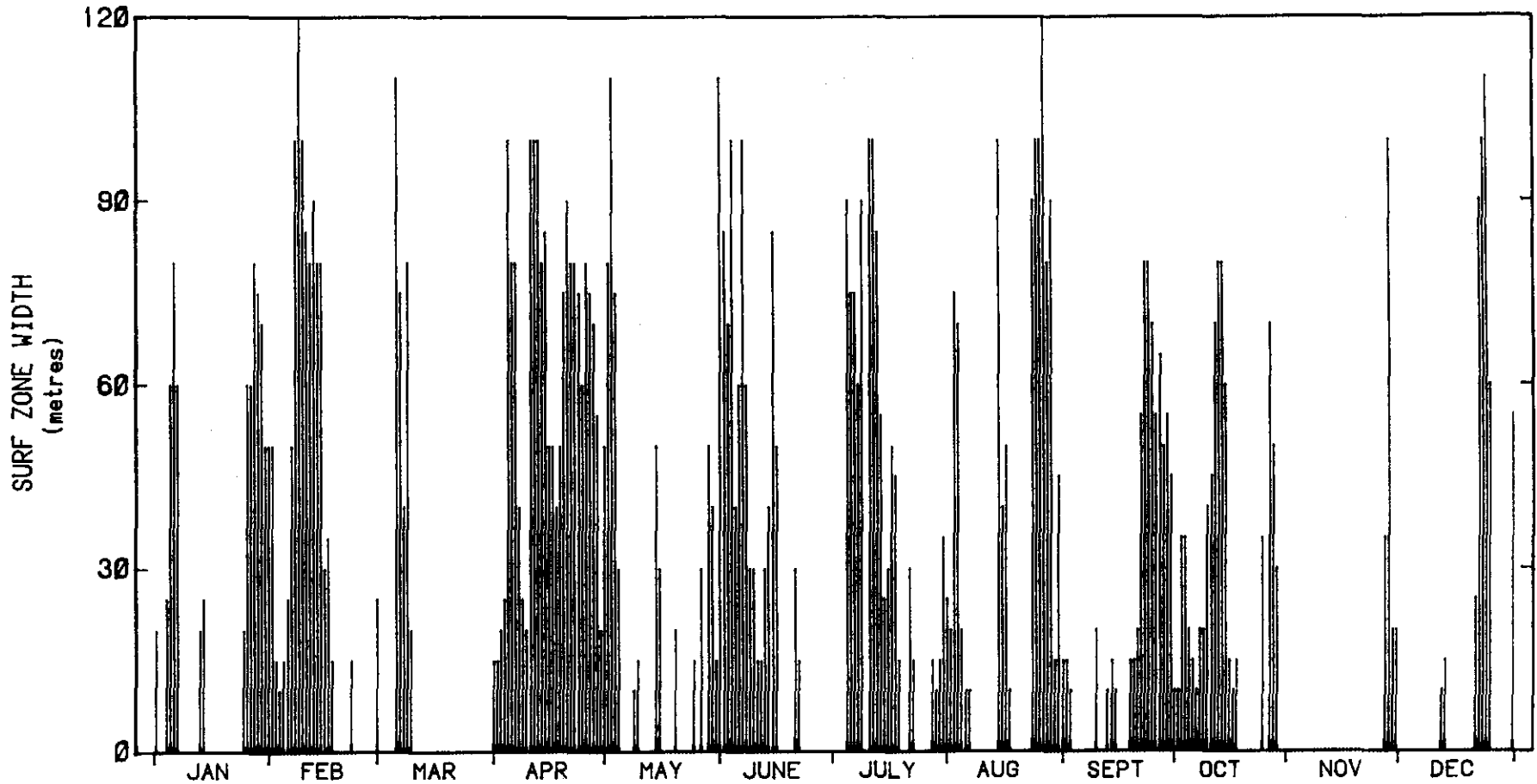
Mission Beach

Figure 6

C 11.1



SURF ZONE WIDTH - MORNING 1977



SURF ZONE WIDTH SUMMARY - 1977

No. of Observations : 361

MORNING OBSERVATIONS

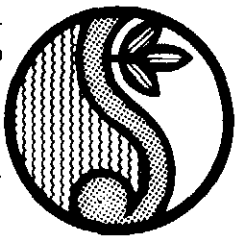
Mean Surf Zone Width = 27.0 m

COPE

Mission Beach

Figure 7

C 11.1



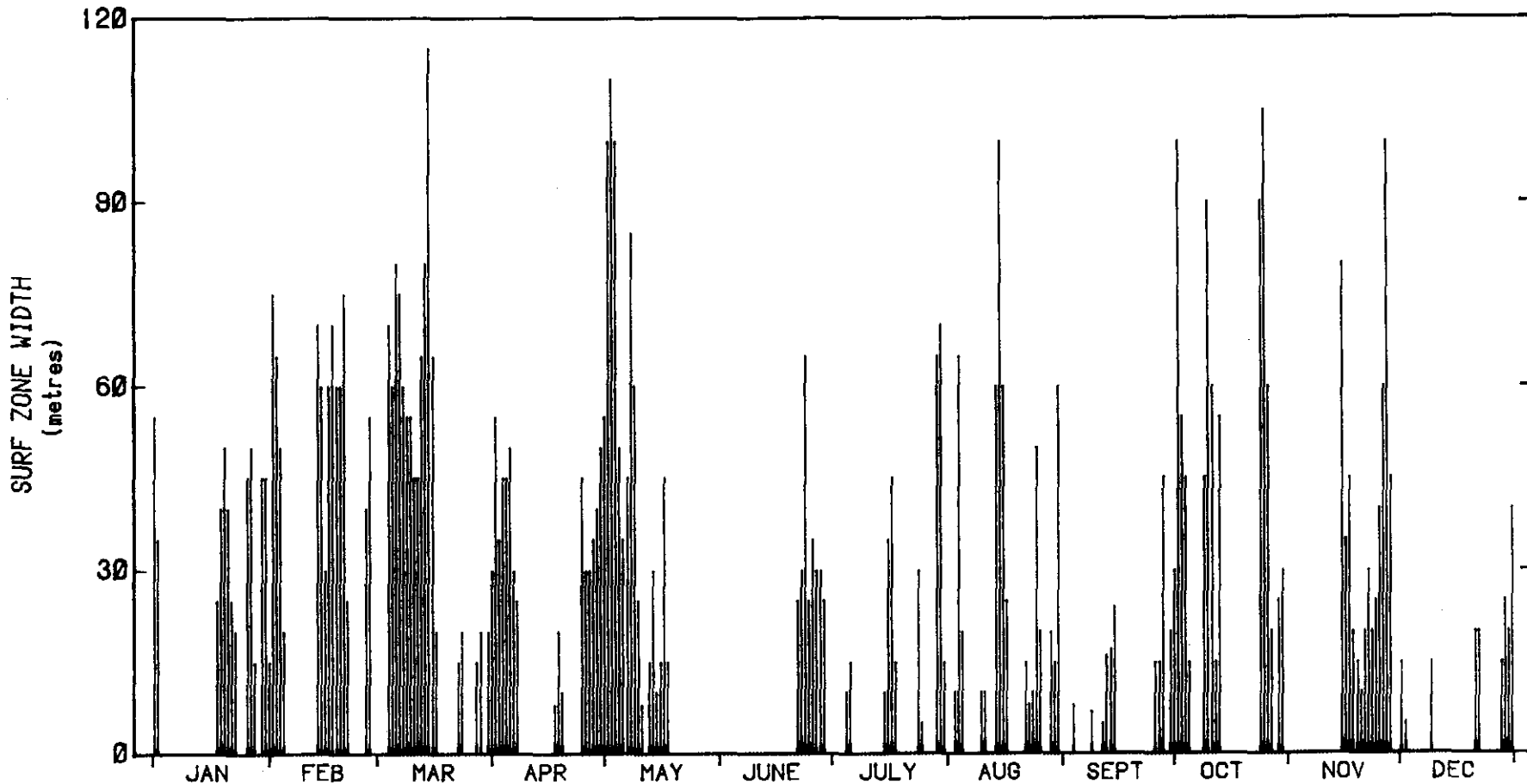
SURF ZONE WIDTH - MORNING 1978

COPE - Coastal Observation Programme Engineering

MISSION BEACH

JOHNSTONE SHIRE

2901



SURF ZONE WIDTH SUMMARY - 1978

No. of Observations : 365

MORNING OBSERVATIONS

Mean Surf Zone Width = 18.0 m

COPE

Mission Beach

Figure 8

C 11.1





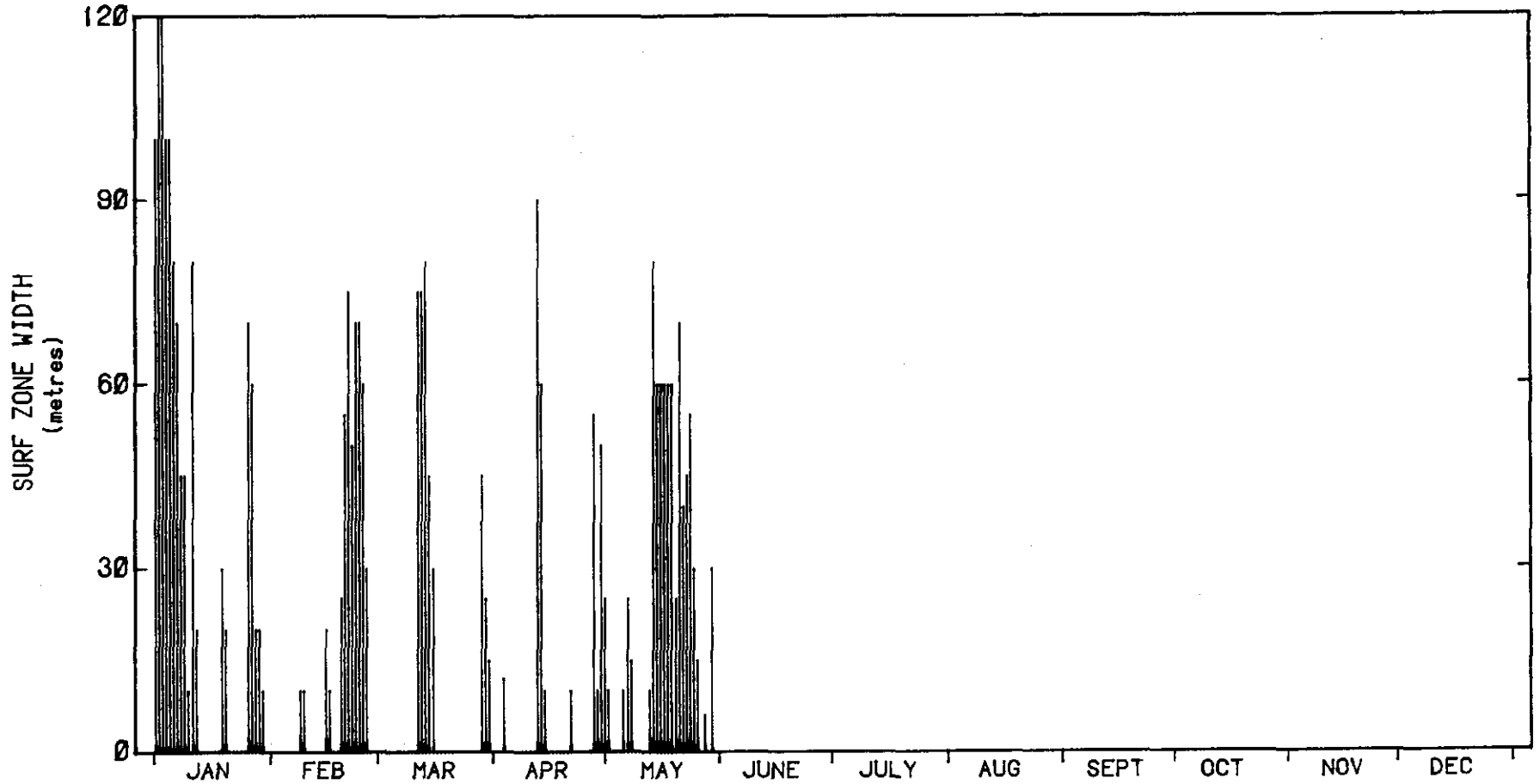
SURF ZONE WIDTH - MORNING 1979

COPE - Coastal Observation Programme Engineering

MISSION BEACH

JOHNSTONE SHIRE

2801



SURF ZONE WIDTH SUMMARY - 1979

No. of Observations : 151

MORNING OBSERVATIONS

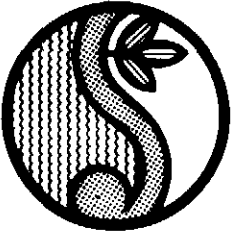
Mean Surf Zone Width = 20.4 m

COPE

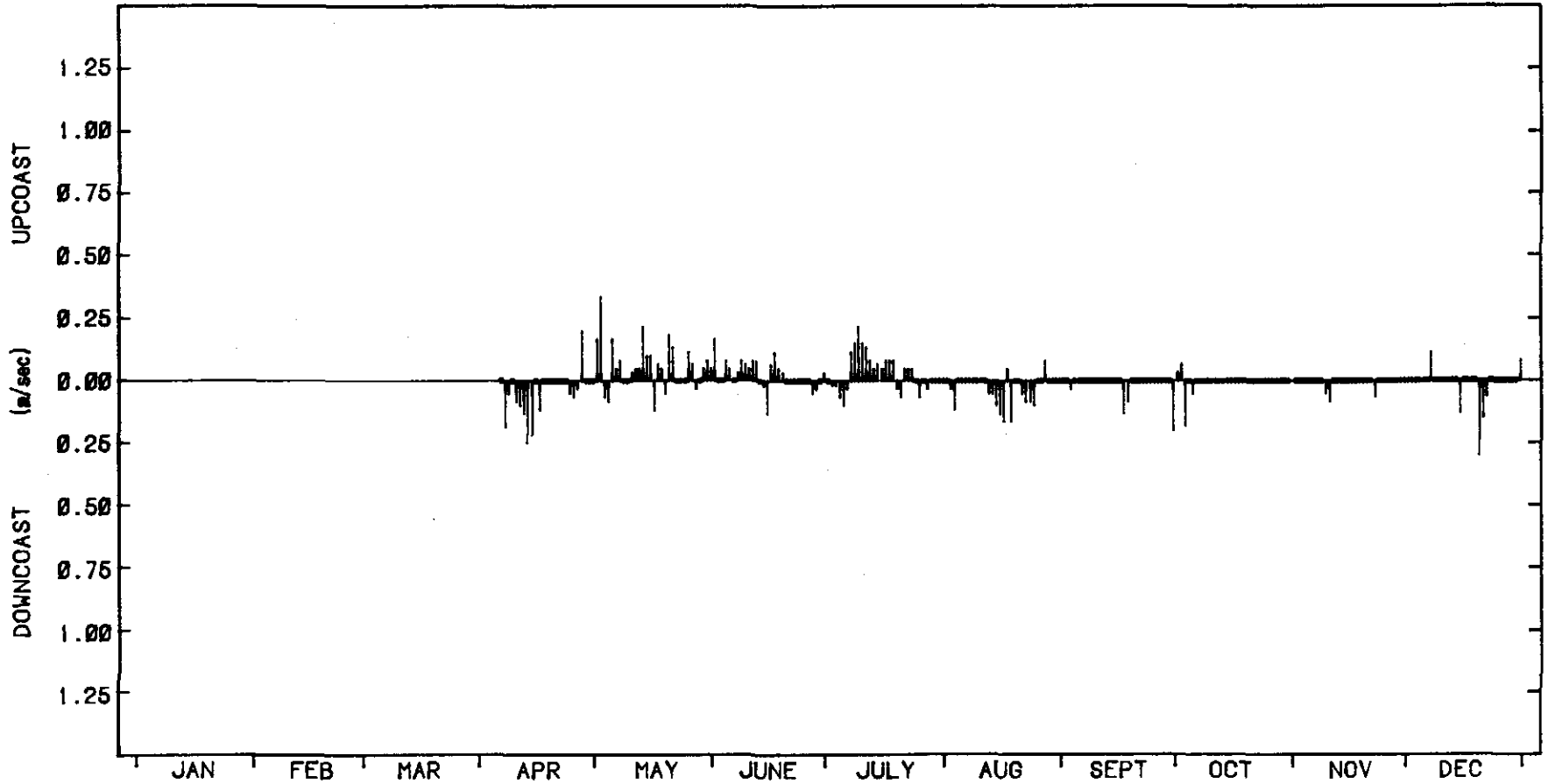
Mission Beach

Figure 9

C 11.1



LITTORAL CURRENTS - MORNING 1976



LITTORAL CURRENT SUMMARY - 1976

Mean Vel = 0.001 m/sec (up)

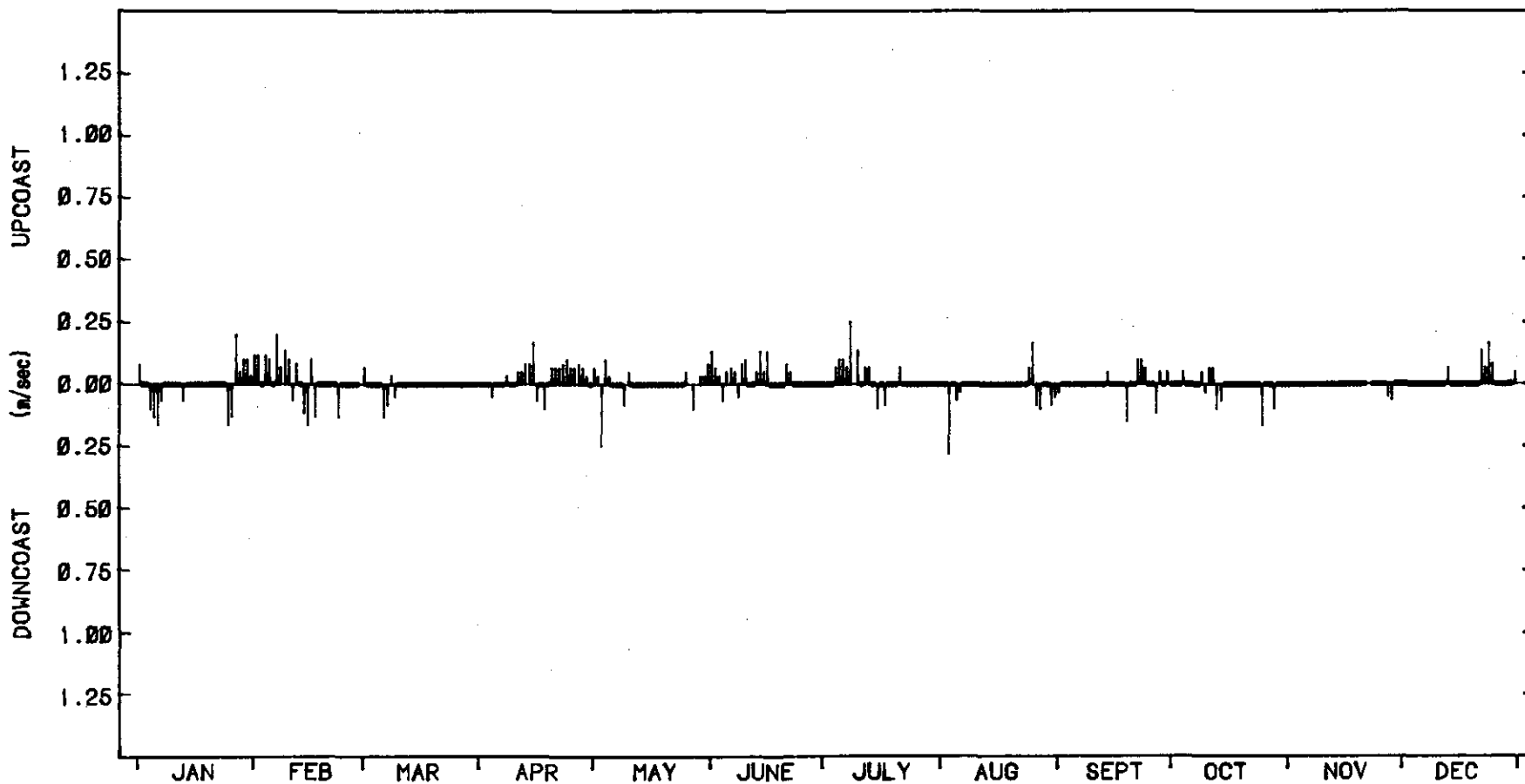
Mean Upcoast Vel = 0.093 m/sec

Mean Downcoast Vel = 0.092 m/sec

MORNING OBSERVATIONS - (269 recordings)

COPE  
Mission Beach

Figure 10  
C 11.1



### LITTORAL CURRENT SUMMARY - 1977

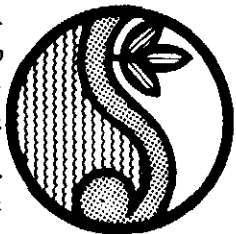
Mean Vel = 0.007 m/sec (up)

Mean Upcoast Vel = 0.082 m/sec

Mean Downcoast Vel = 0.101 m/sec

MORNING OBSERVATIONS - (361 recordings)





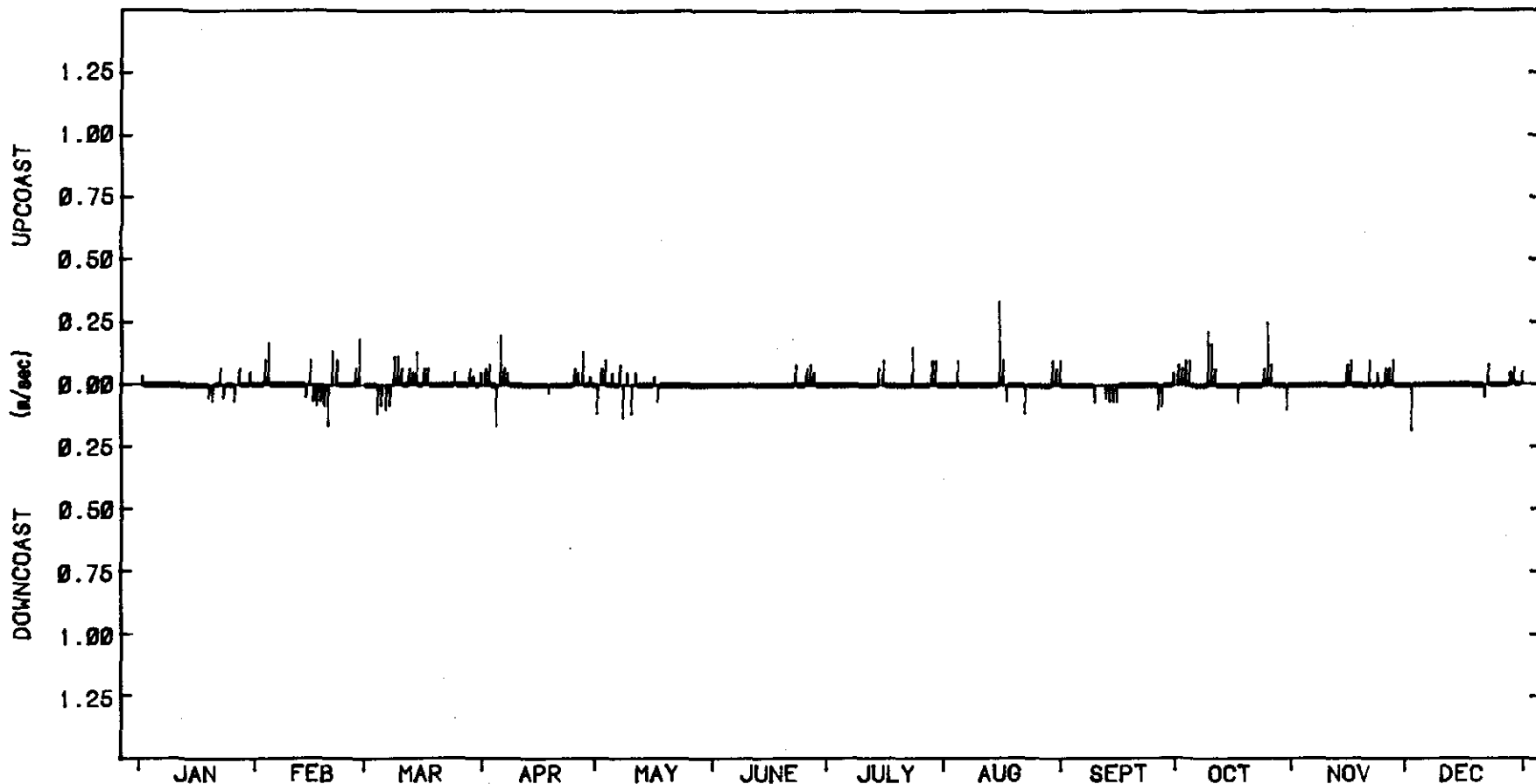
LITTORAL CURRENTS - MORNING 1978

COPE - Coastal Observation Programme Engineering

JOHNSTONE SHIRE

MISSION BEACH

2801



LITTORAL CURRENT SUMMARY - 1978

Mean Vel = 0.011 m/sec (up)

Mean Upcoast Vel = 0.089 m/sec

Mean Downcoast Vel = 0.081 m/sec

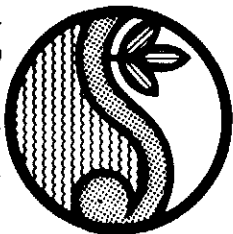
MORNING OBSERVATIONS - (365 recordings)

COPE

Mission Beach

Figure 12

C 11.1



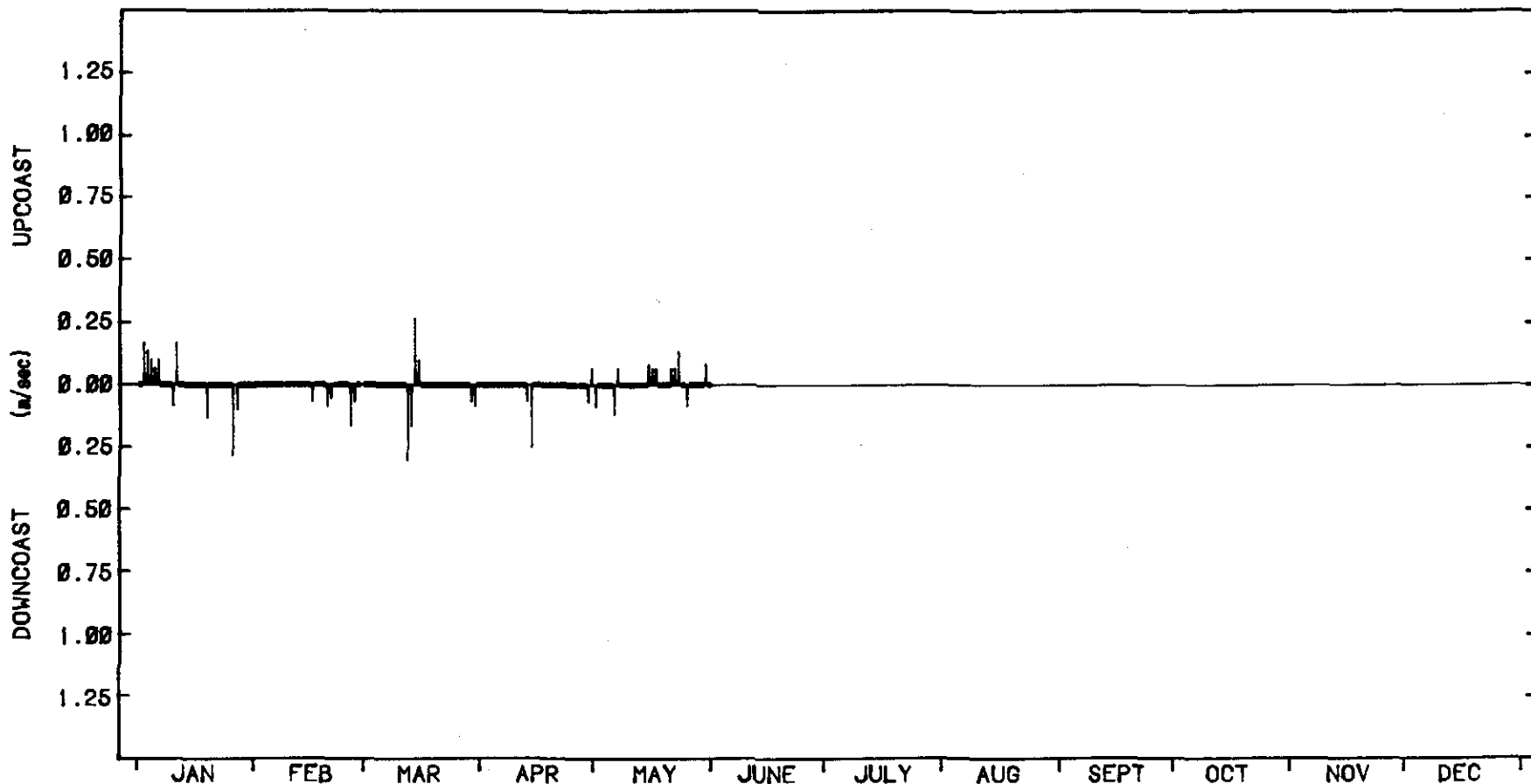
LITTORAL CURRENTS - MORNING 1979

COPE - Coastal Observation Programme Engineering

JOHNSTONE SHIRE

MISSION BEACH

2801



LITTORAL CURRENT SUMMARY - 1979

Mean Vel = -.003 m/sec (down)

Mean Upcoast Vel = 0.106 m/sec

Mean Downcoast Vel = 0.122 m/sec

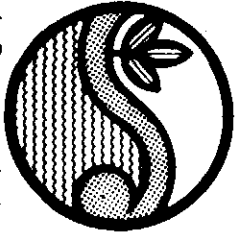
MORNING OBSERVATIONS - (151 recordings)

COPE

Mission Beach

Figure 13

C 11.1



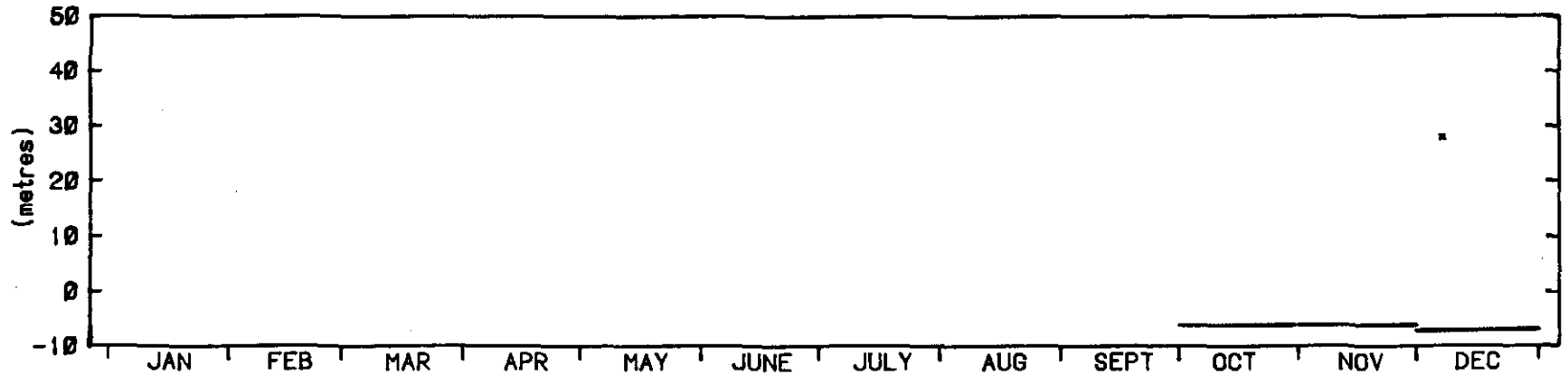
BEACH PROFILE PARAMETERS - 1976

COPE - Coastal Observation Programme Engineering

JOHNSTONE SHIRE

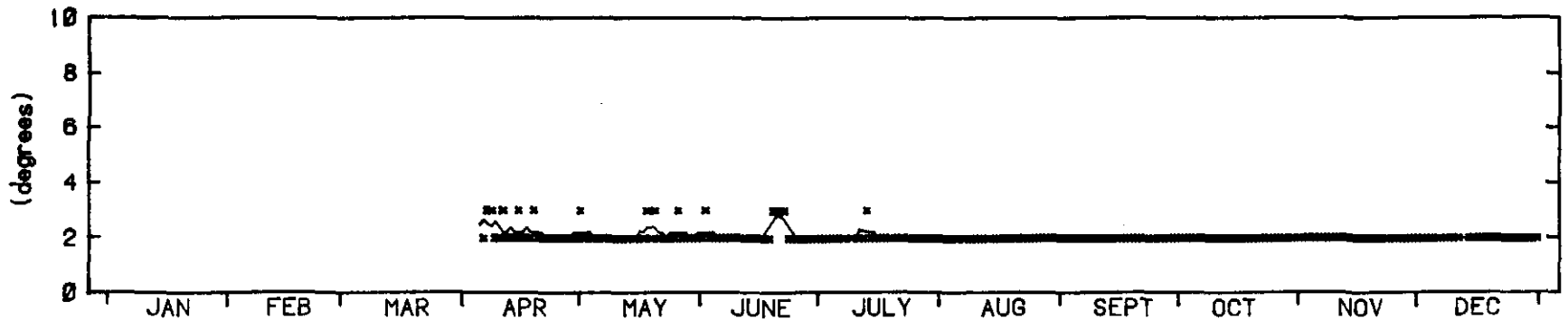
MISSION BEACH

2801




DISTANCE TO FIXED CONTOUR AND VEGETATION LINE - 1976

 Indicates Distance to Fixed Contour : 1 Observations Fixed Contour Level is approx 1.5 m above A.H.D.  
 Indicates Distance to Vegetation Line : 91 Observations



FORESHORE SLOPE - 1976

 Five Day Moving Average

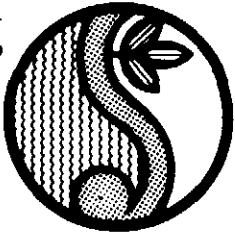
No. of Observations : 258

COPE

Mission Beach

Figure 14

C 11.1



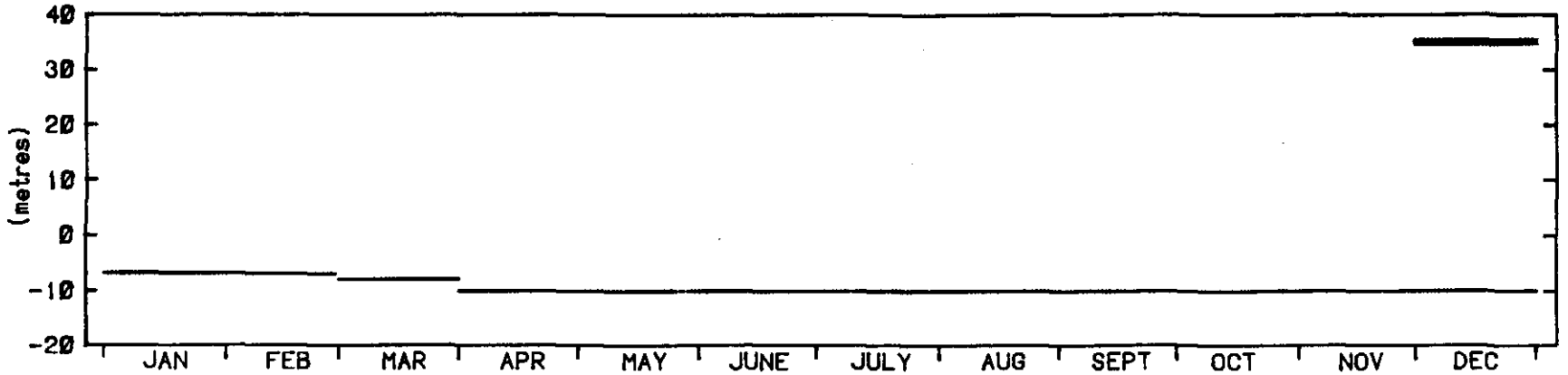
BEACH PROFILE PARAMETERS - 1977

COPE - Coastal Observation Programme Engineering



JOHNSTONE SHIRE

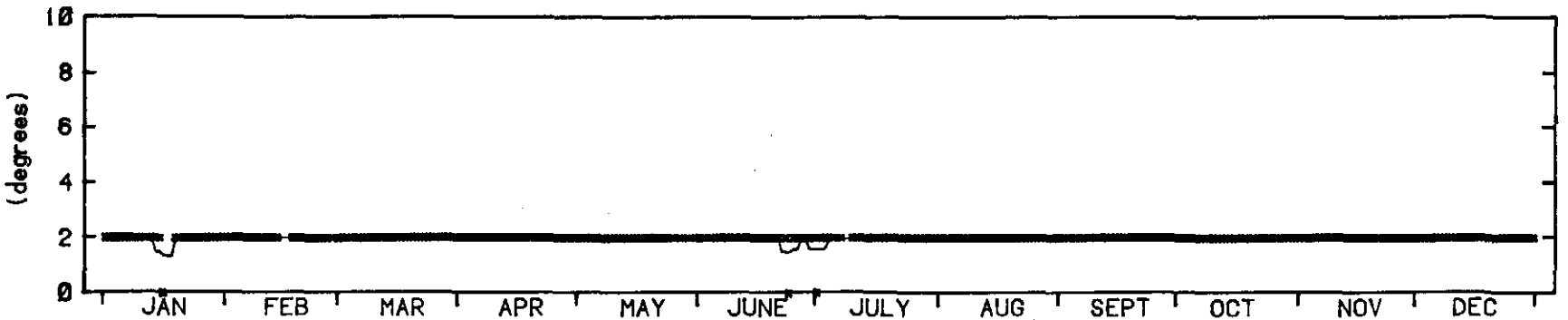
MISSION BEACH

2801



DISTANCE TO FIXED CONTOUR AND VEGETATION LINE - 1977

 Indicates Distance to Fixed Contour : 31 Observations Fixed Contour Level is approx 1.5 m above A.H.D.  
 Indicates Distance to Vegetation Line : 351 Observations



FORESHORE SLOPE - 1977

 Five Day Moving Average

No. of Observations : 349

COPE

Mission Beach

Figure 15

C 11.1



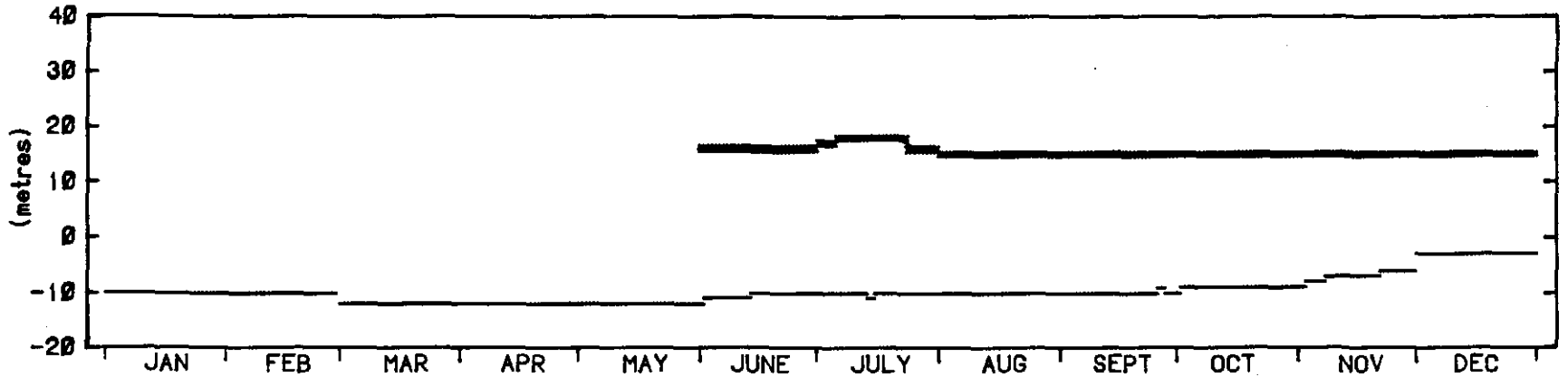
BEACH PROFILE PARAMETERS - 1978

COPE - Coastal Observation Programme Engineering



JOHNSTONE SHIRE

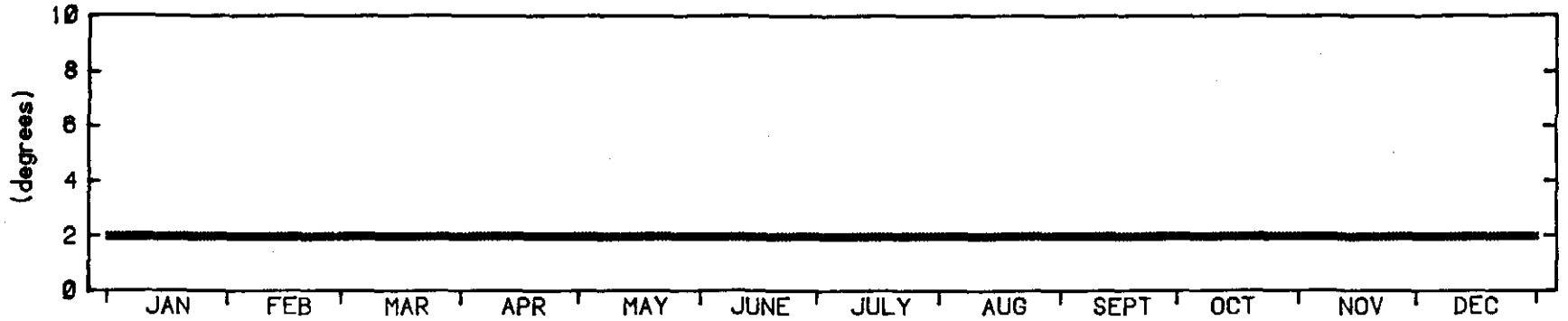
MISSION BEACH

2801



DISTANCE TO FIXED CONTOUR AND VEGETATION LINE - 1978

 Indicates Distance to Fixed Contour : 202 Observations Fixed Contour Level is approx 1.5 m above A.H.D.  
 Indicates Distance to Vegetation Line : 365 Observations



FORESHORE SLOPE - 1978

 Five Day Moving Average

No. of Observations : 365

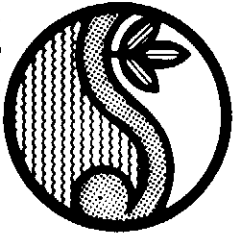
COPE

Mission Beach

Figure 16

C 11.1





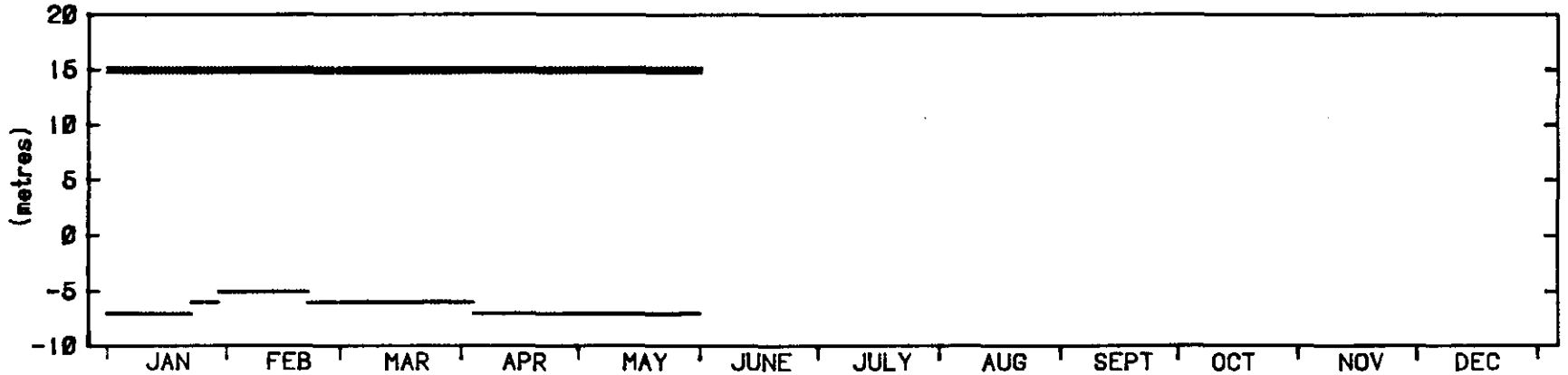
BEACH PROFILE PARAMETERS - 1979

COPE - Coastal Observation Programme Engineering



JOHNSTONE SHIRE

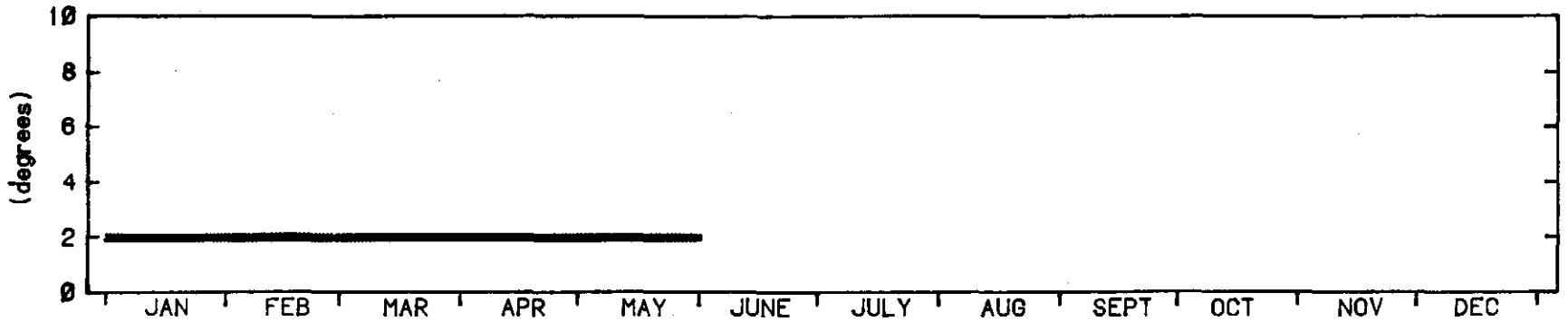
MISSION BEACH

2881



DISTANCE TO FIXED CONTOUR AND VEGETATION LINE - 1979

 Indicates Distance to Fixed Contour : 150 Observations Fixed Contour Level is approx 1.5 m above A.H.D.  
 Indicates Distance to Vegetation Line : 150 Observations



FORESHORE SLOPE - 1979

 Five Day Moving Average

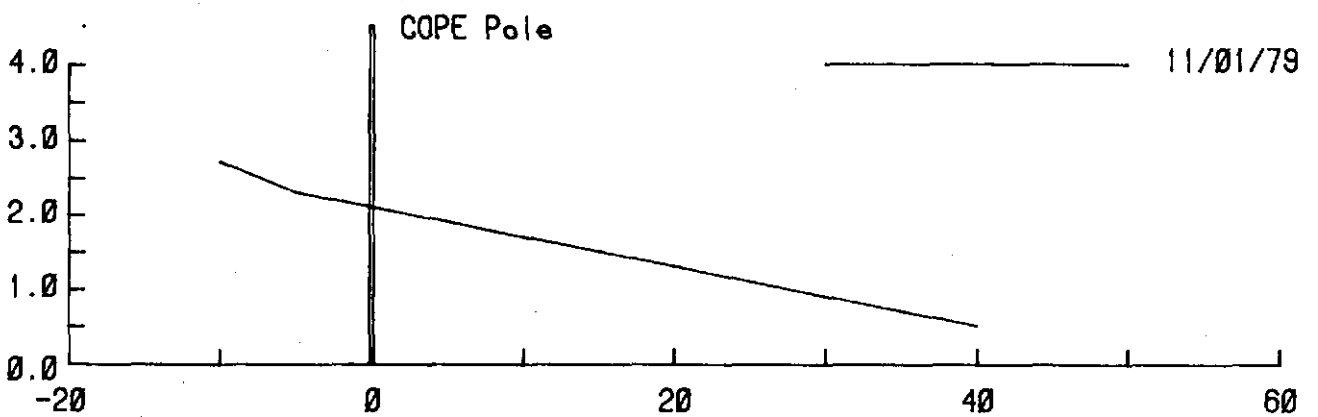
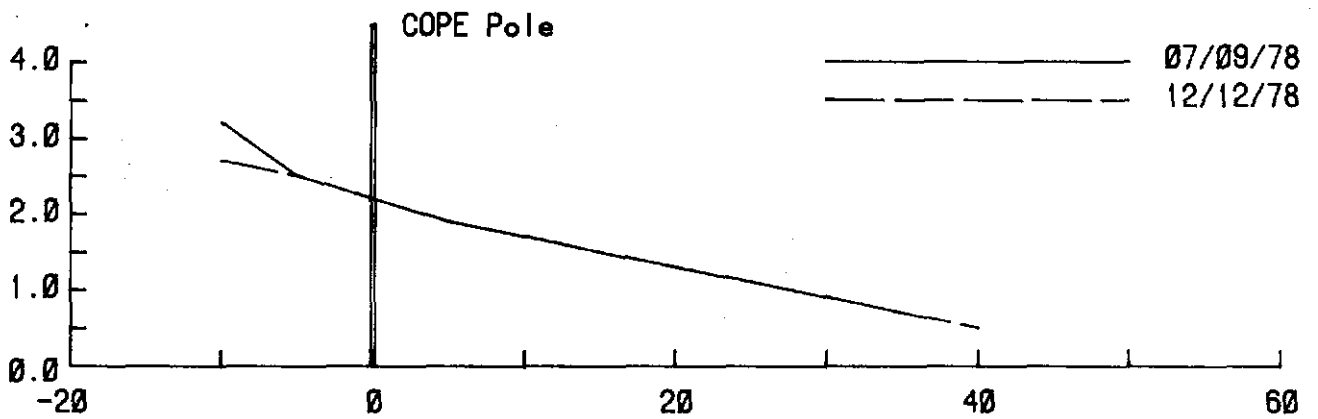
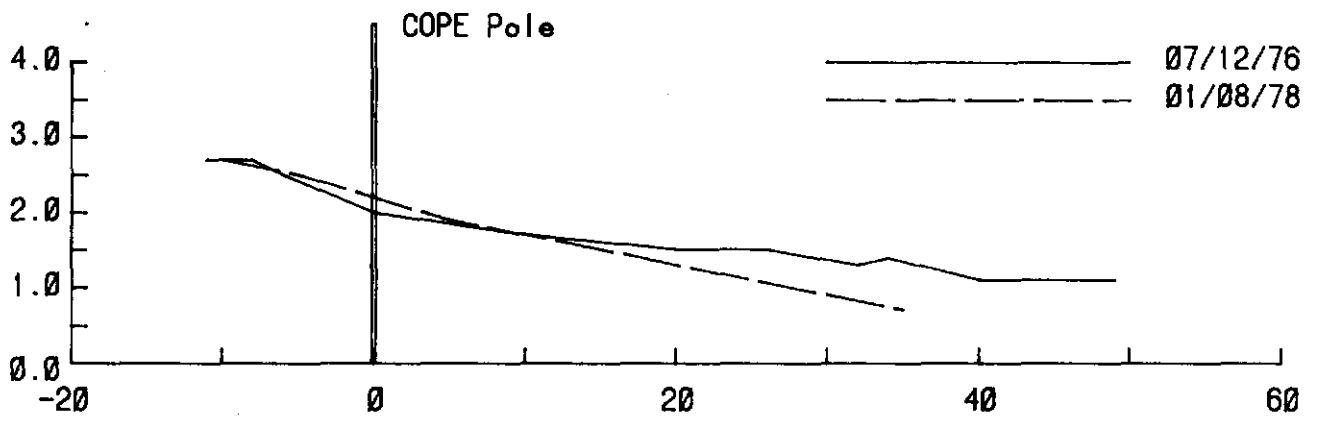
No. of Observations : 150

COPE

Mission Beach

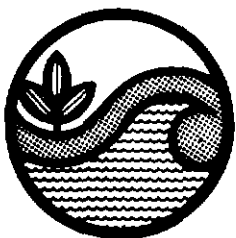
Figure 17

C 11.1



Level Datum is A.H.D.

Distances and Levels are measured in Metres



Beach Protection Authority

MONTHLY BEACH PROFILES

1976-1979

COPE  
Mission Beach

Figure 18  
C 11.1