

MALAYSIA

AIR QUALITY MANAGEMENT STUDY
FOR KUALA LUMPUR REGION

ENVIRONMENTAL
RESEARCH
AND
MONITORING
CORPORATION

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MALAYSIA

**AIR QUALITY MANAGEMENT STUDY
FOR KELANG VALLEY REGION**

**FINAL REPORT
VOL.3
SUPPORTING REPORT**

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AUGUST 1993

JAPAN INTERNATIONAL COOPERATION AGENCY

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CONTENTS

Volume 3 SUPPORTING REPORT

	Pages
Part 1 METEOROLOGY	
1.1 Surface Level Meteorology-----	1
1.1.1 Wind Speed Histogram-----	1
1.1.2 Stability Index Histogram-----	6
1.1.3 Wind Rose-----	11
1.1.4 Diurnal Change of Meteorological Parameters-----	16
1.2 Upper Level Meteorology-----	31
1.2.1 Wind Rose at Upper Level-----	31
1.2.2 Vertical Profile of Wind and Temperature-----	34
1.3 Analysis of Other Related Data-----	63
1.3.1 Diurnal Change of Sunshine Duration-----	63
1.3.2 Monthly Change of Sunshine Duration and Relative Humidity-----	64
1.3.3 Wind Roses in 1981 through 1990-----	66
1.3.4 F-test of Meteorological Parameters-----	86
Part 2 AMBIENT AIR QUALITY	
2.1 Monitoring of the Ambient Air Quality-----	97
2.1.1 Cumulative Distribution-----	97
2.1.2 Diurnal Change of Pollutant Concentration-----	103
2.1.3 Weekly Change of Pollutant Concentration-----	122
2.1.4 Relationship of Air Pollutant Concentration to Meteorological Parameters-----	147
2.1.5 Analysis of High SPM Concentration-----	165
2.1.6 Analysis of High O ₃ Concentration-----	186
2.2 Simplified Measurement-----	199
2.2.1 Results of Simplified Measurement in Wide Area-----	199
2.2.2 Contour Map of Simplified Measurement in Wide Area-----	203
2.3 Analysis of Other Related Data Analysis of Existing Data at UPM-----	216
2.4 Effects of Pollutants on Human Health-----	227
Part 3 AIR POLLUTION SOURCES	
3.1 Factories-----	231
3.1.1 Factory Questionnaire-----	231
3.1.2 Facility Questionnaire-----	242
3.1.3 Emission Factor-----	251

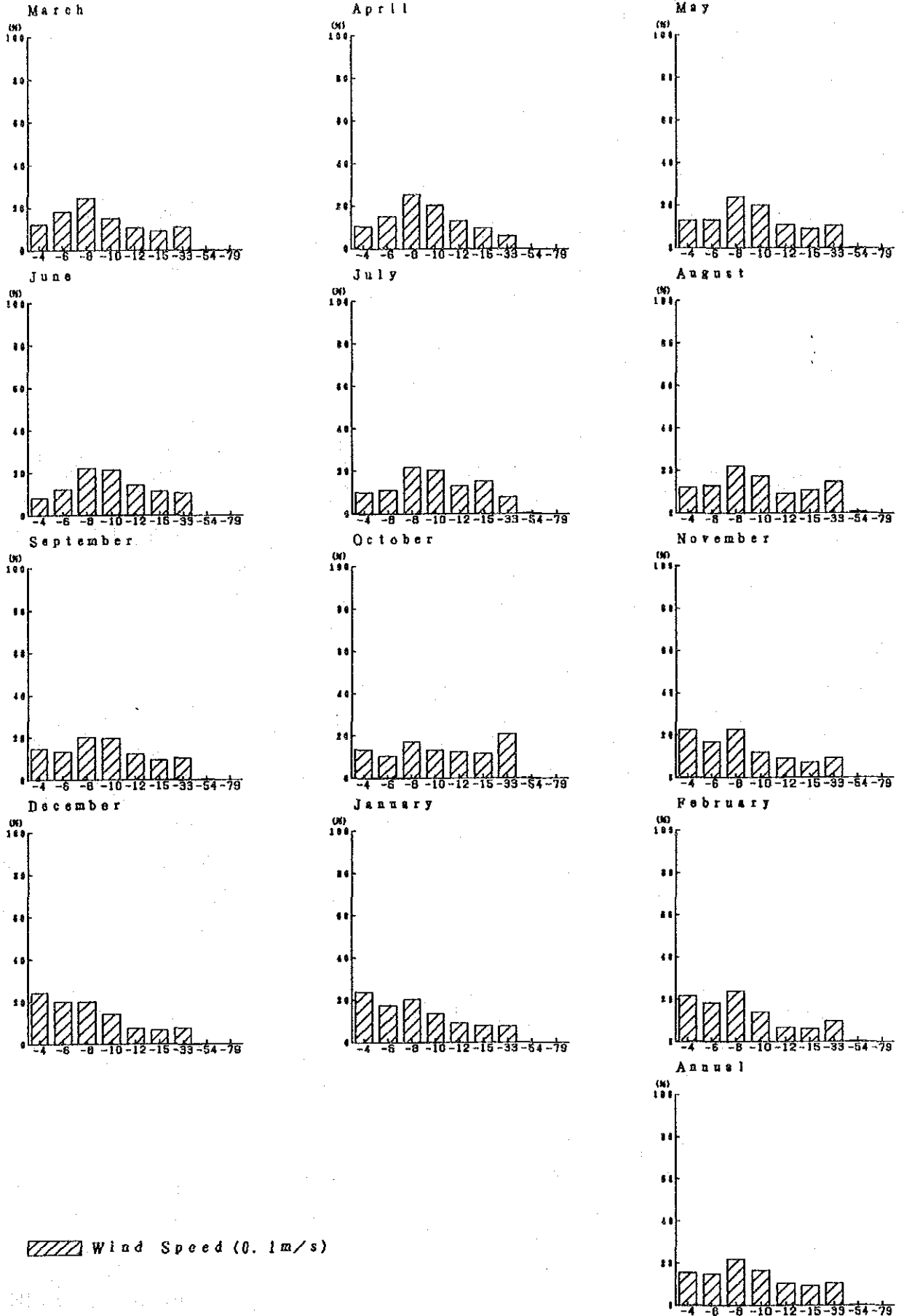
3.1.4	Prediction of Future Fuel Consumption of Liquid and Gaseous Fuels in Factories-----	254
3.2	Motor Vehicles -----	258
3.2.1	Traffic Volume Survey-----	258
3.2.2	Travel Speed Survey-----	264
3.2.3	Chassis Dynamometer Test-----	276
3.2.4	Vehicle Exhaust Gas Measurement at Idling State-----	281
3.2.5	O.D. Zone and Trip Generation in 1992-----	287
3.2.6	Existing Traffic Data-----	303
3.2.7	Emission Factors of Current Motor Vehicles-----	315
3.2.8	Emission Factors of Motor Vehicles in the Future-----	346
Part 4	AIR QUALITY SIMULATION	
4.1	Air Quality Simulation by Dispersion Model-----	381
4.1.1	Dispersion Equation-----	381
4.1.2	Calculation Method for Correlation Coefficient and Coefficient of Variation-----	398
4.1.3	Setting of Background Concentration-----	399
4.1.4	Contribution Concentration by Air Pollution Sources-----	400
Part 5	AIR QUALITY TARGET VALUE	
5.1	Estimation of Air Quality Target Value-----	405
Part 6	LIST OF EXISTING DATA COLLECTED-----	413

Part 1 METEOROLOGY

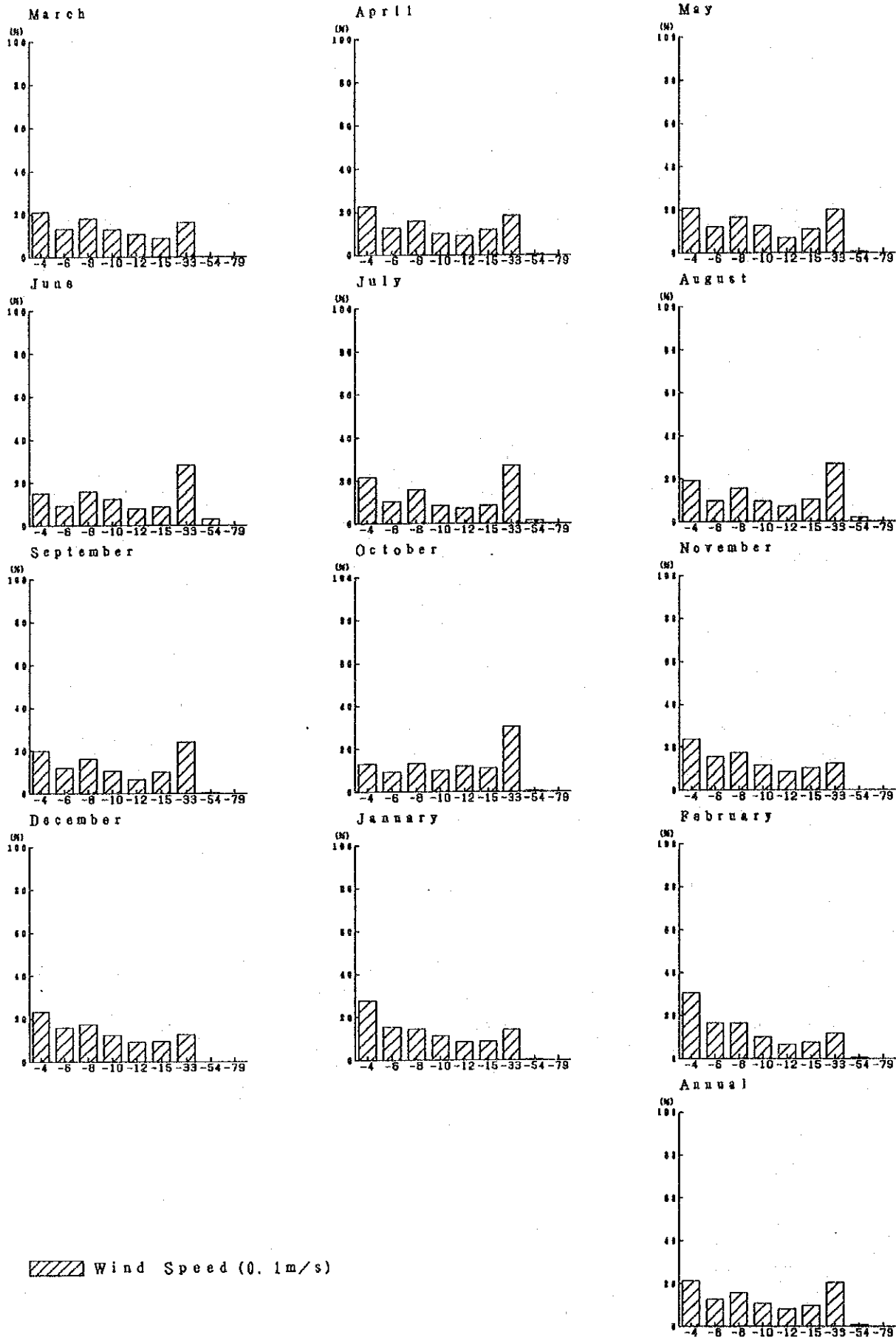
1.1 Surface Level Meteorology

1.1.1 Wind Speed Histogram

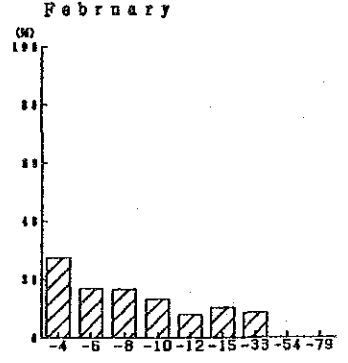
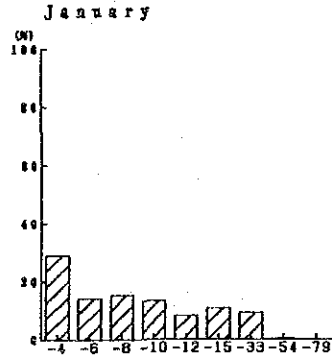
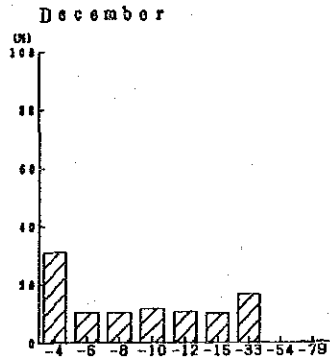
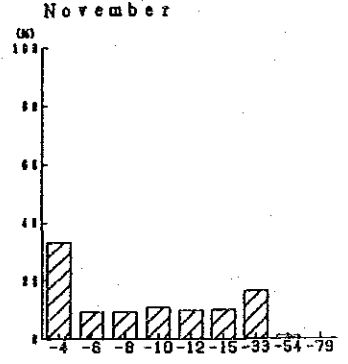
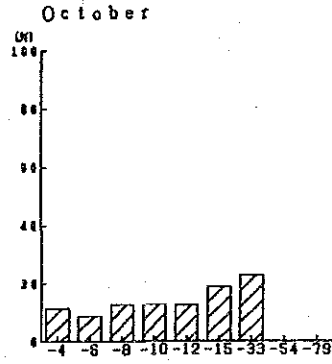
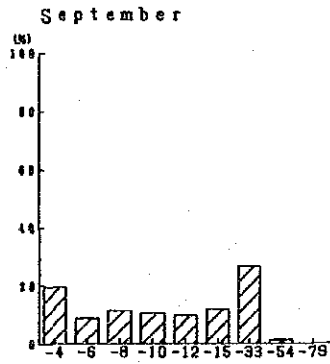
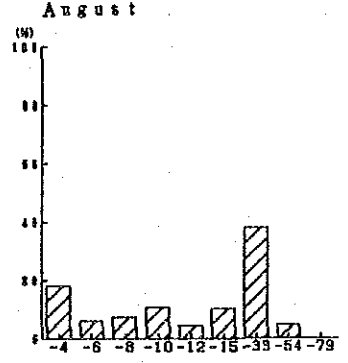
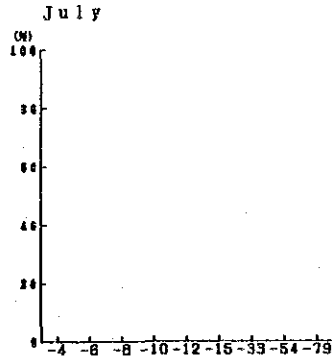
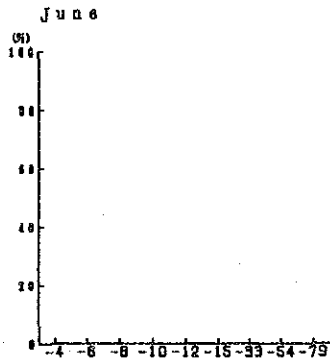
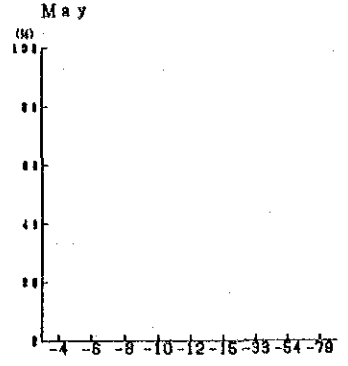
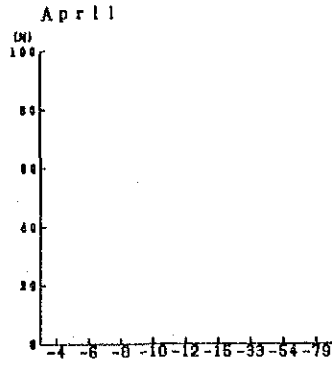
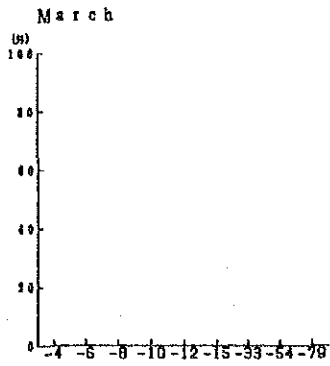
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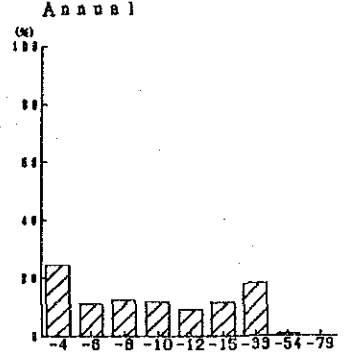
Wind Speed Histogram at Shah Alam



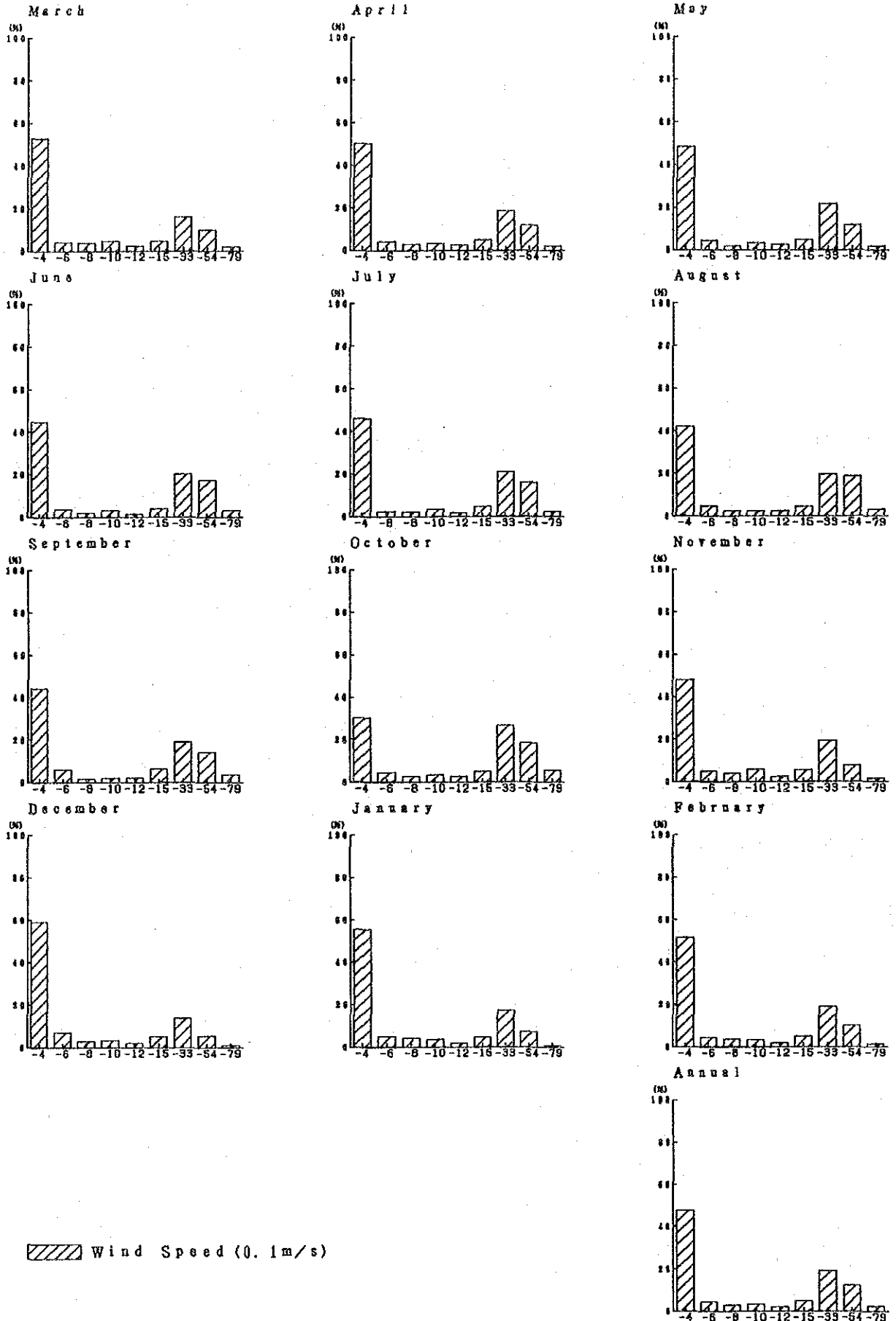
Wind Speed Histogram at Klang



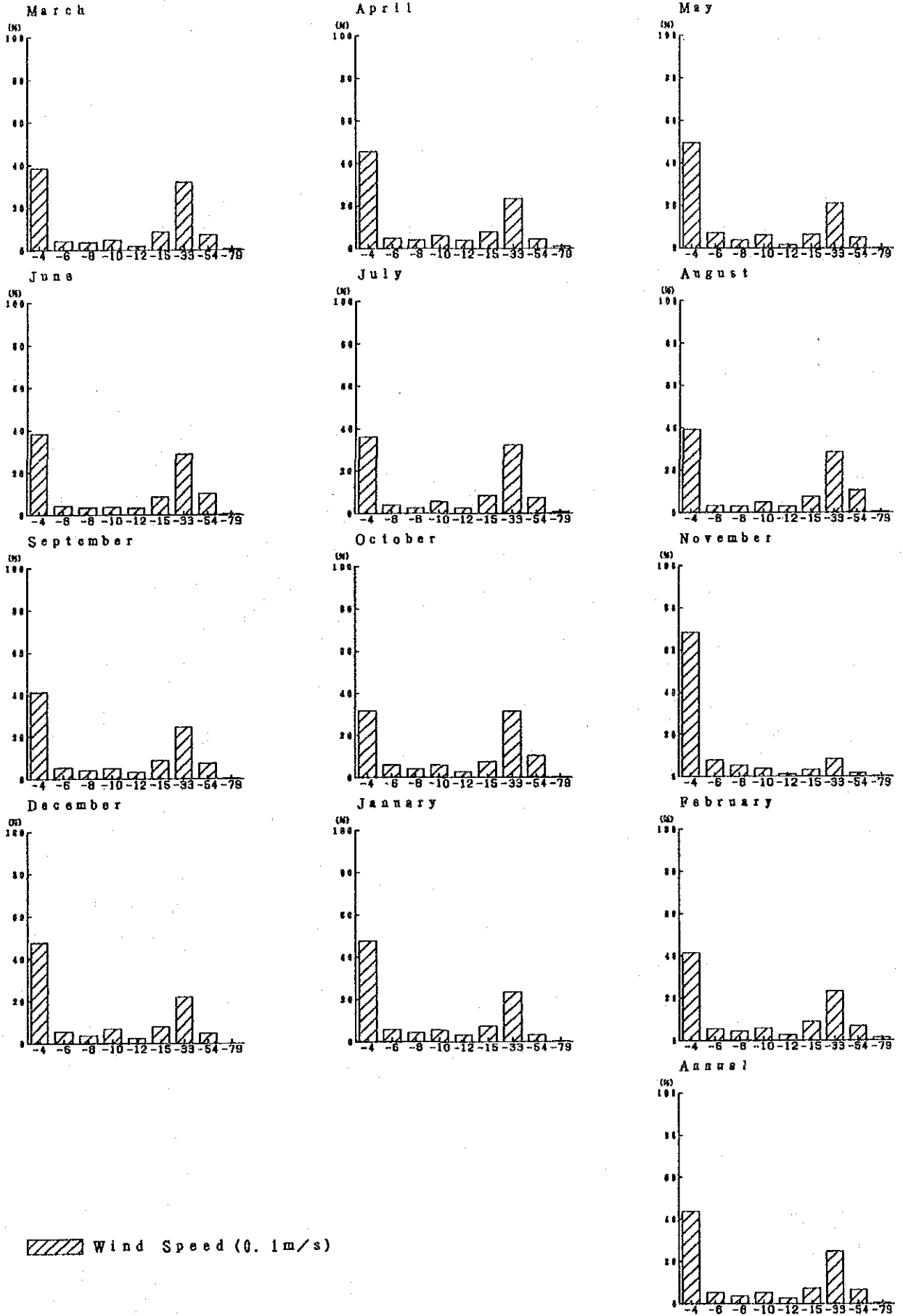
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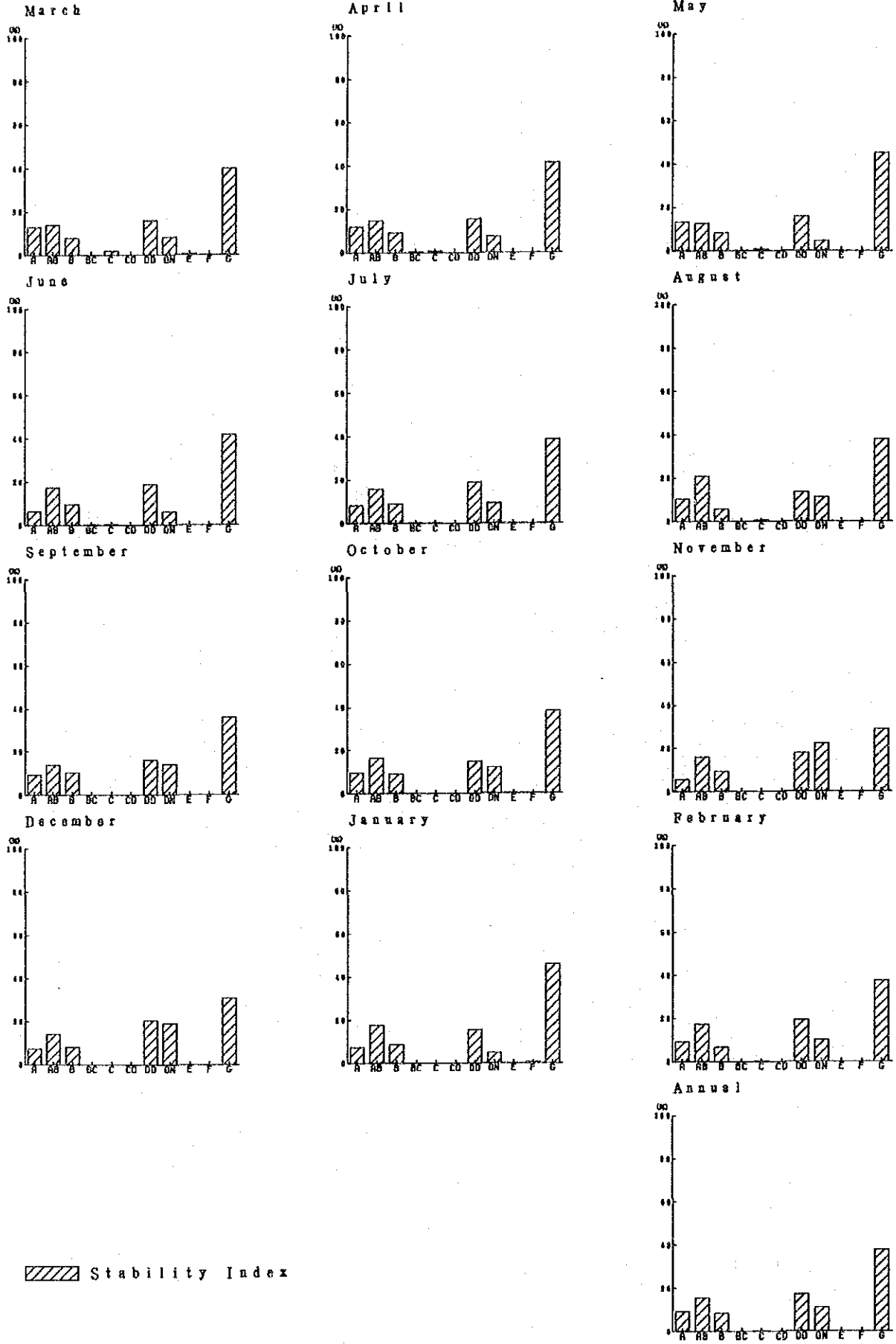
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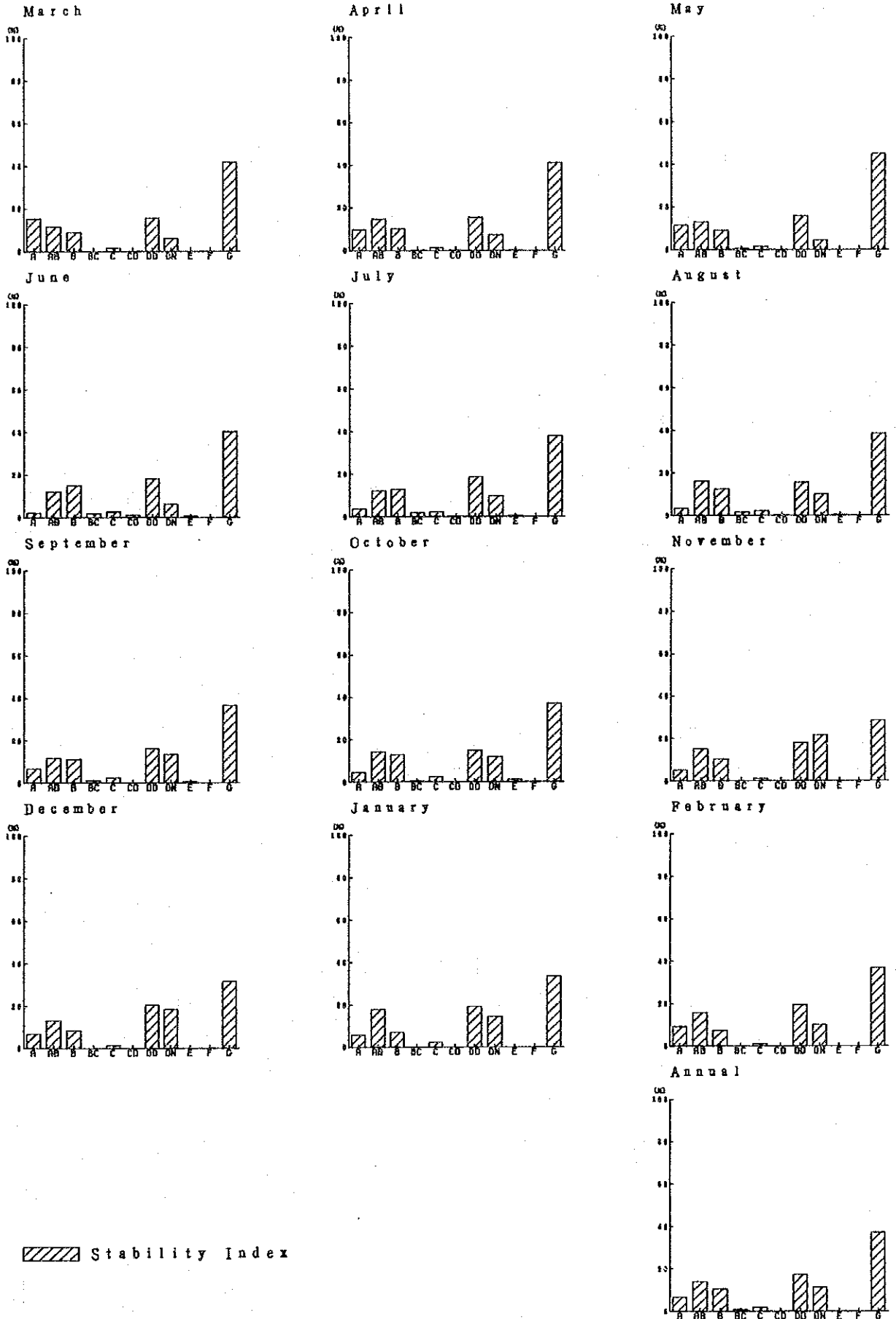
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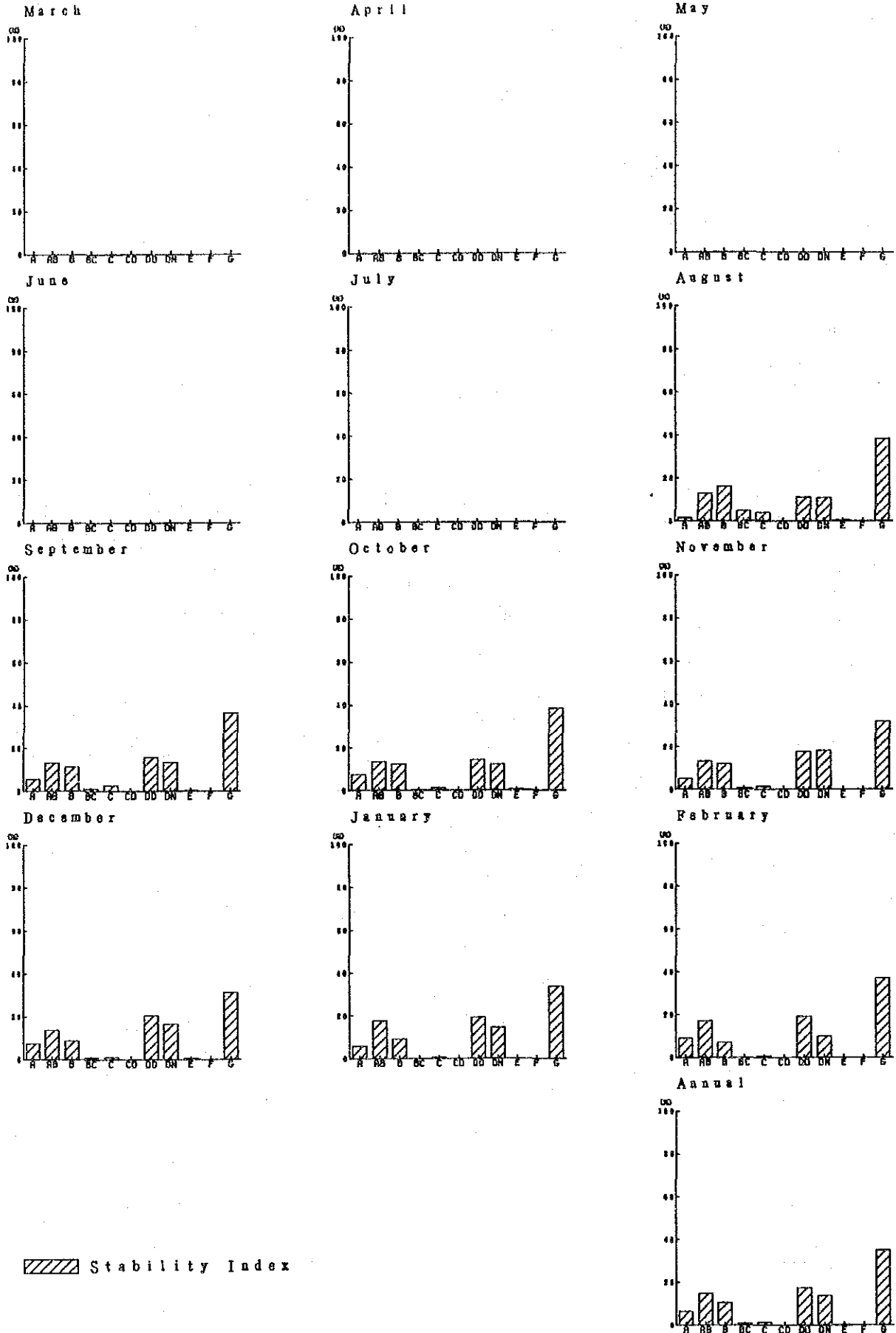


Stability Index Histogram at Shah Alam

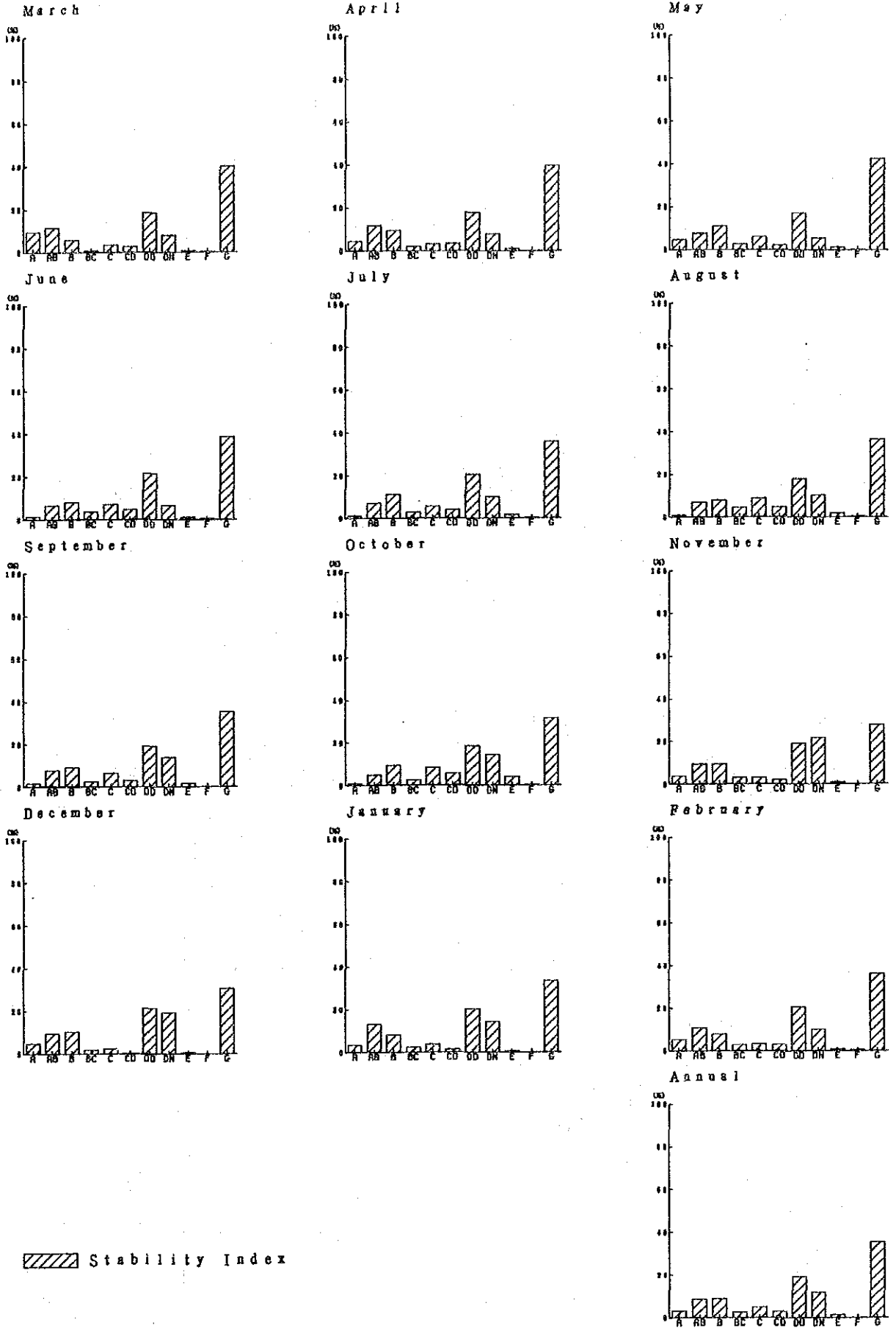


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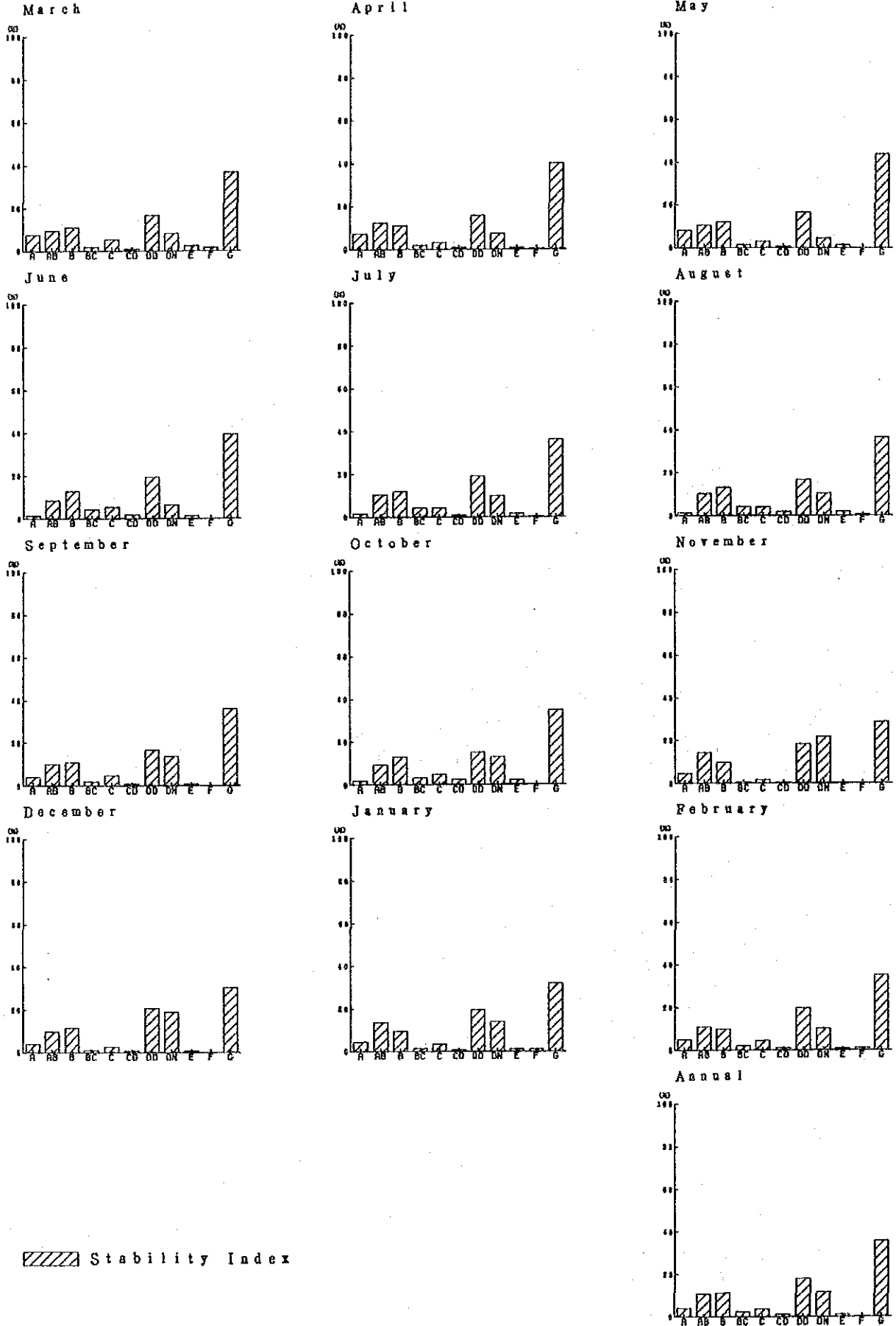
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Stability Index Histogram at Subang (MMS)

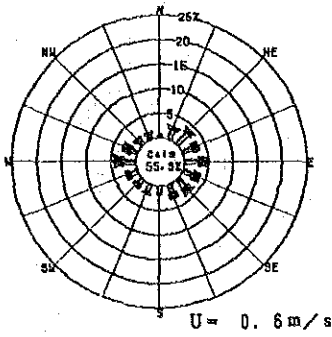


Stability Index Histogram at Petaling Jaya (MMS)

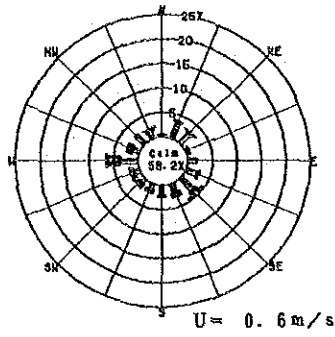


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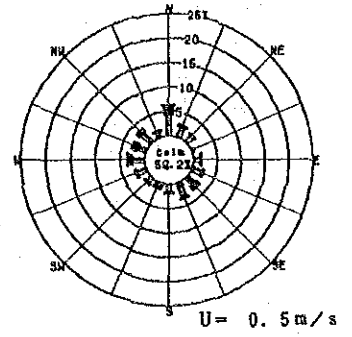
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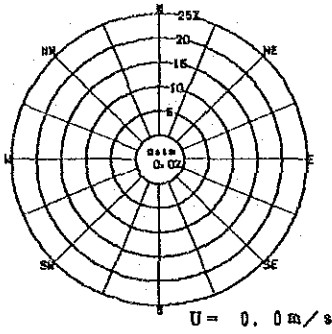
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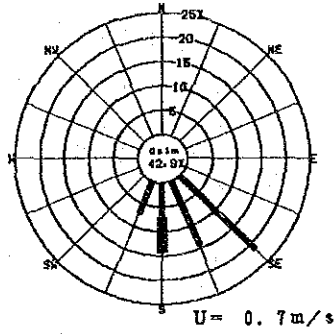
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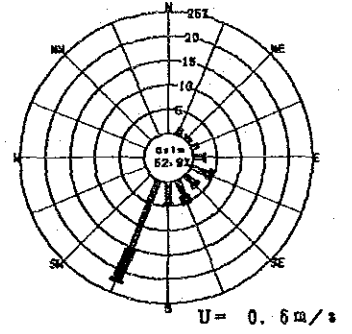
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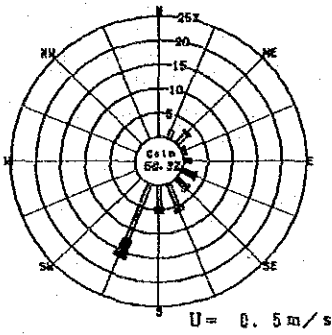
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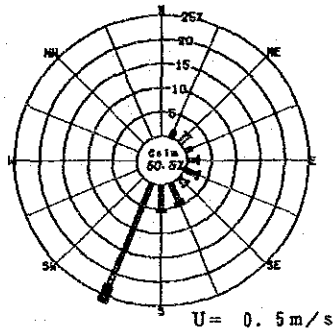
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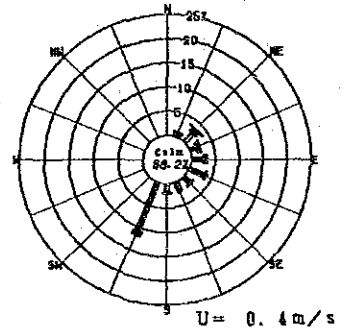
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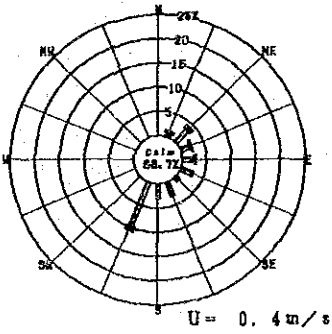
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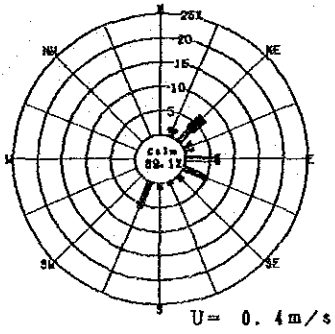
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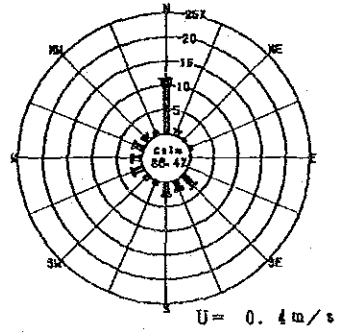
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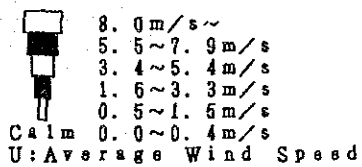
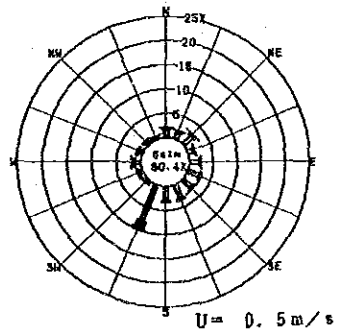
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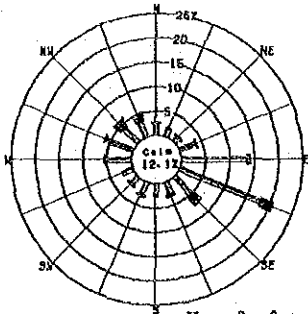


Annual



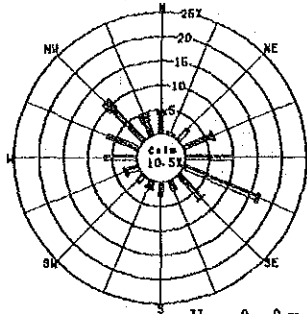
Wind Roses at Petaling Jaya

March



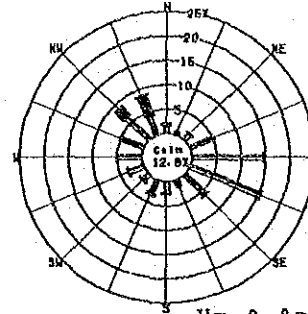
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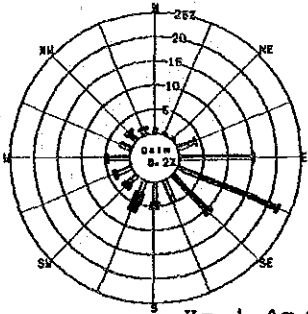
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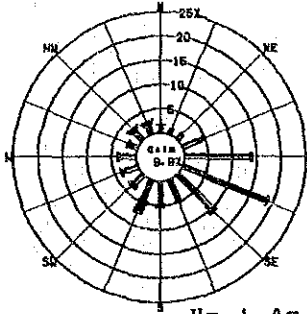
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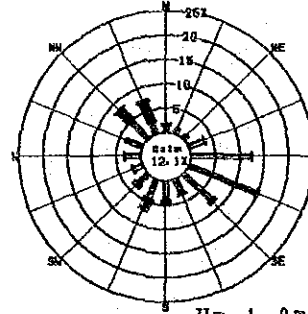
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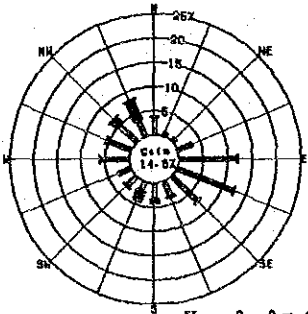
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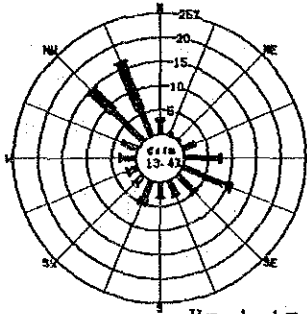
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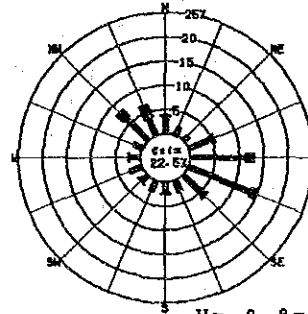
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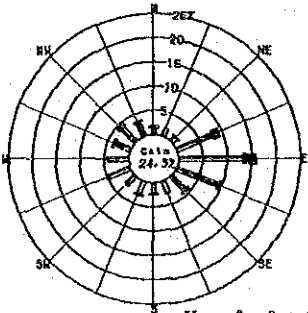
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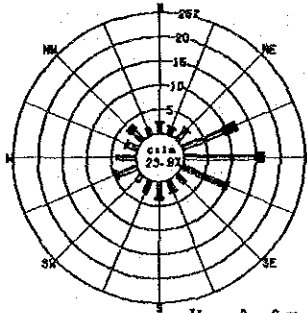
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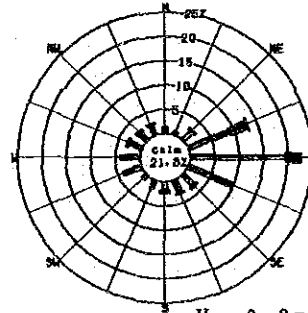
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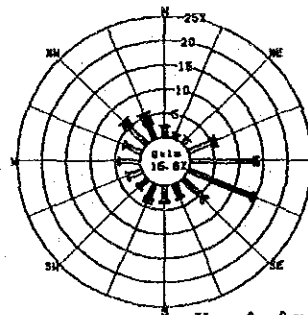
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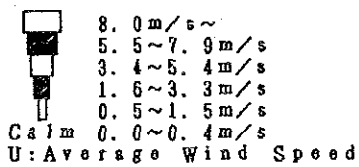


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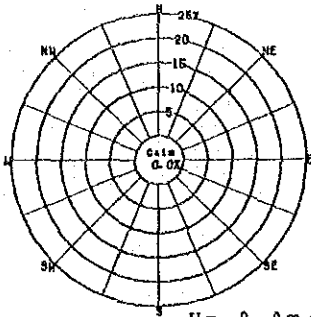


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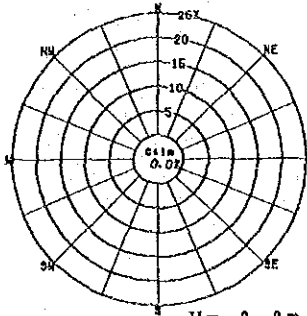
Wind Roses at Klang

March



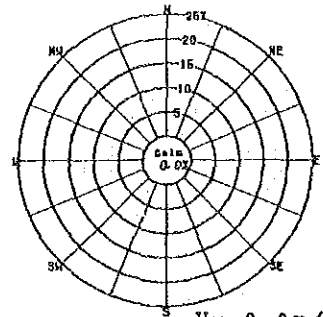
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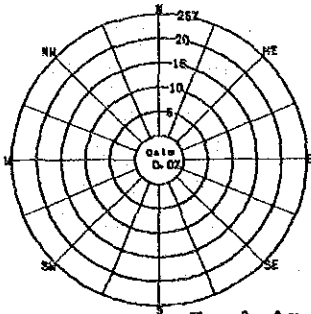
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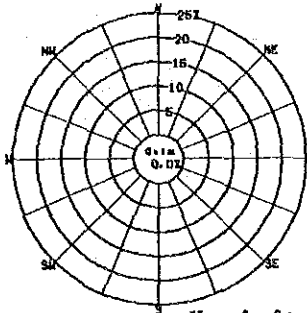
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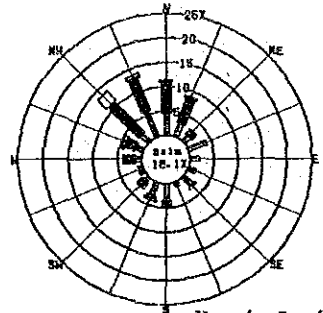
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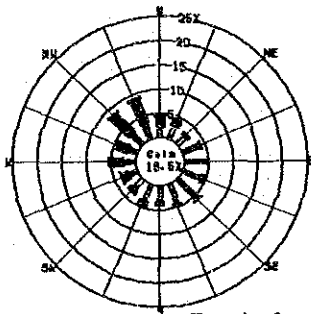
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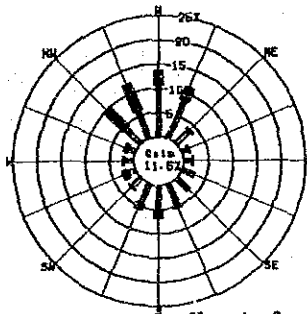
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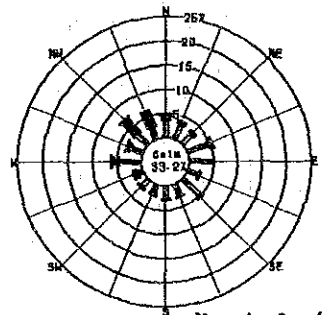
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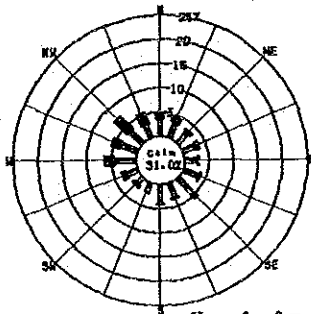
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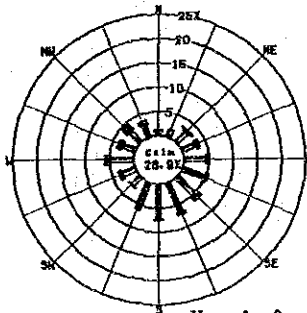
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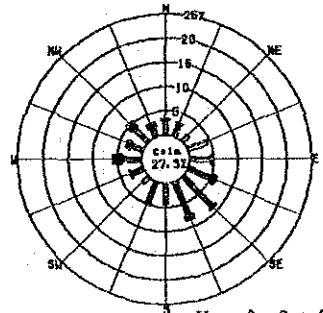
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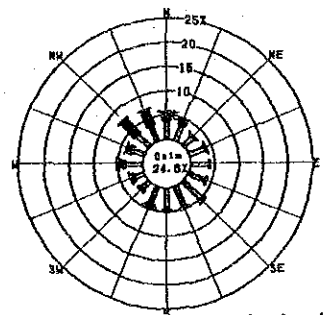
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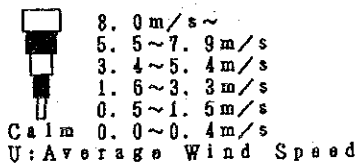


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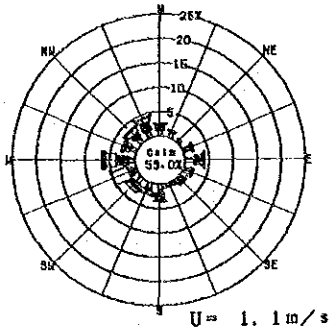


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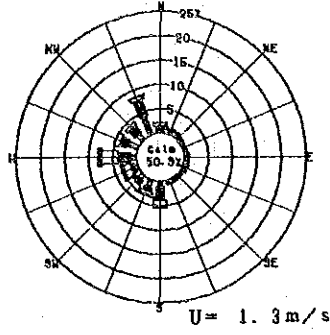


Wind Roses at Subang (MMS)

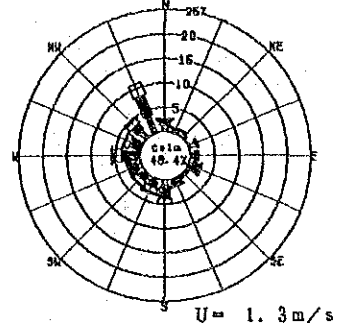
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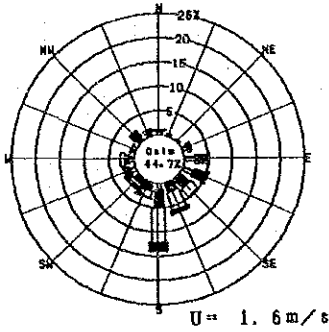
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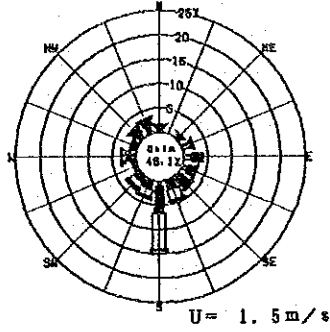
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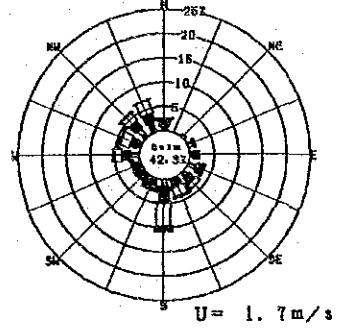
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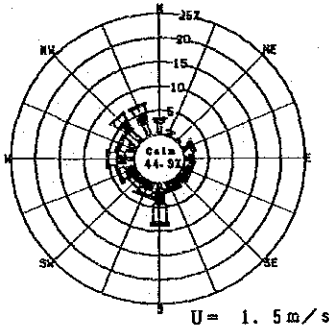
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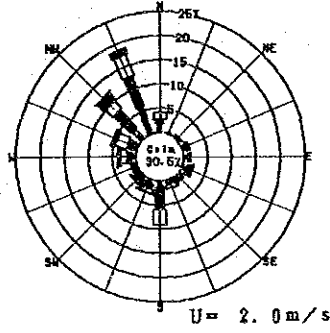
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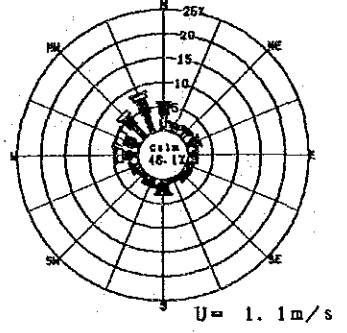
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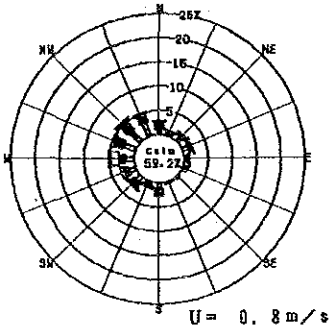
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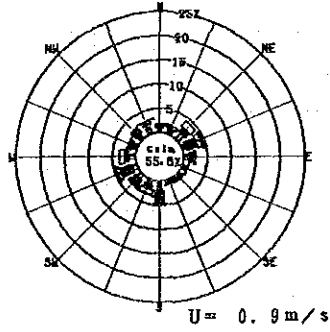
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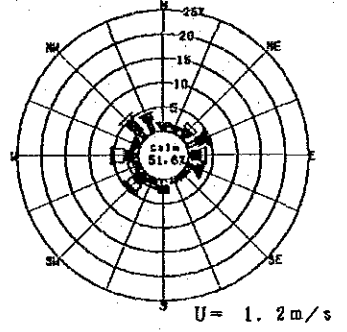
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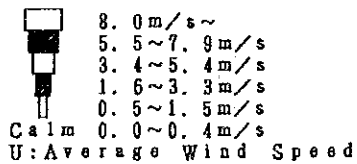
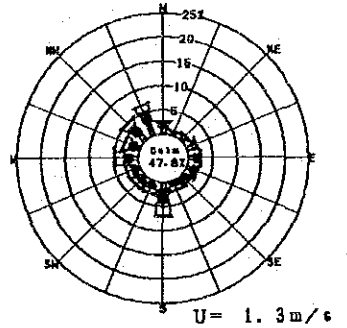
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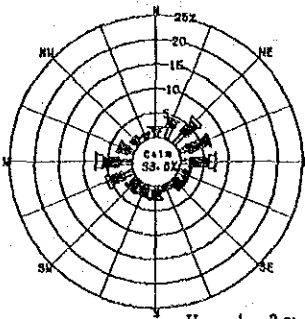


Annual



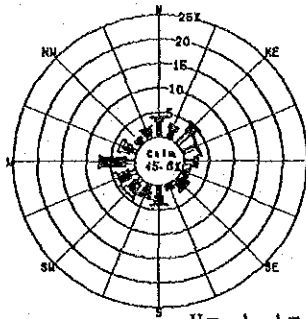
Wind Roses at Petaling Jaya (MMS)

March



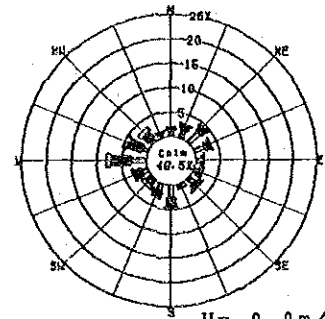
U = 1.3 m/s

April



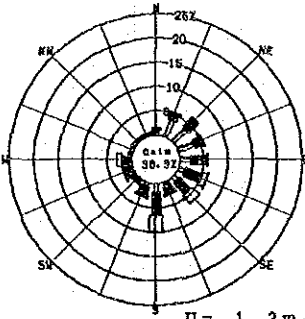
U = 1.1 m/s

May



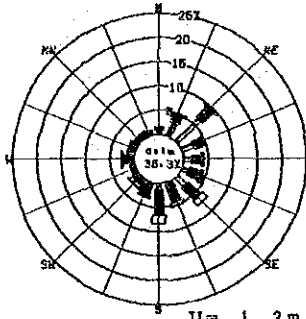
U = 0.9 m/s

June



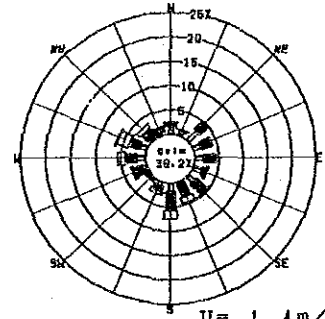
U = 1.3 m/s

July



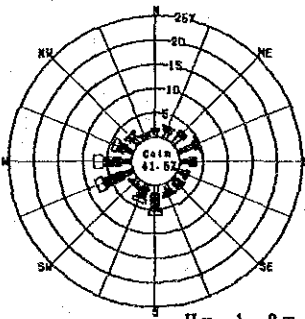
U = 1.3 m/s

August



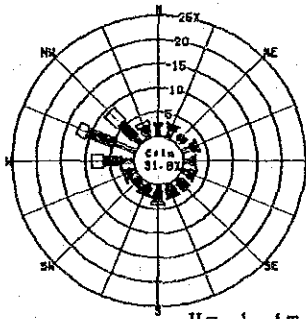
U = 1.4 m/s

September



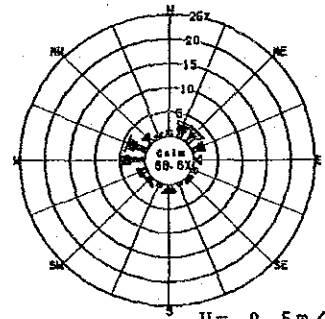
U = 1.2 m/s

October



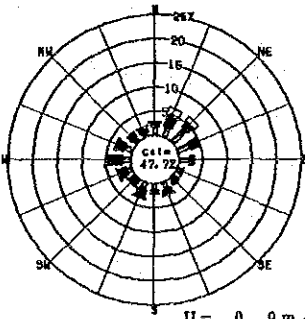
U = 1.4 m/s

November



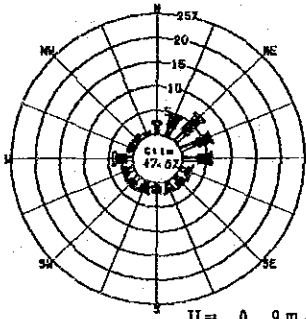
U = 0.5 m/s

December



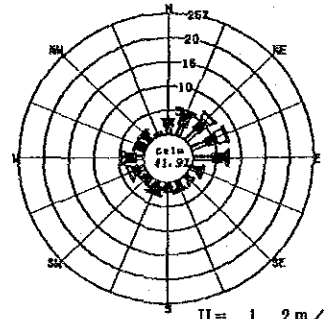
U = 0.9 m/s

January



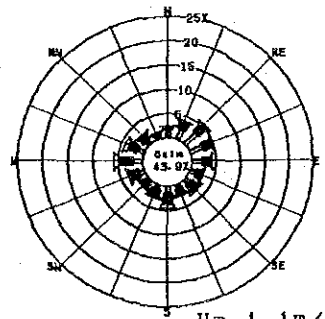
U = 0.9 m/s

February

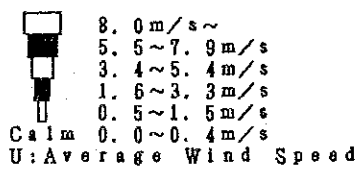


U = 1.2 m/s

Annual

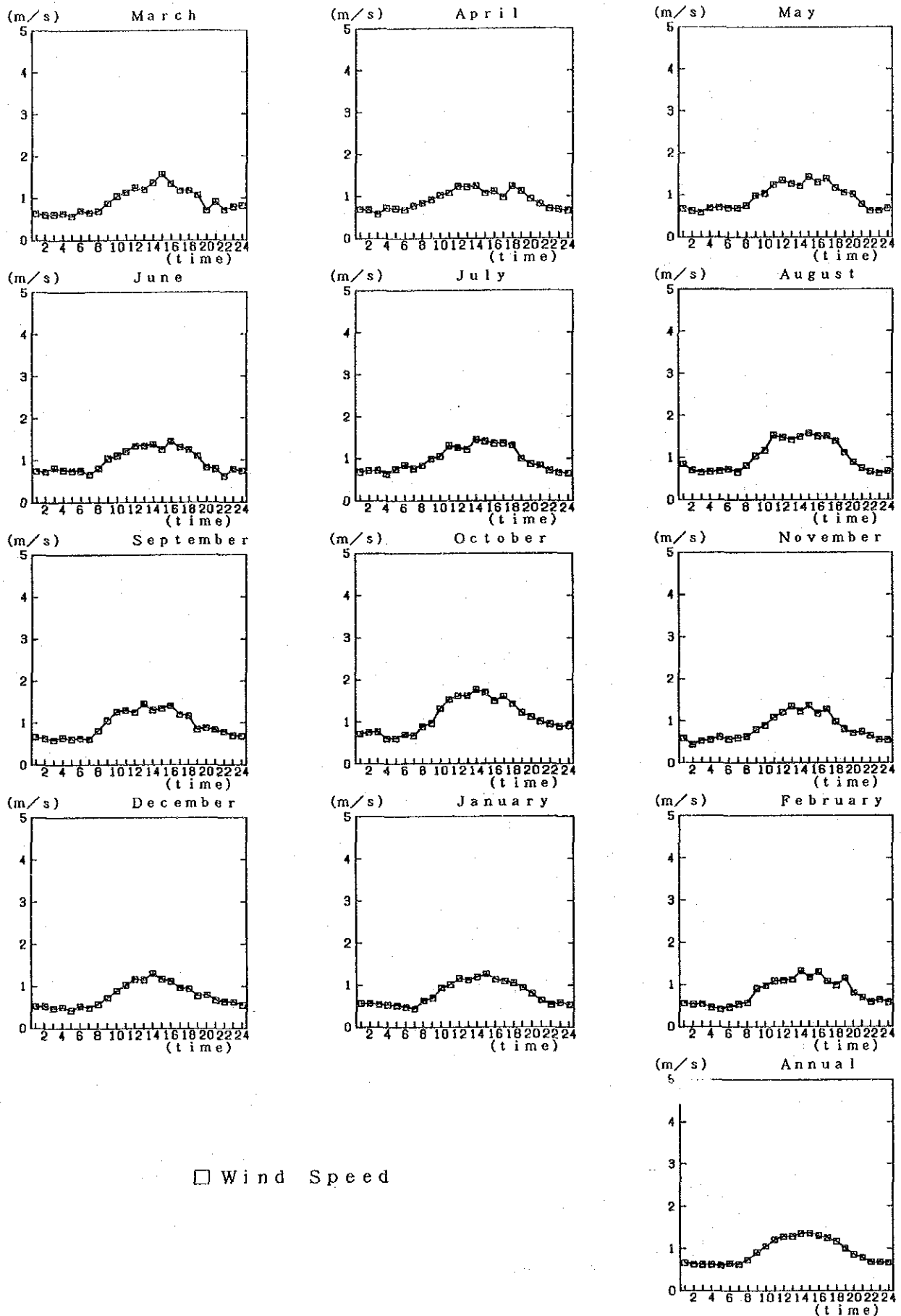


U = 1.1 m/s

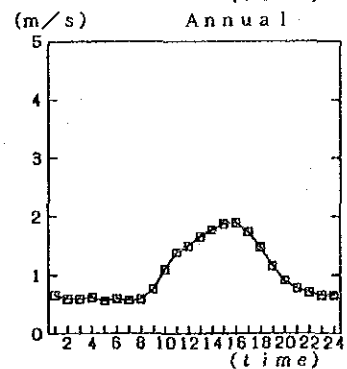
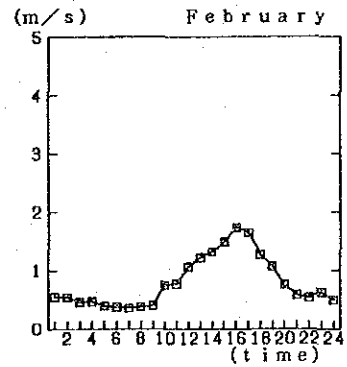
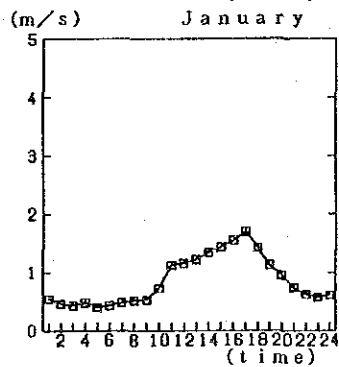
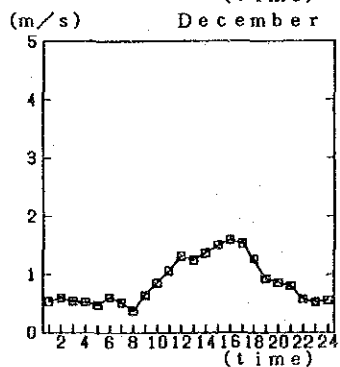
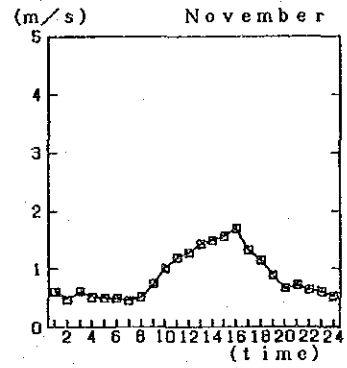
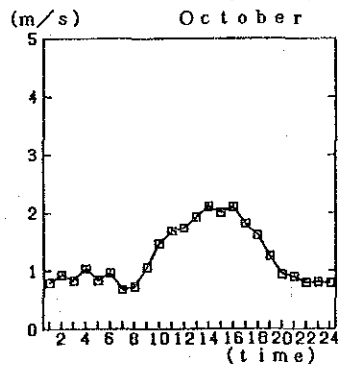
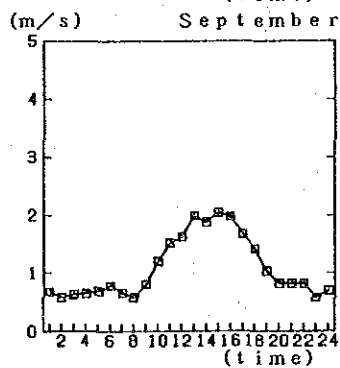
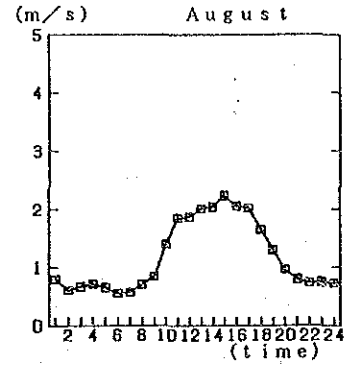
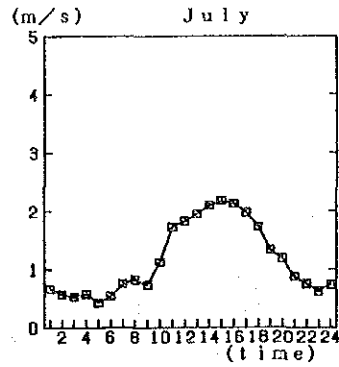
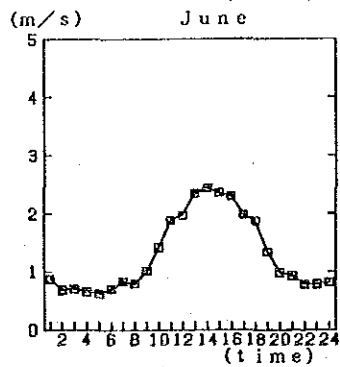
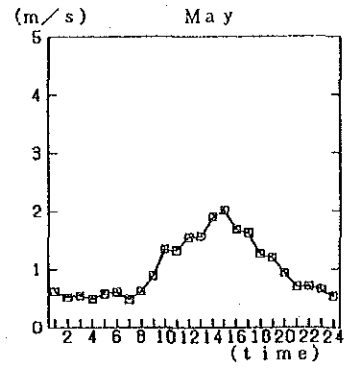
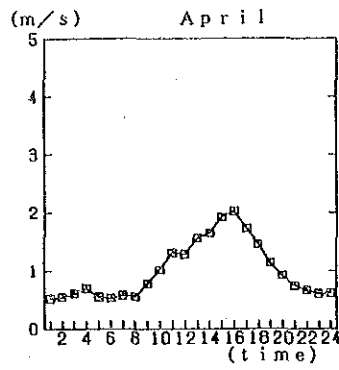
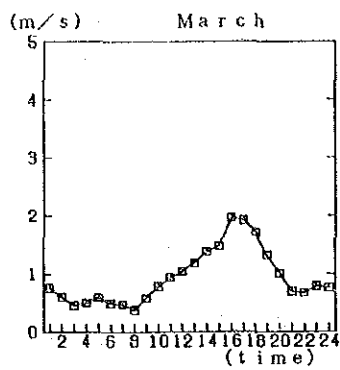


1.1.4 Diurnal Change of Meteorological Parameters

Diurnal Change of Wind Speed at Petaling Jaya

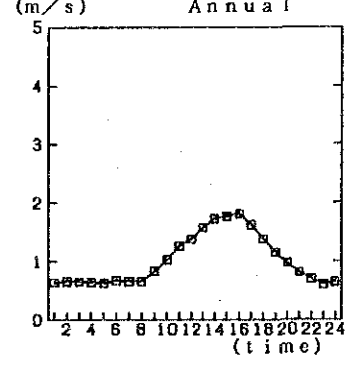
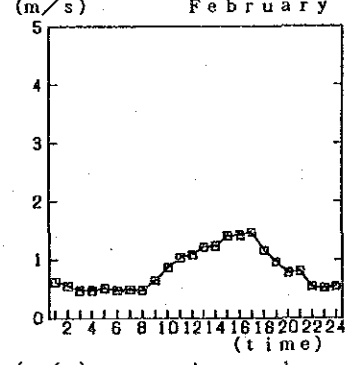
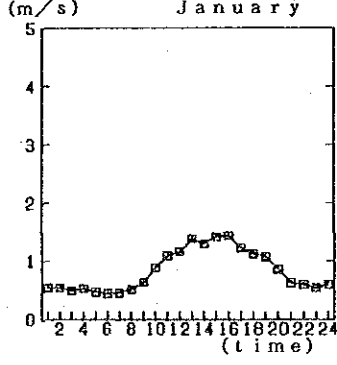
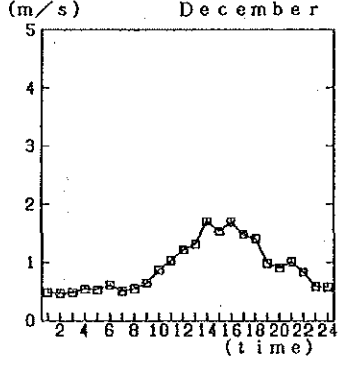
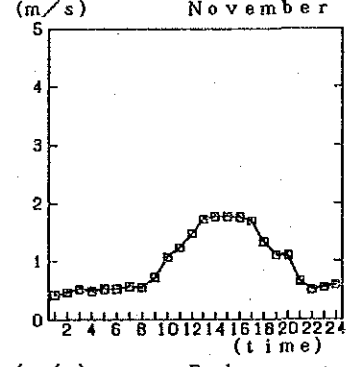
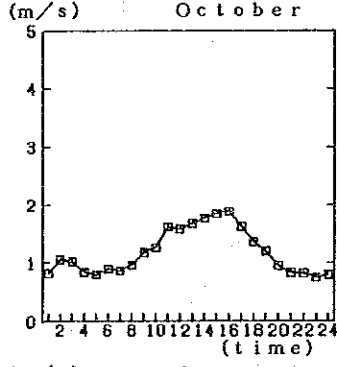
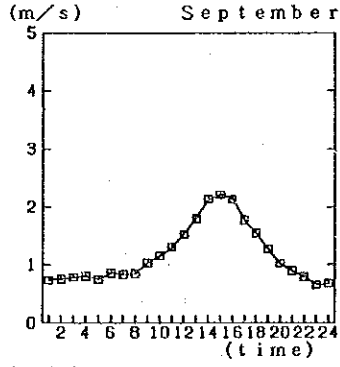
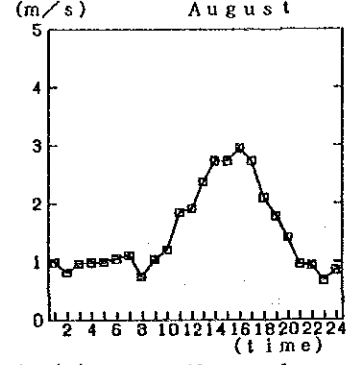
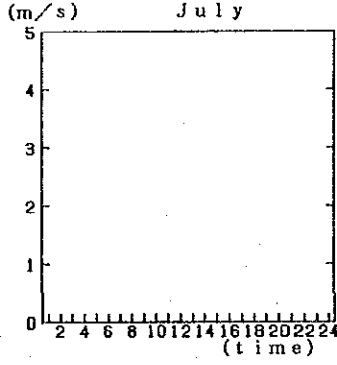
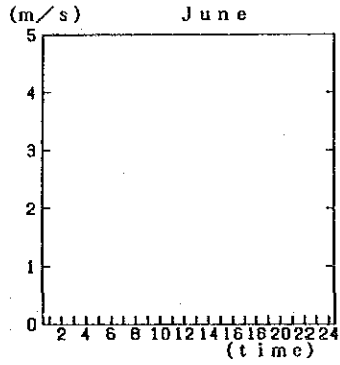
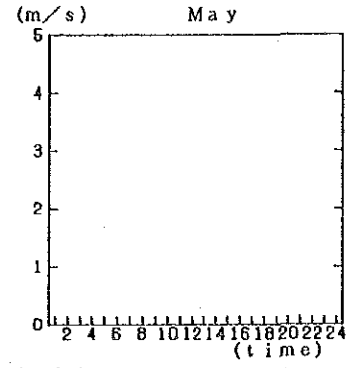
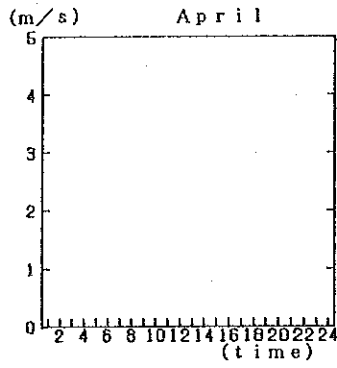
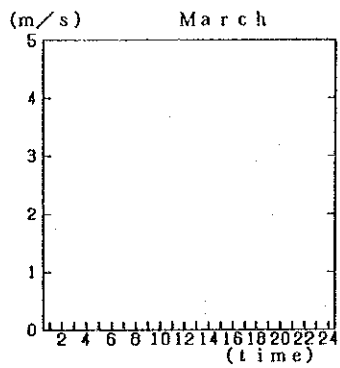


Diurnal Change of Wind Speed at Shah Alam



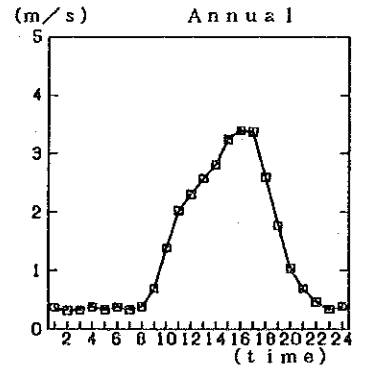
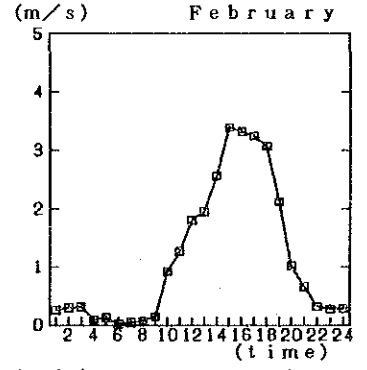
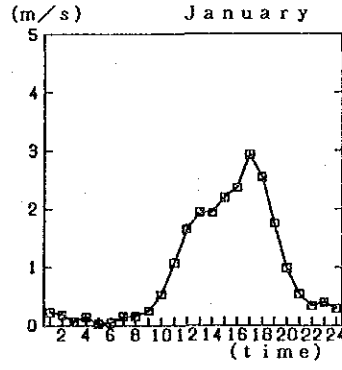
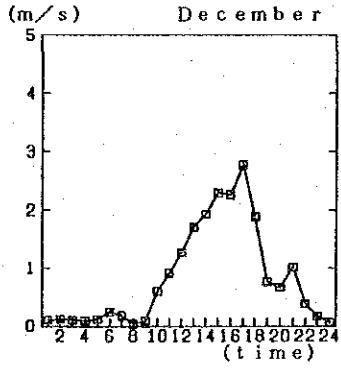
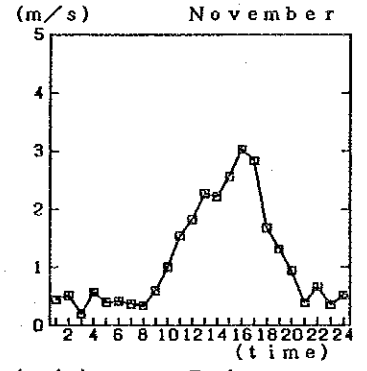
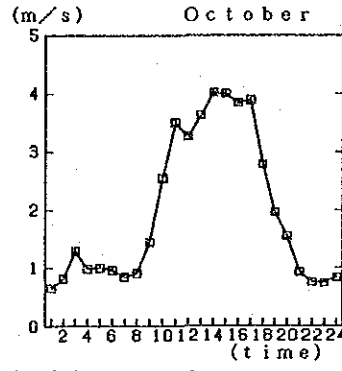
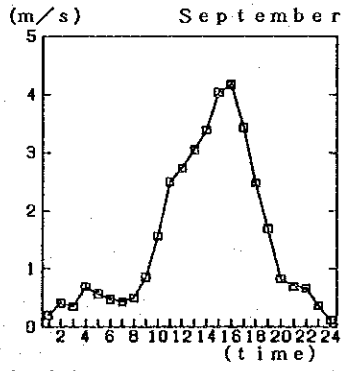
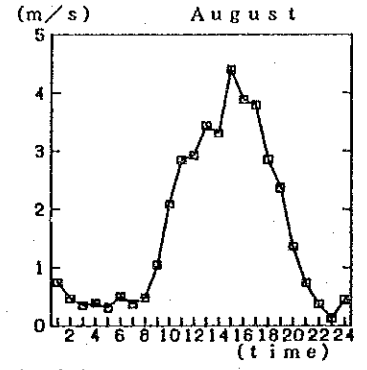
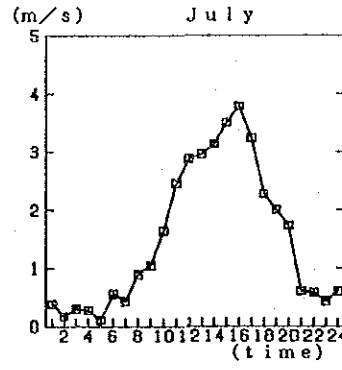
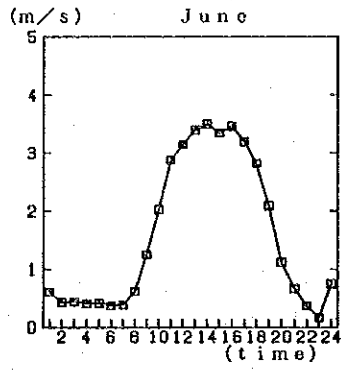
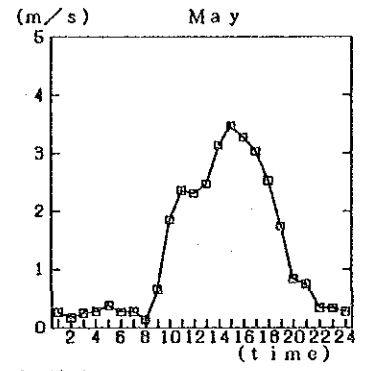
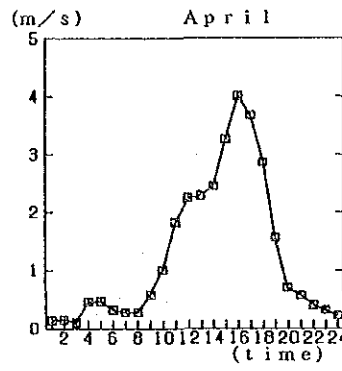
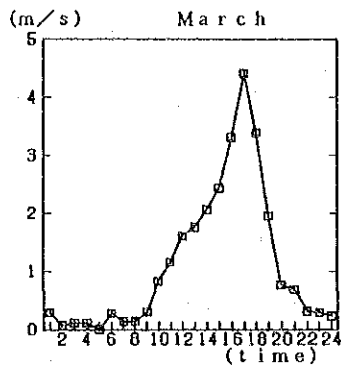
□ Wind Speed

Diurnal Change of Wind Speed at Klang



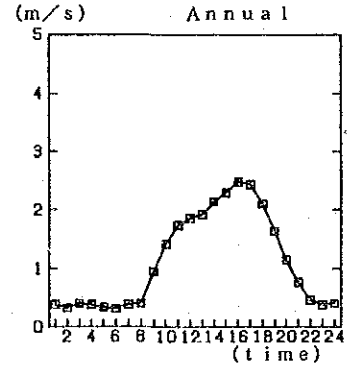
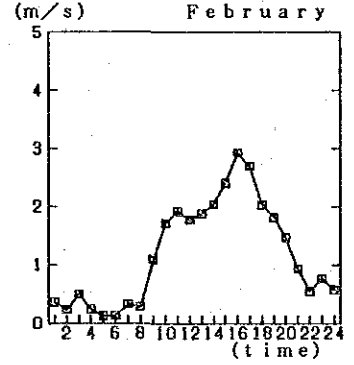
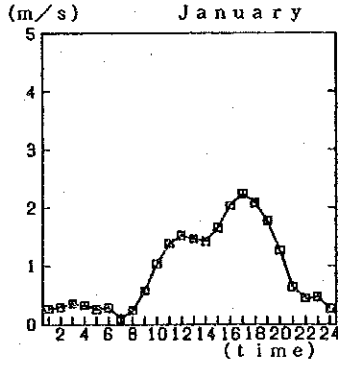
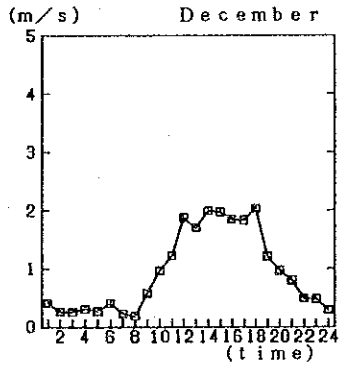
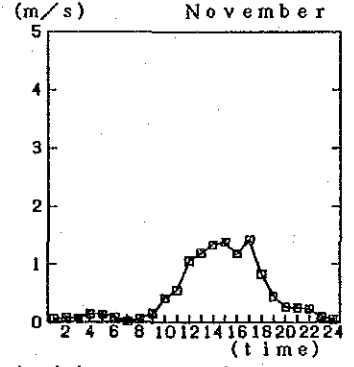
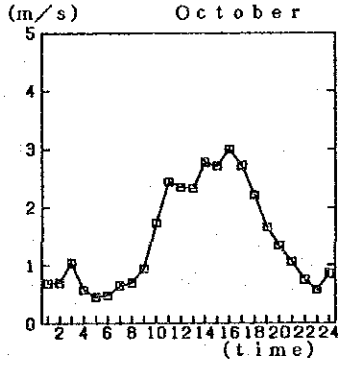
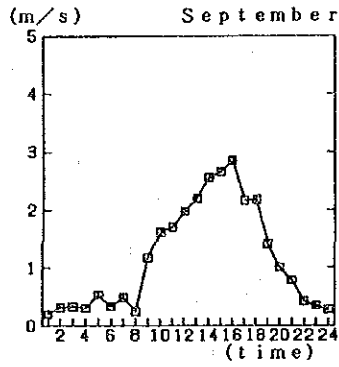
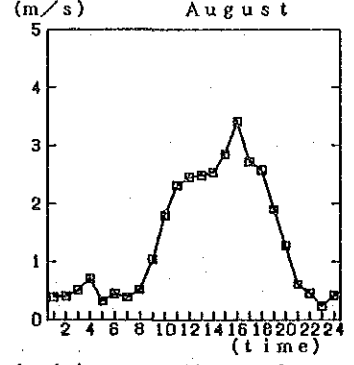
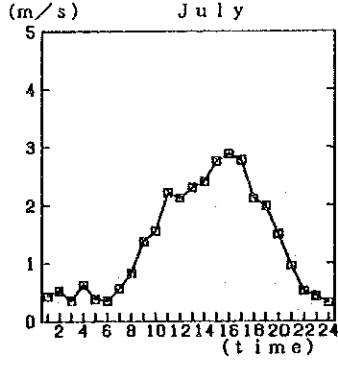
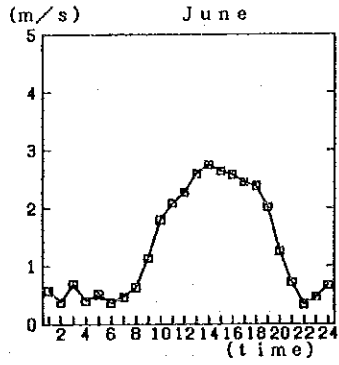
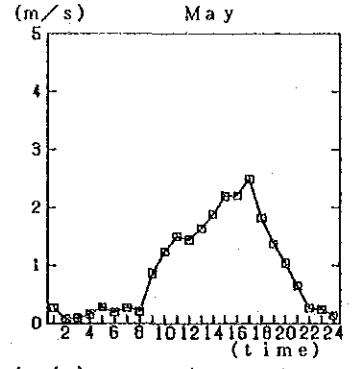
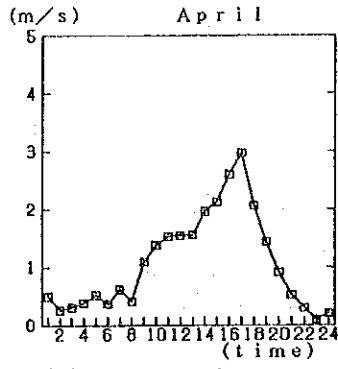
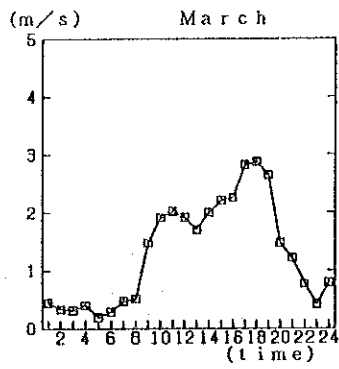
□ Wind Speed

Diurnal Change of Wind Speed at Subang (MMS)



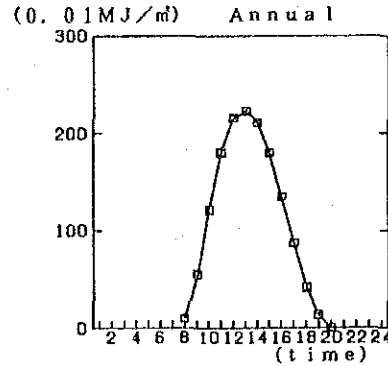
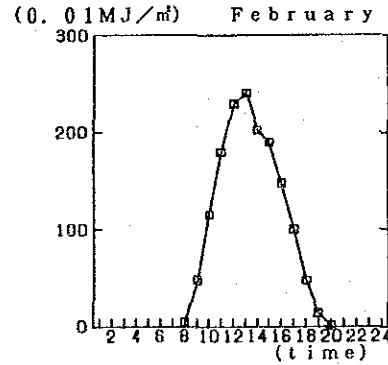
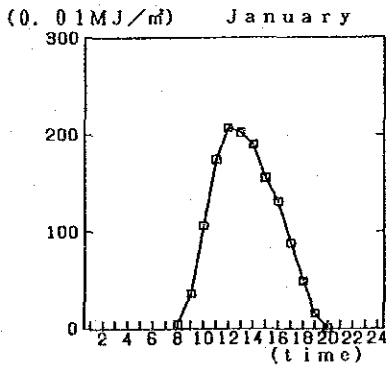
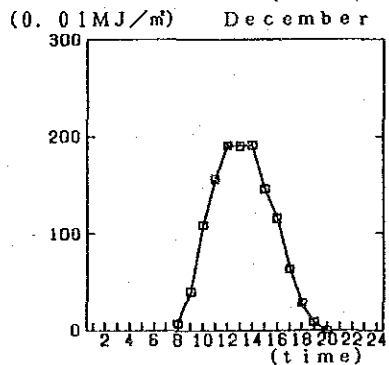
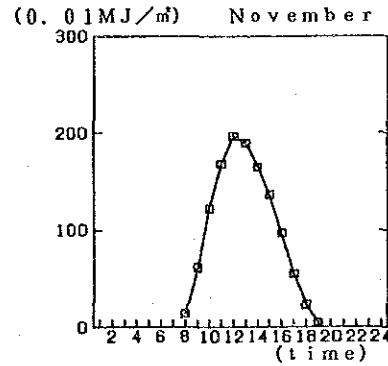
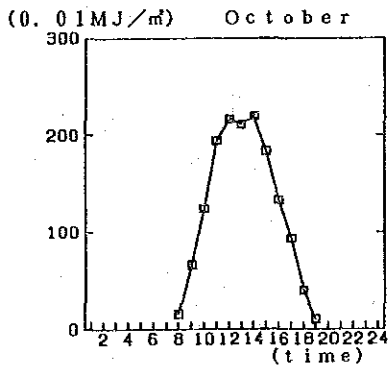
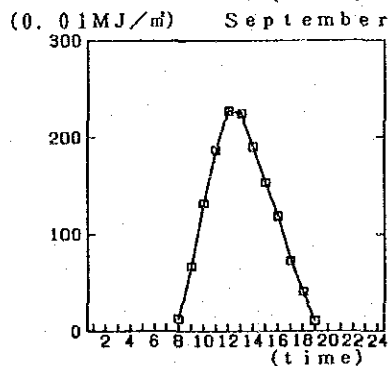
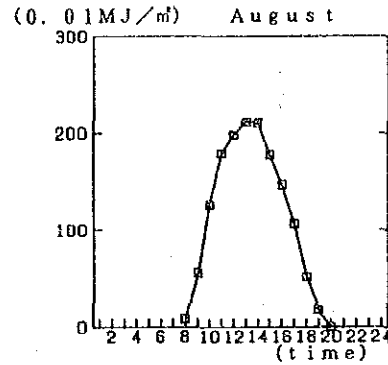
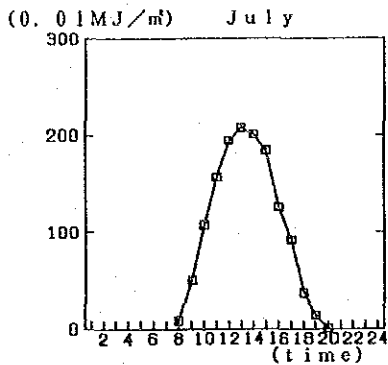
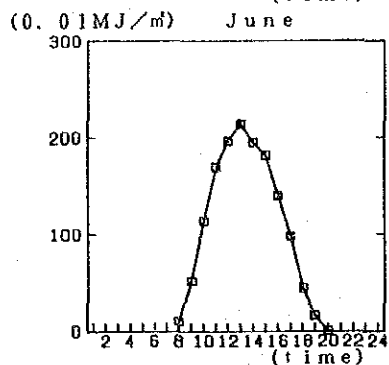
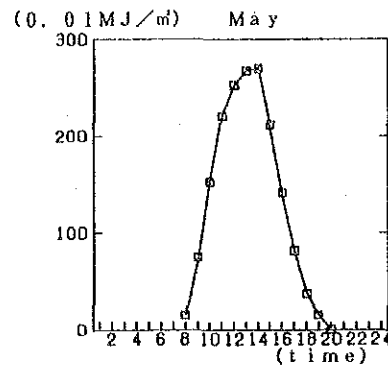
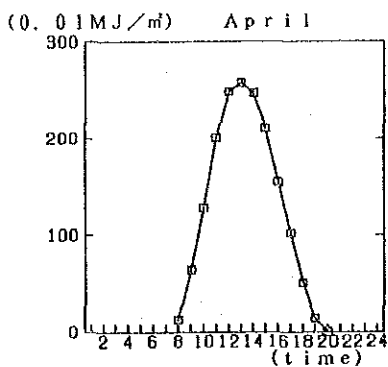
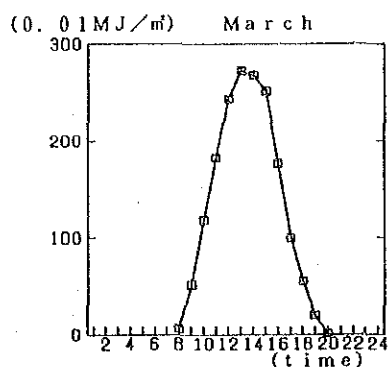
□ Wind Speed

Diurnal Change of Wind Speed at Petaling Jaya (MMS)



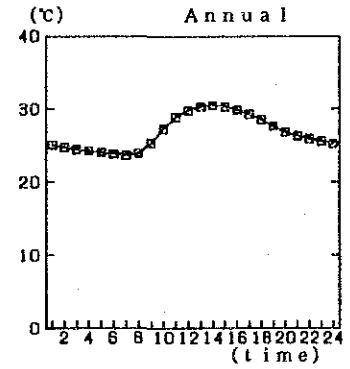
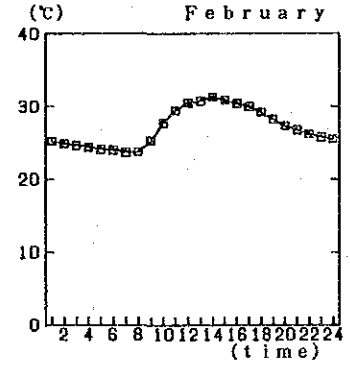
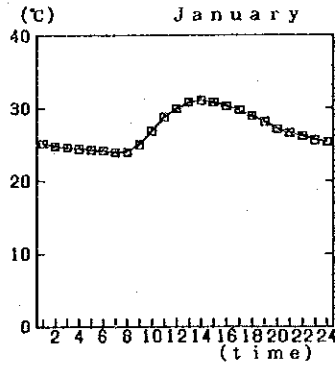
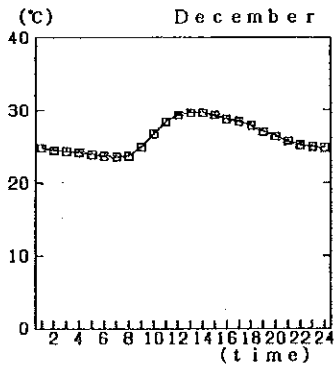
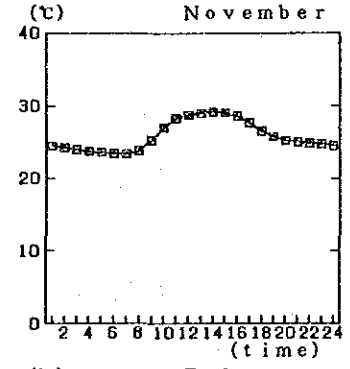
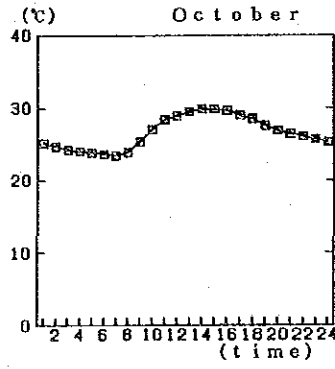
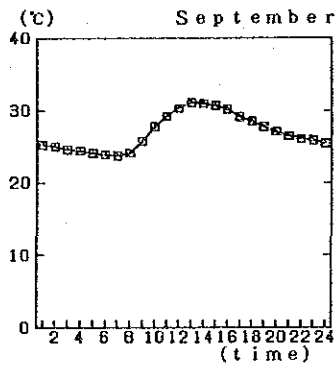
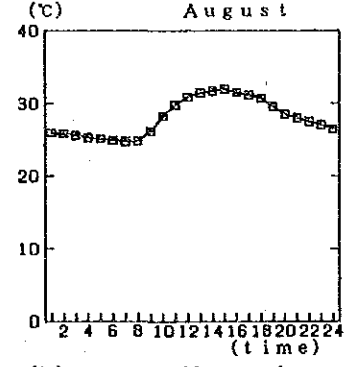
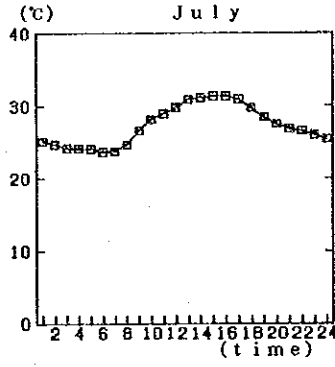
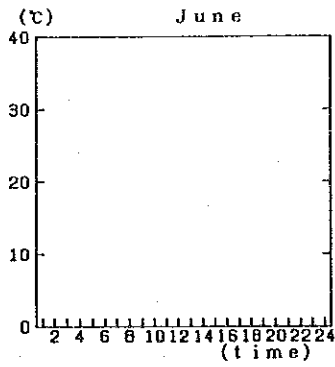
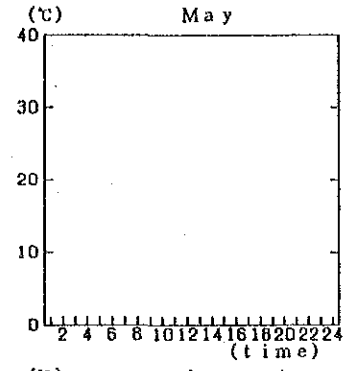
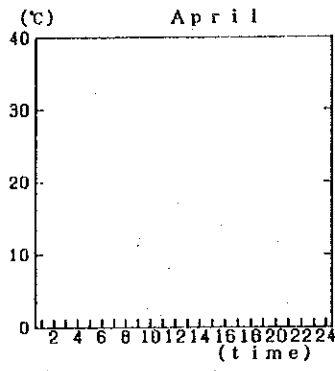
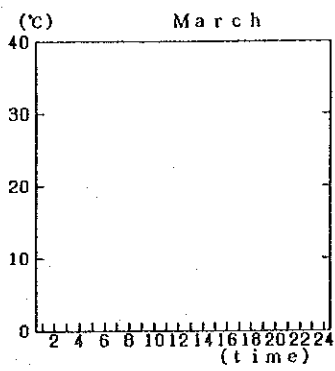
□ Wind Speed

Diurnal Change of Solar Radiation at Petaling Jaya



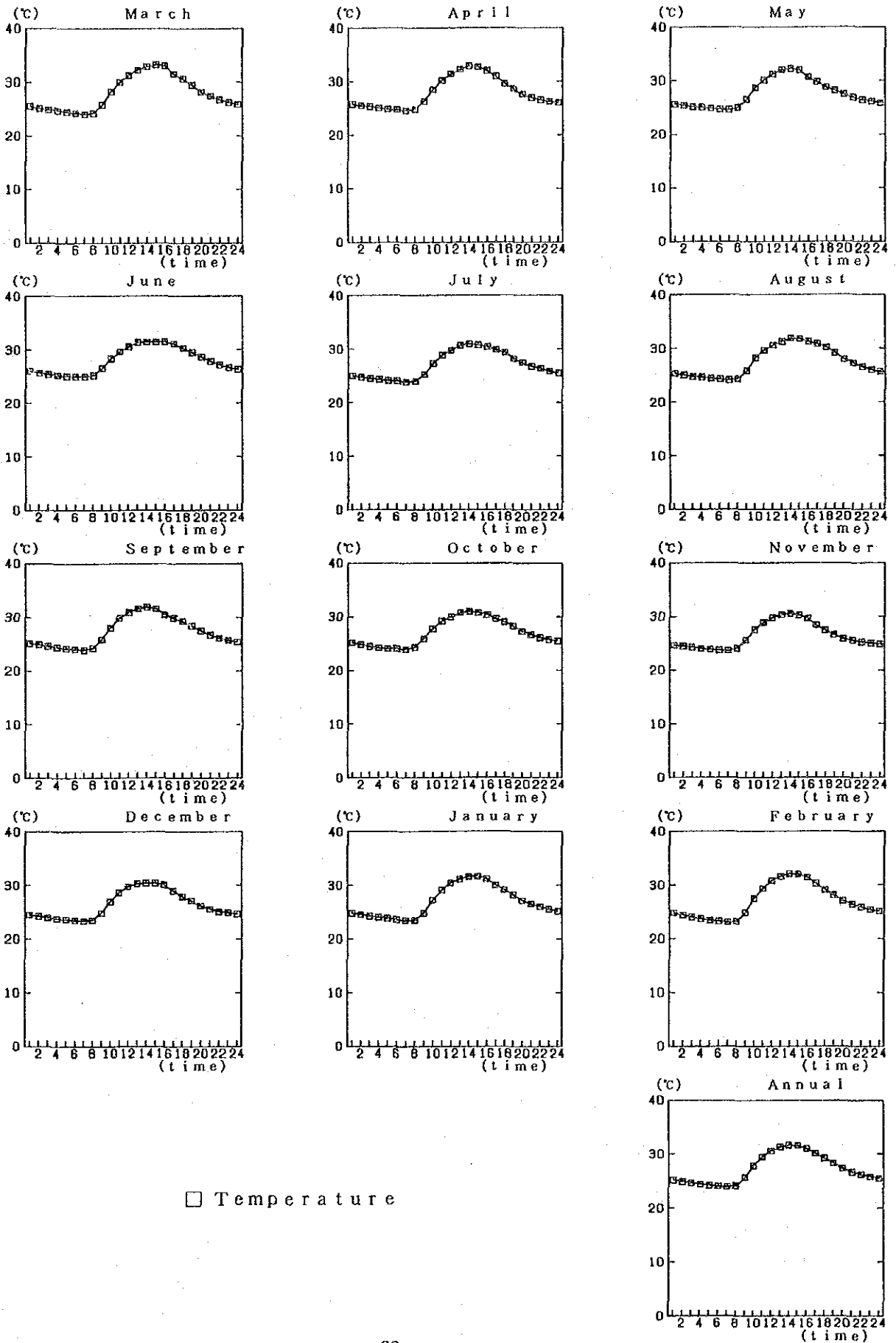
□ Solar Radiation

Diurnal Change of Temperature at Klang

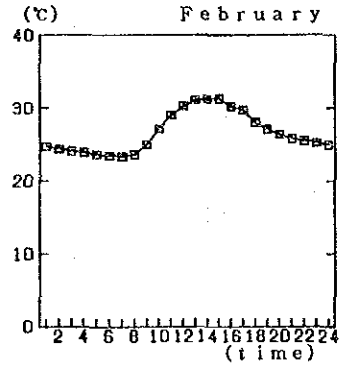
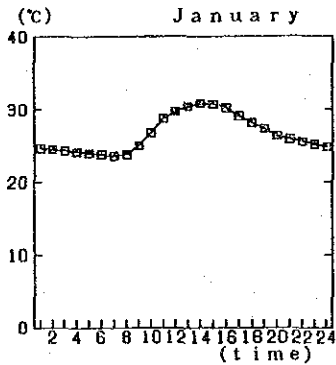
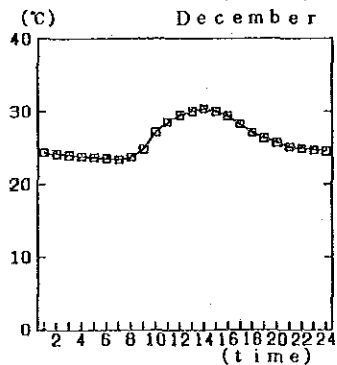
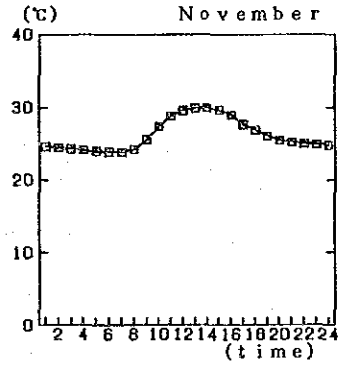
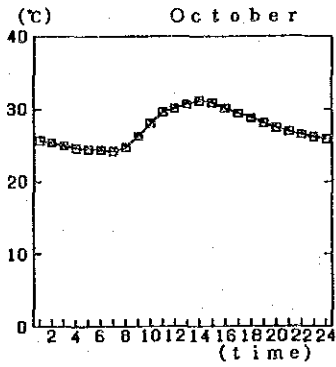
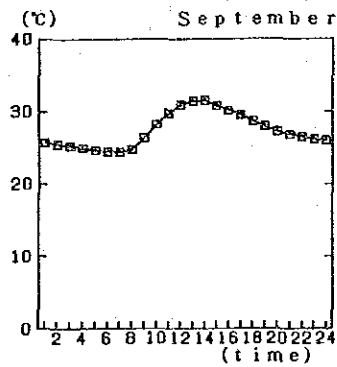
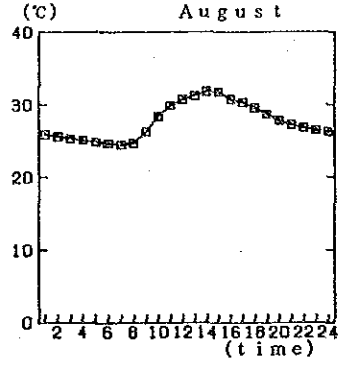
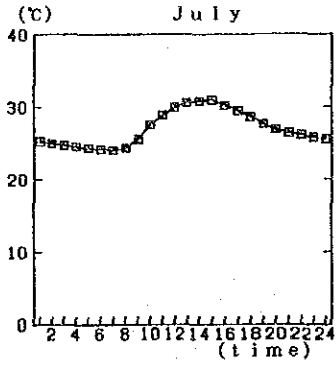
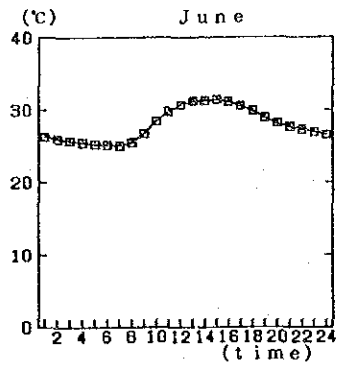
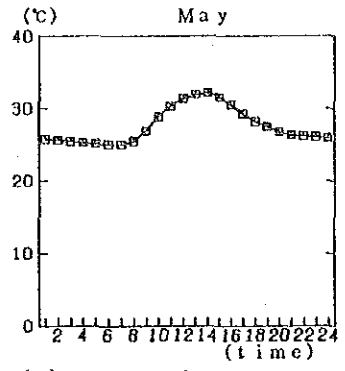
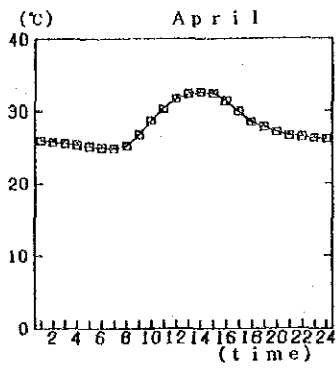
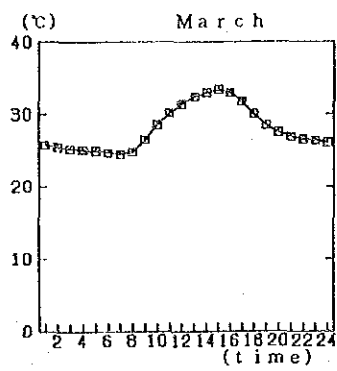


□ Temperature

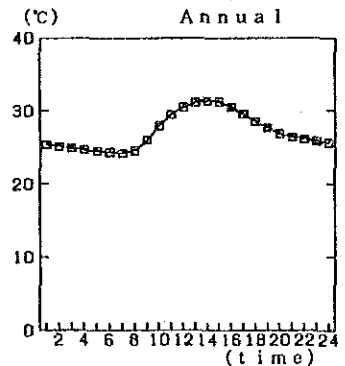
Diurnal Change of Temperature at Subang (MMS)



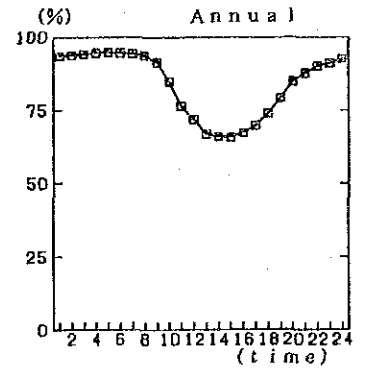
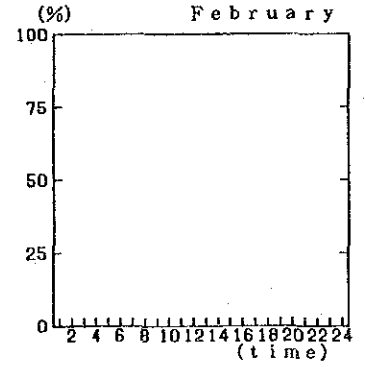
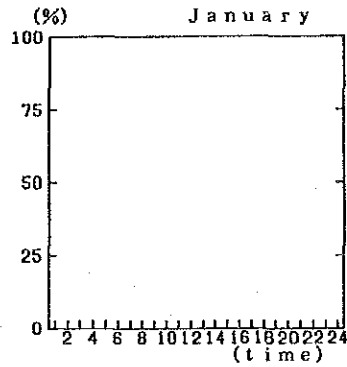
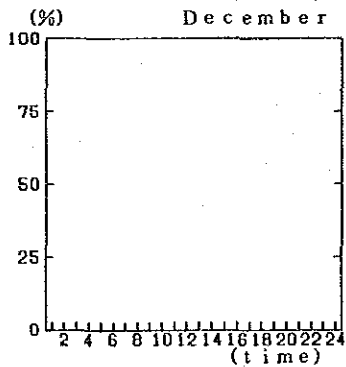
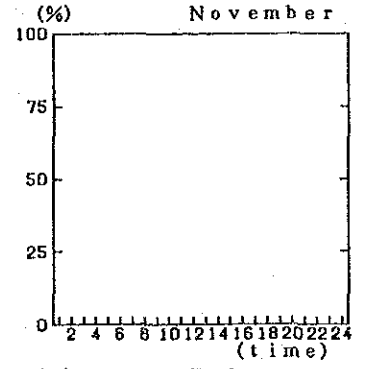
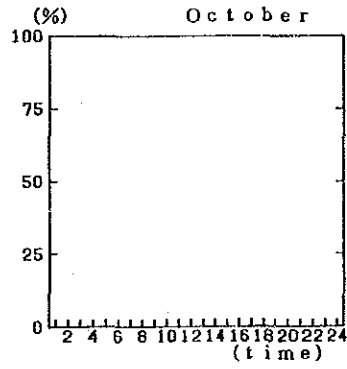
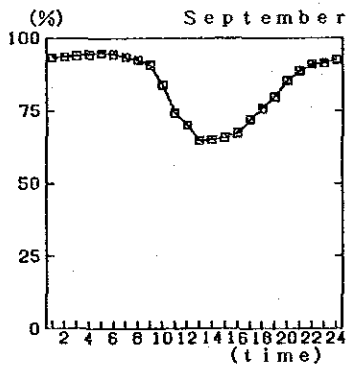
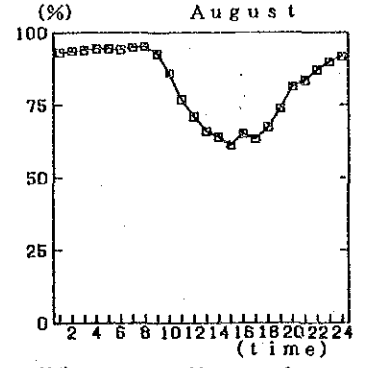
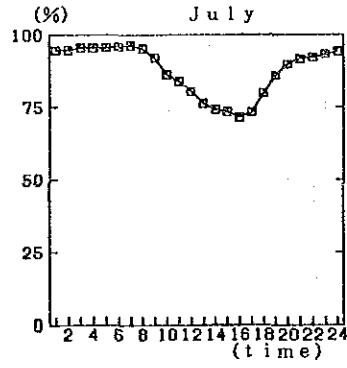
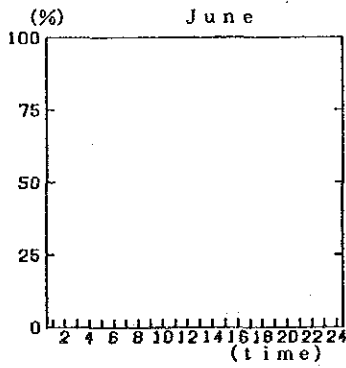
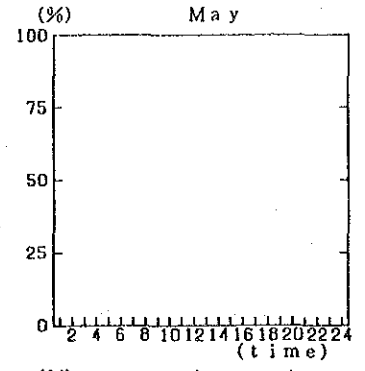
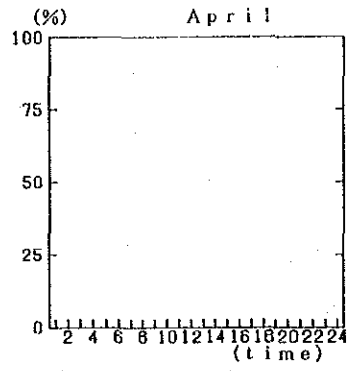
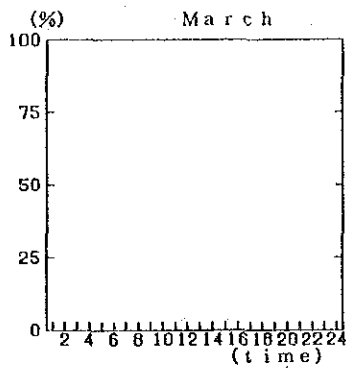
Diurnal Change of Temperature at Petaling Jaya (MMS)



□ Temperature

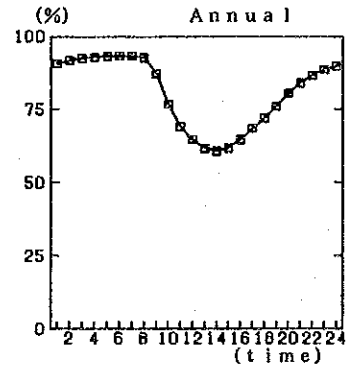
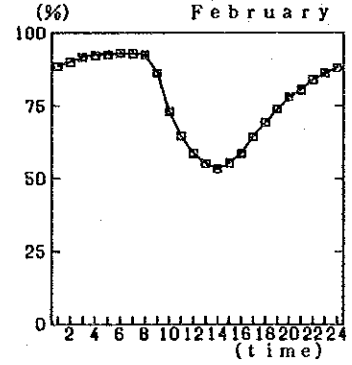
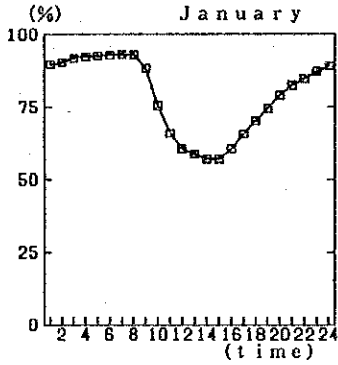
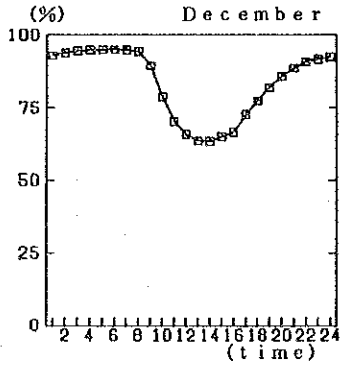
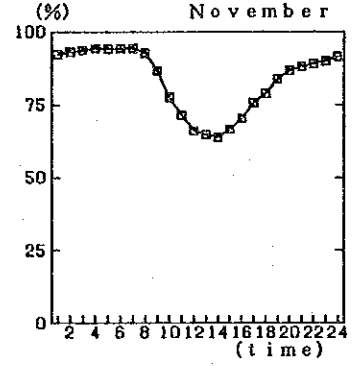
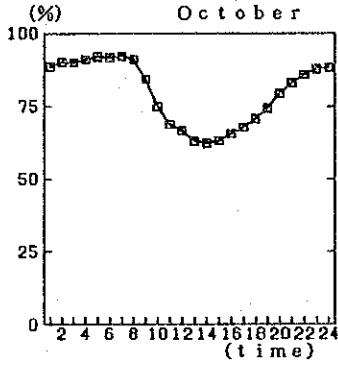
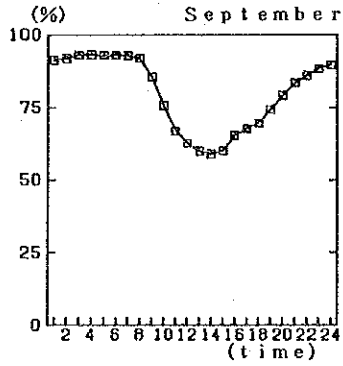
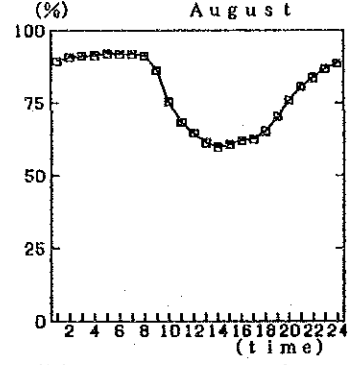
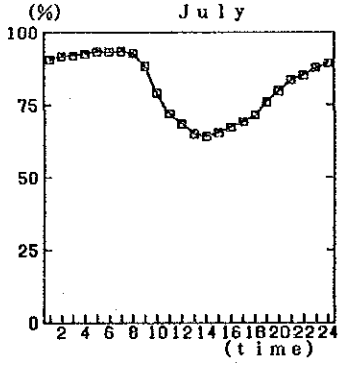
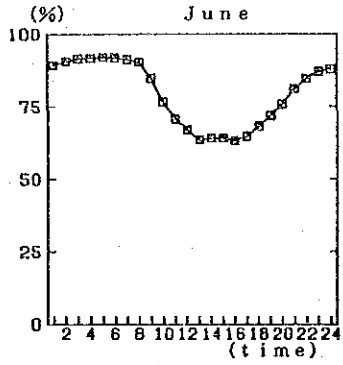
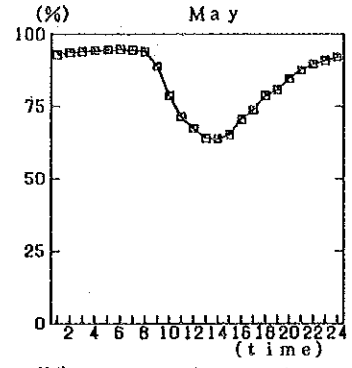
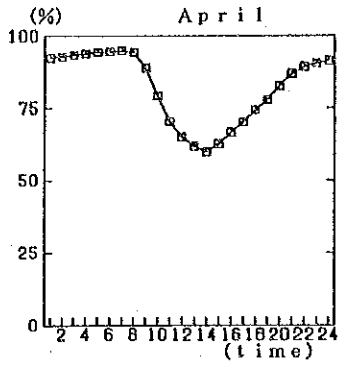
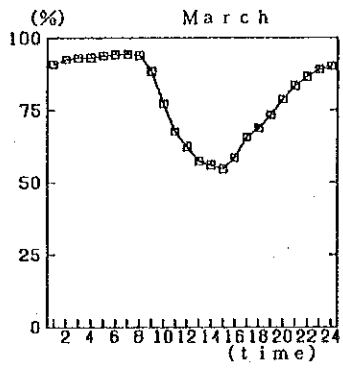


Diurnal Change of Relative Humidity at Klang



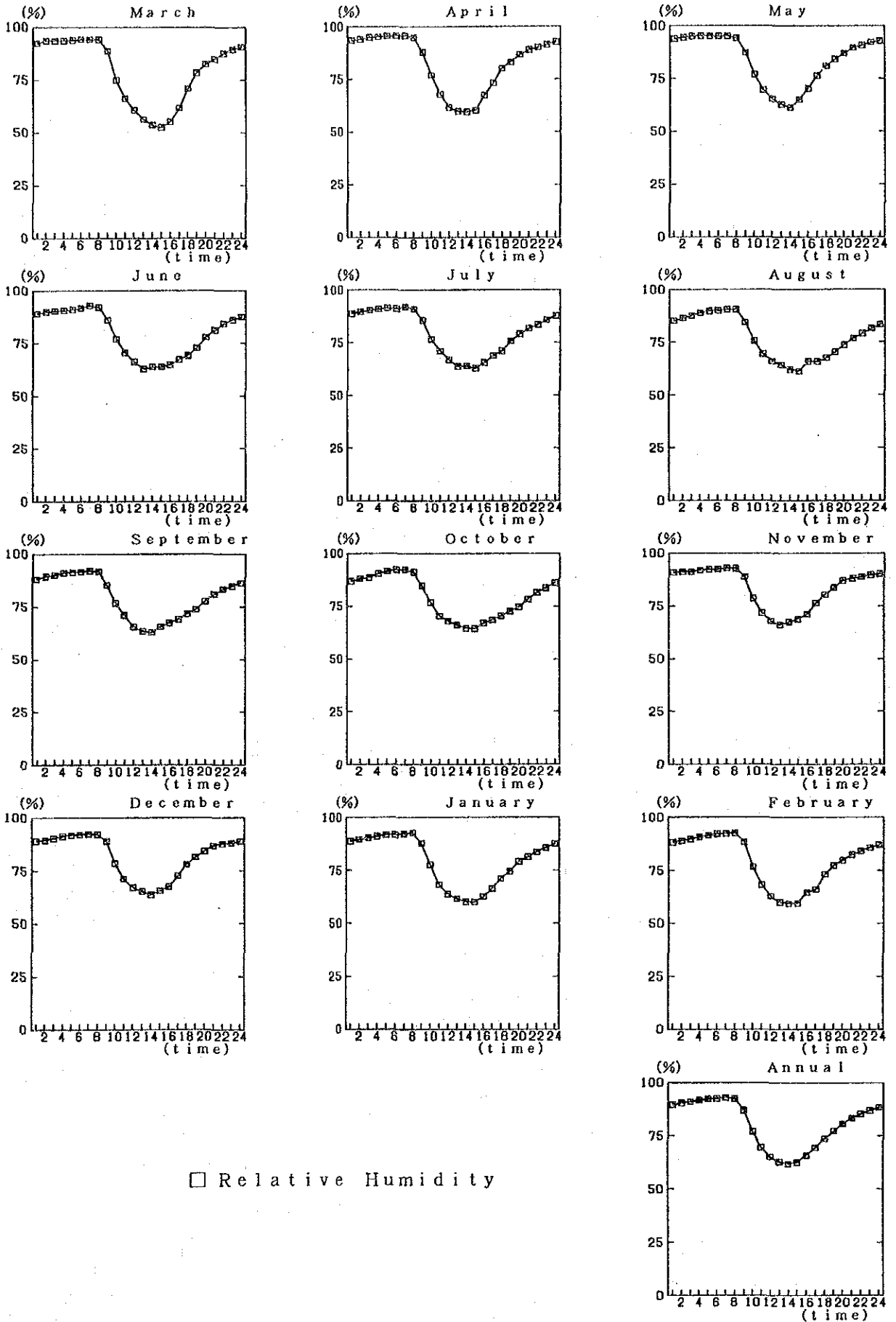
□ Relative Humidity

Diurnal Change of Relative Humidity at Subang (MMS)

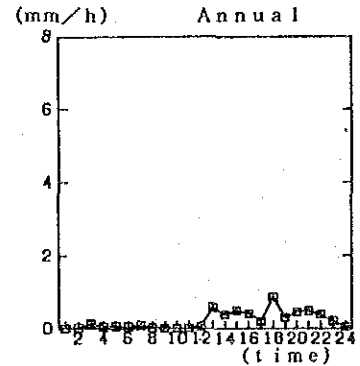
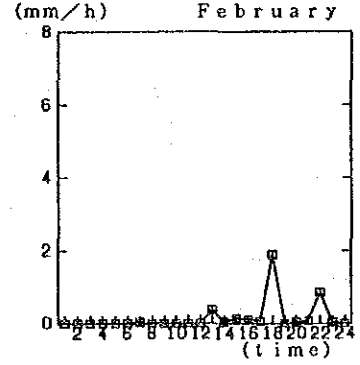
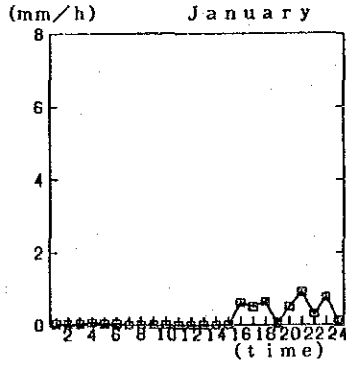
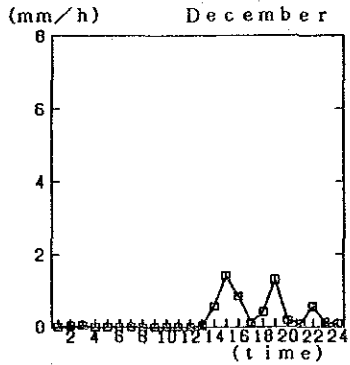
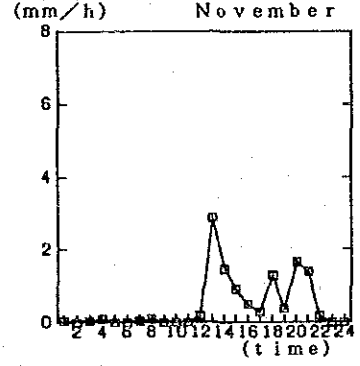
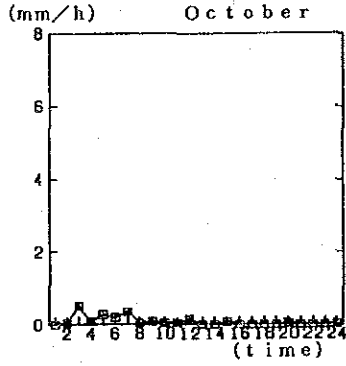
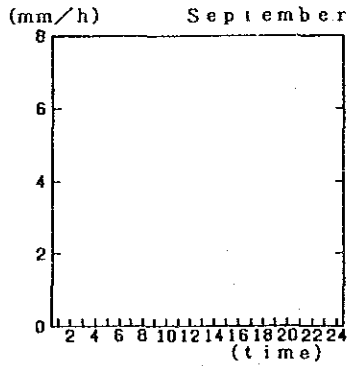
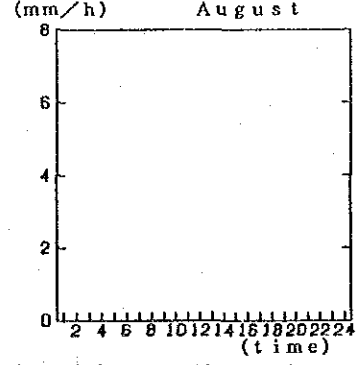
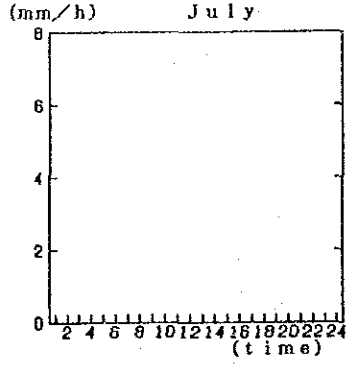
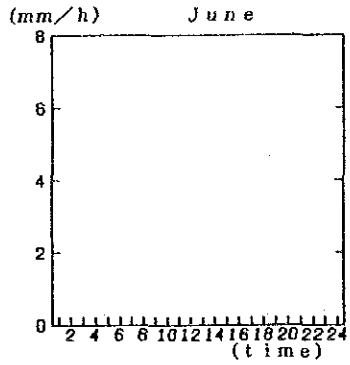
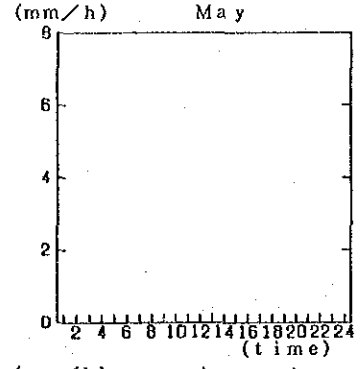
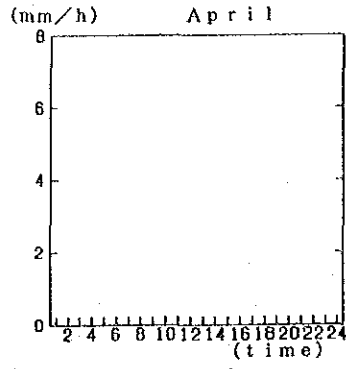
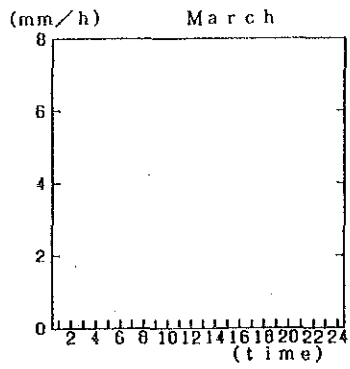


□ Relative Humidity

Diurnal Change of Relative Humidity at Petaling Jaya (MMS)

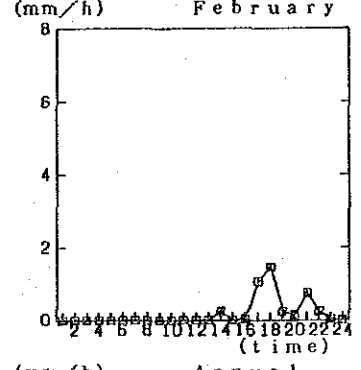
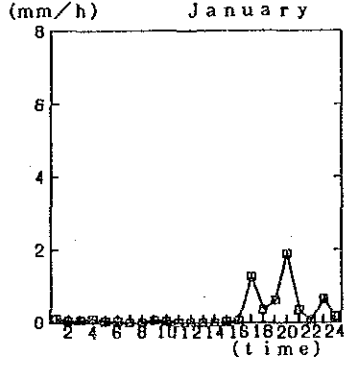
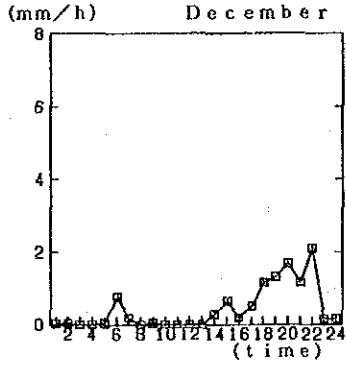
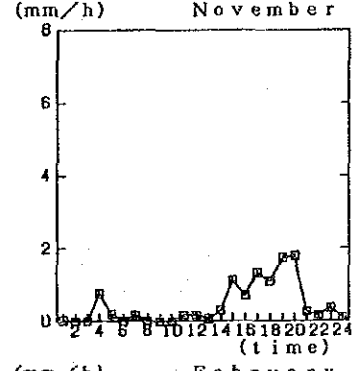
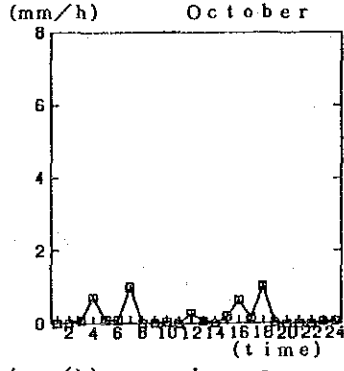
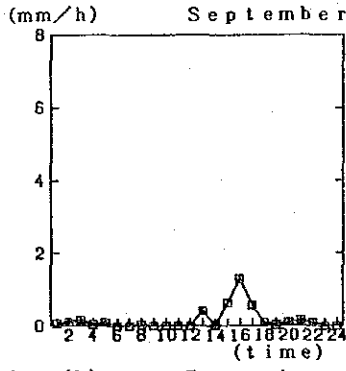
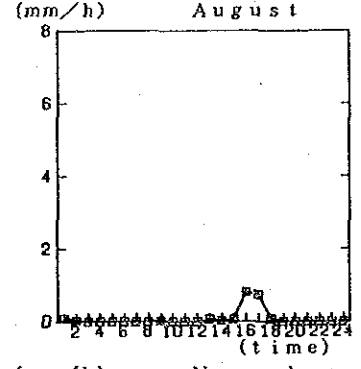
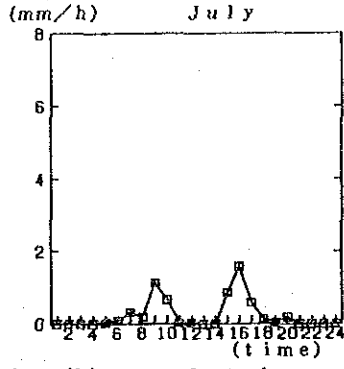
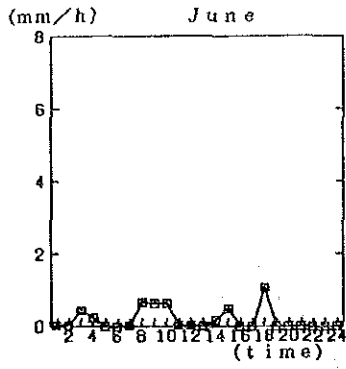
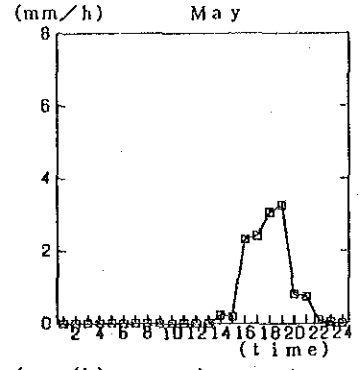
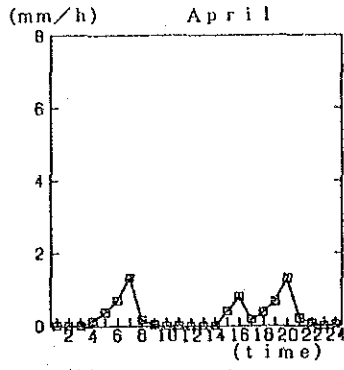
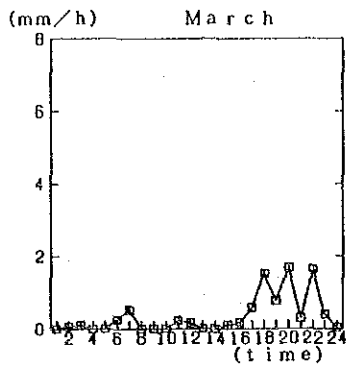


Diurnal Change of Rain Volume at Klang

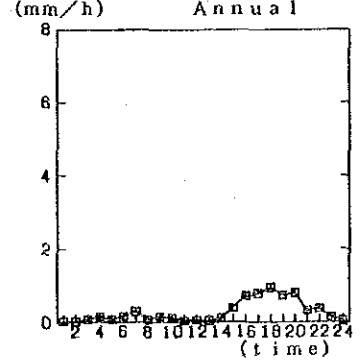


□ Rain Volume

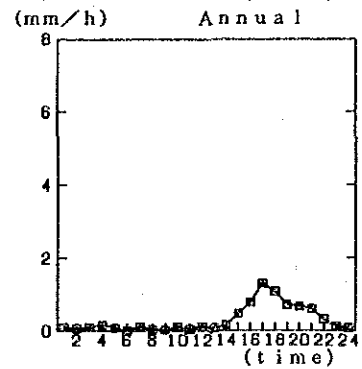
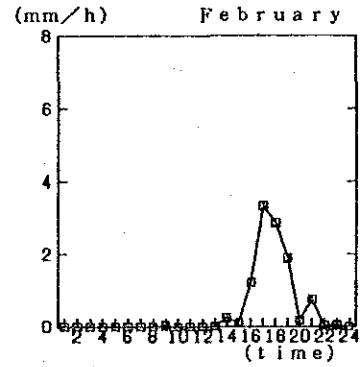
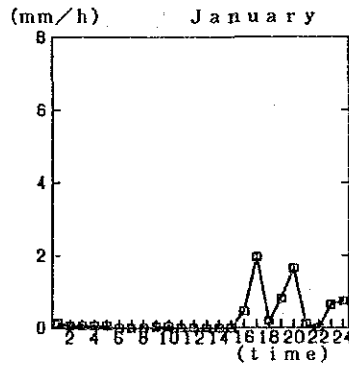
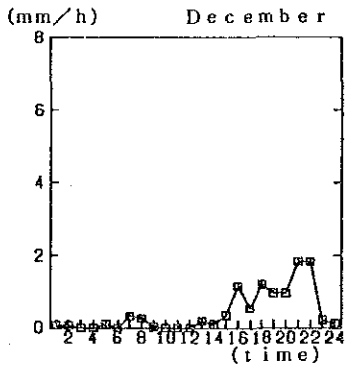
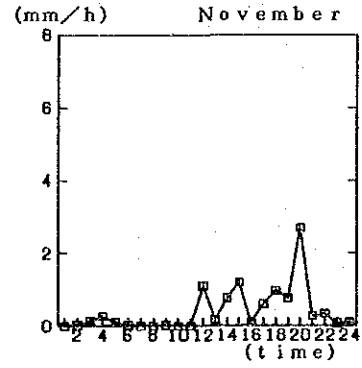
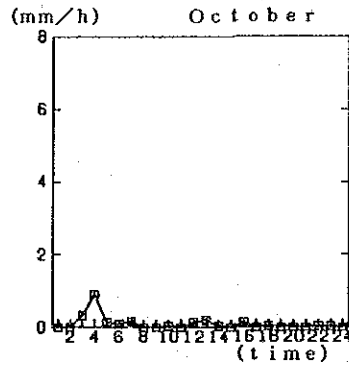
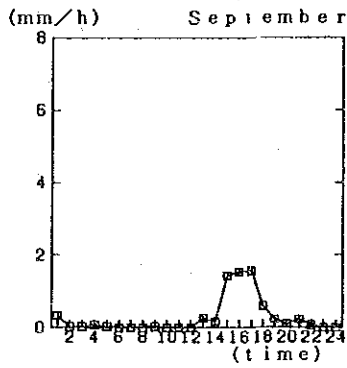
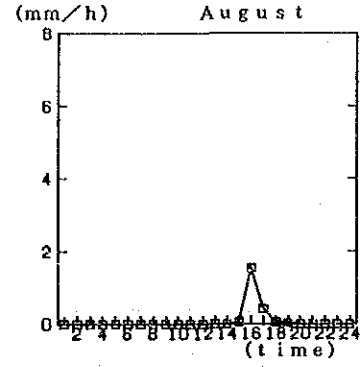
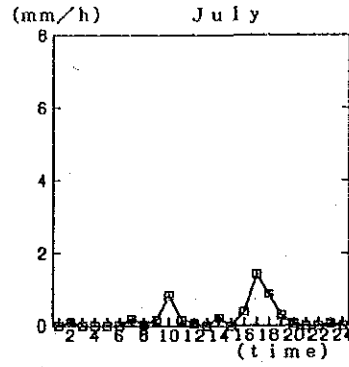
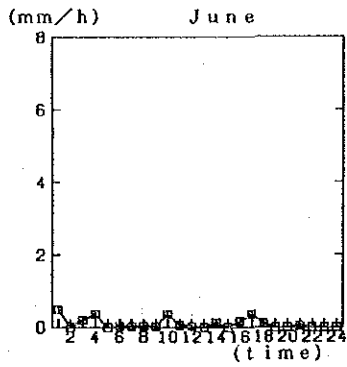
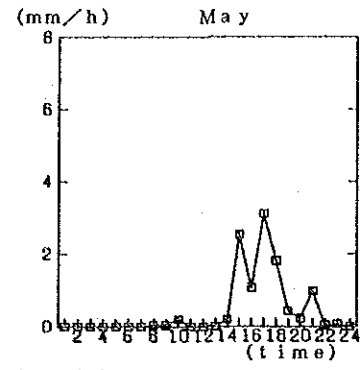
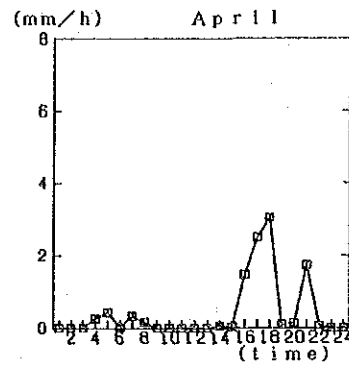
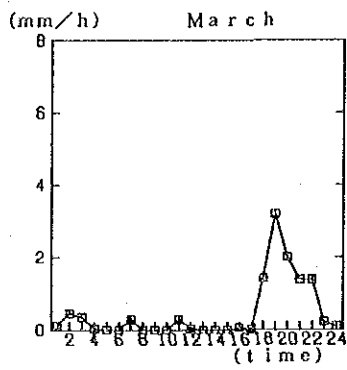
Diurnal Change of Rain Volume at Subang (MMS)



□ Rain Volume



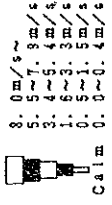
Diurnal Change of Rain Volume at Petaling Jaya (MMS)



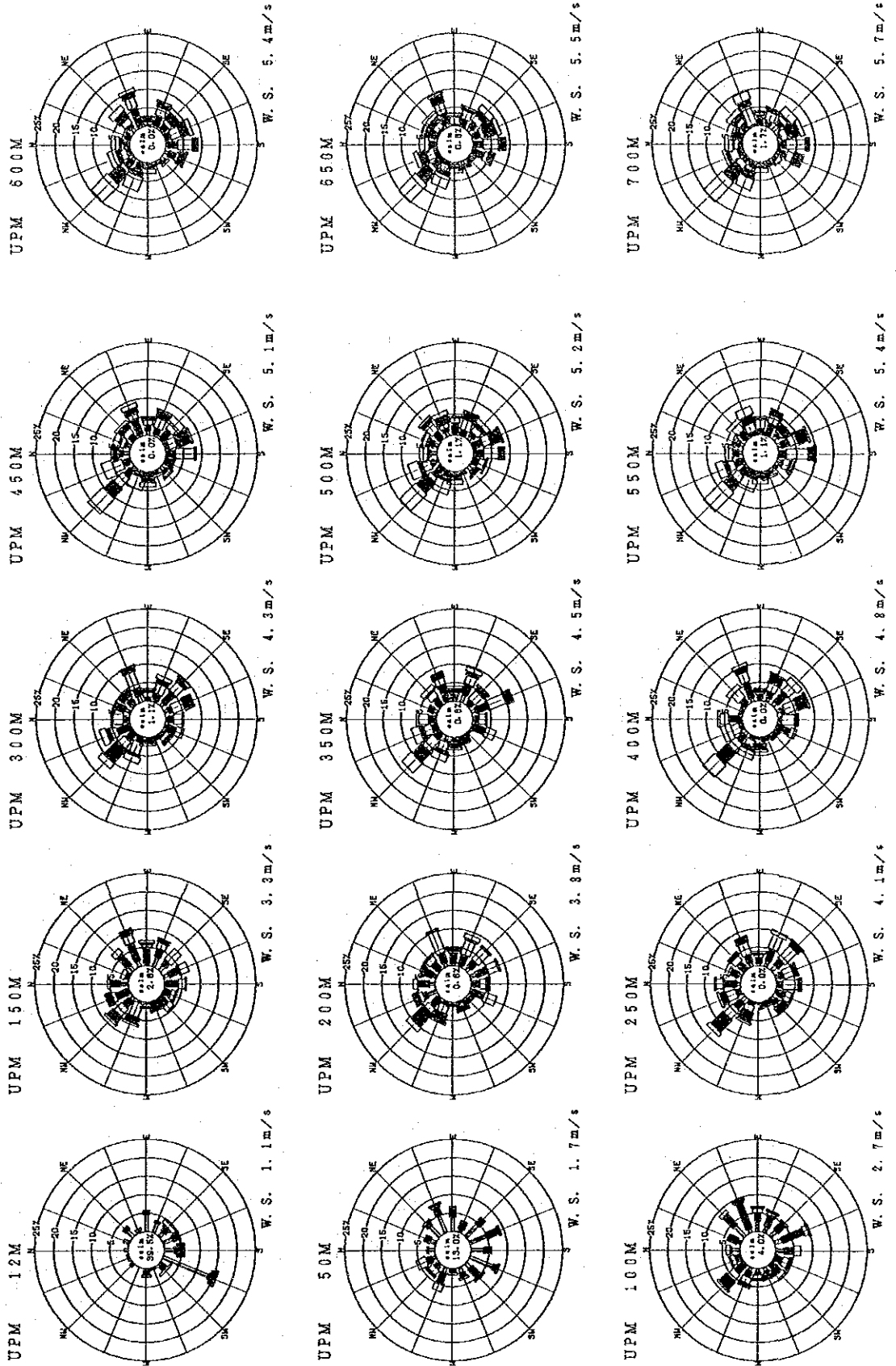
□ Rain Volume

1.2 Upper Level Meteorology


1.2.1 Wind Rose at Upper Level

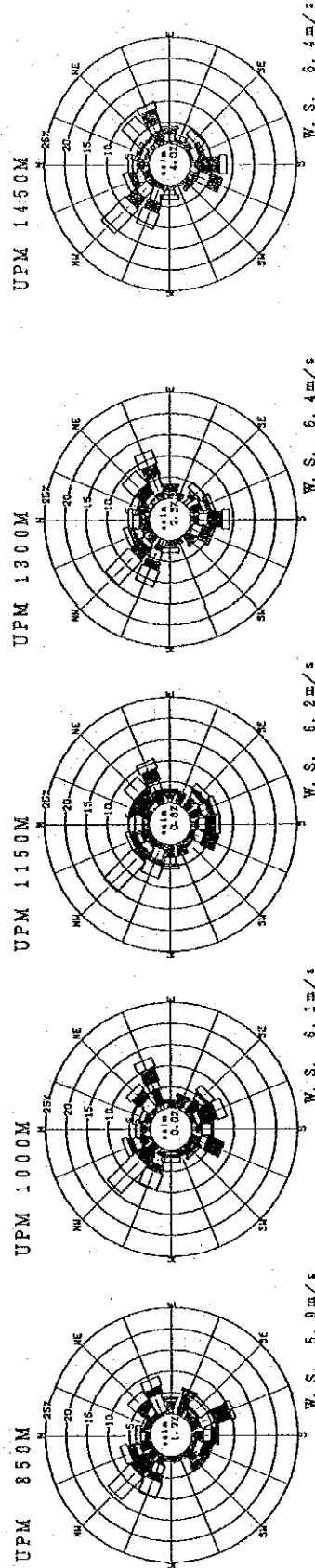
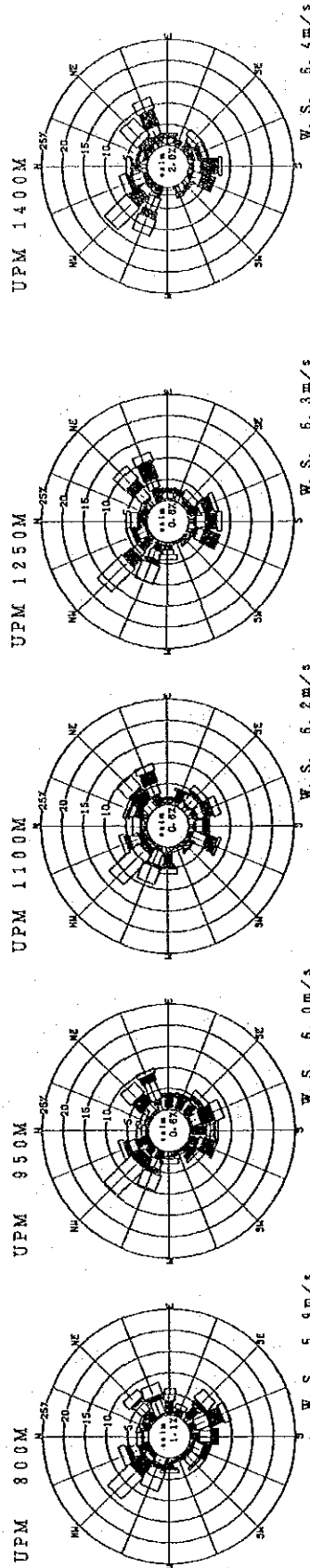
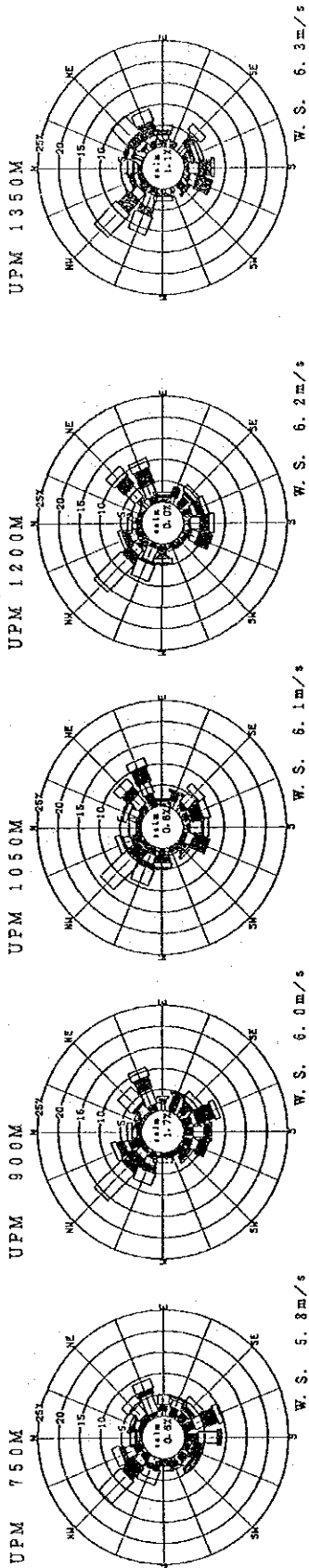


Wind Rose (Upper Level)

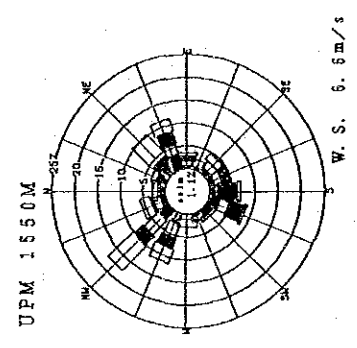
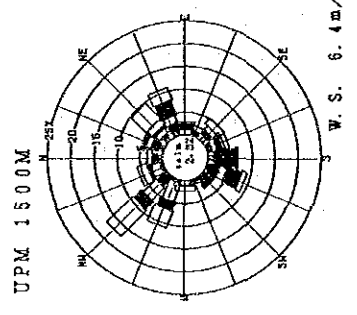
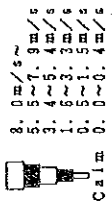


Wind Rose (Upper Level)

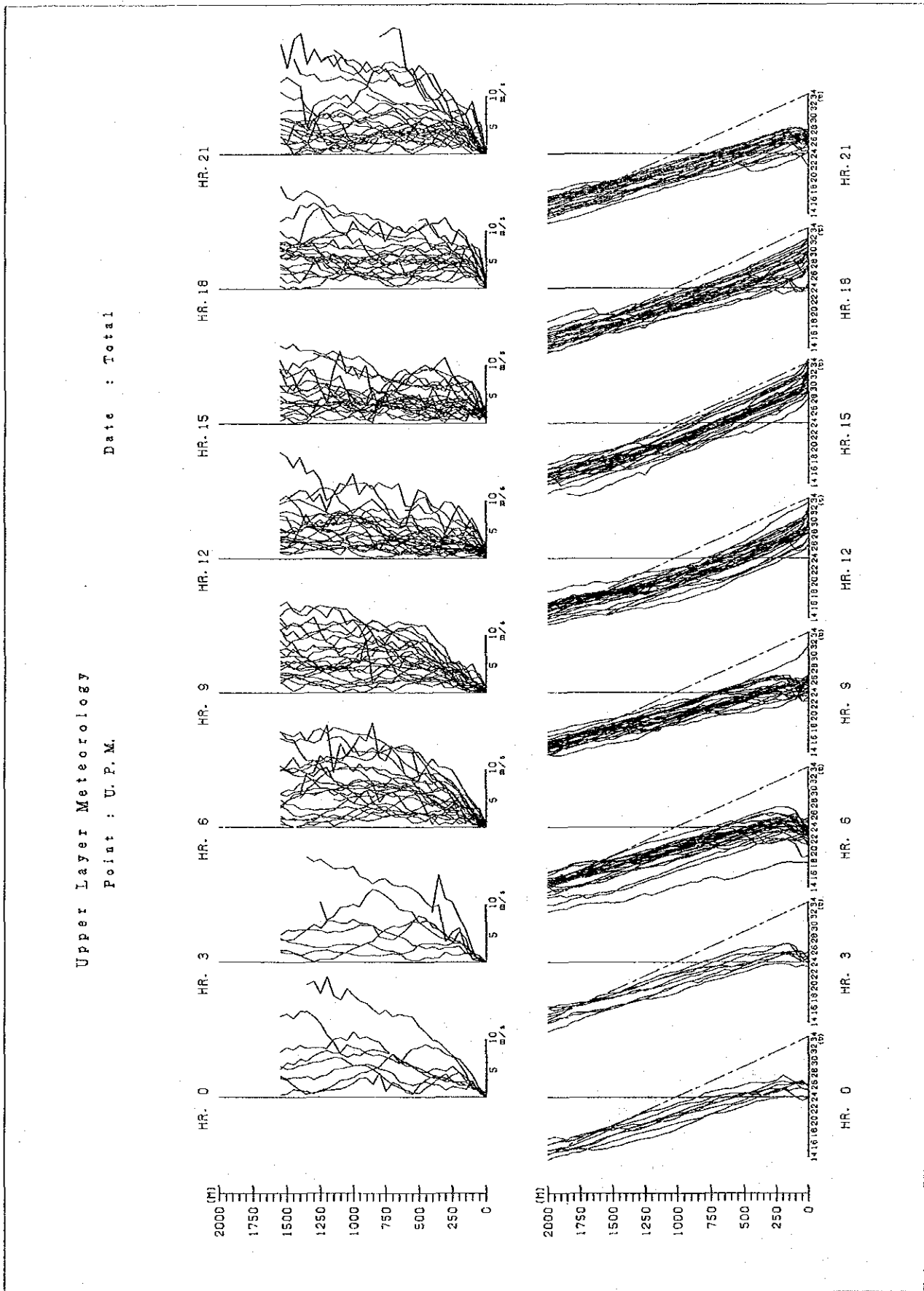

 8.0m/s ~
 5.5 ~ 7.9m/s
 3.4 ~ 5.4m/s
 1.6 ~ 3.3m/s
 0.5 ~ 1.5m/s
 Calm 0.0 ~ 0.4m/s



Wind Rose (Upper Level)



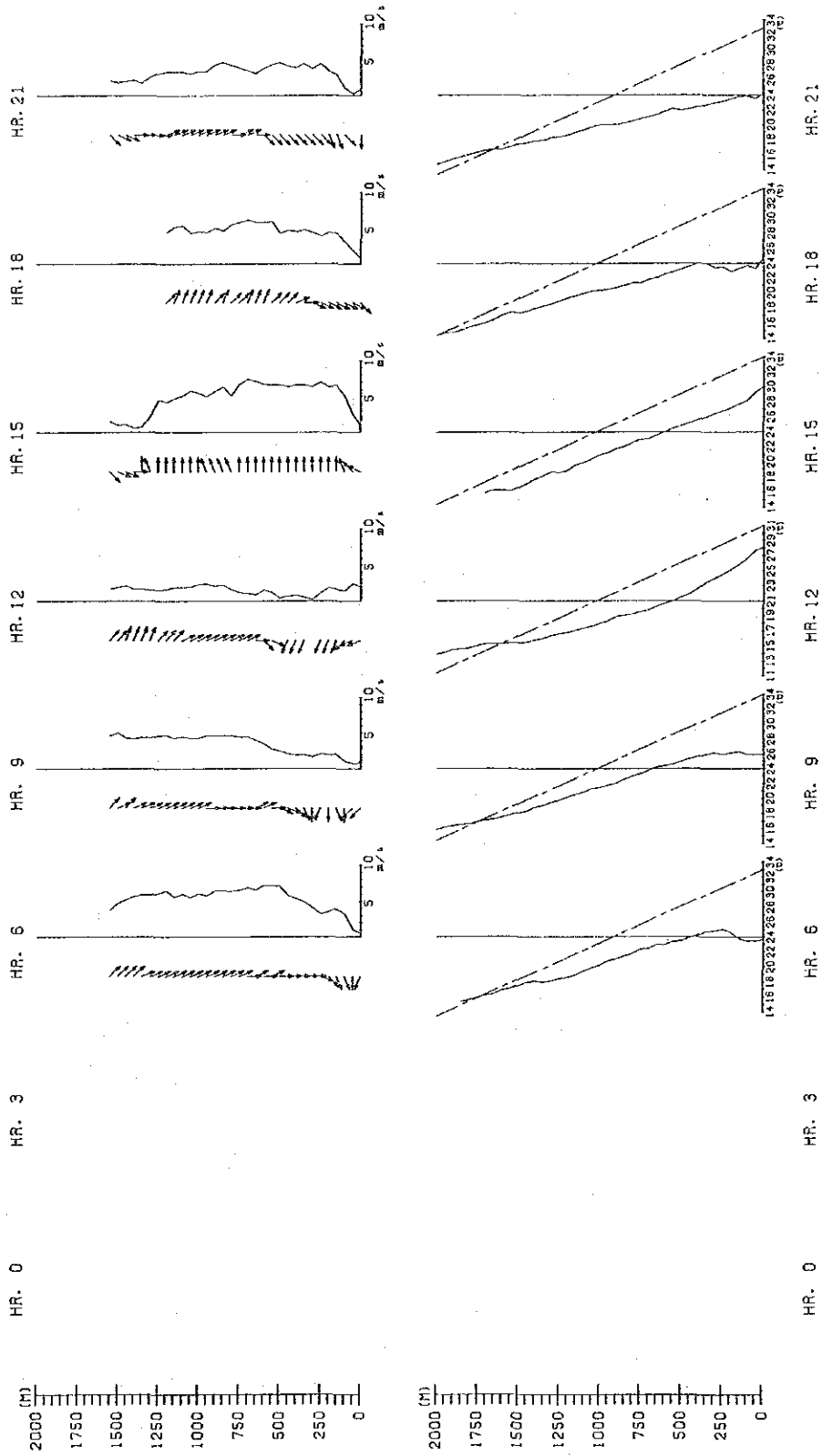
1.2.2 Vertical Profile of Wind and Temperature



Upper Layer Meteorology

Point : U.P.M.

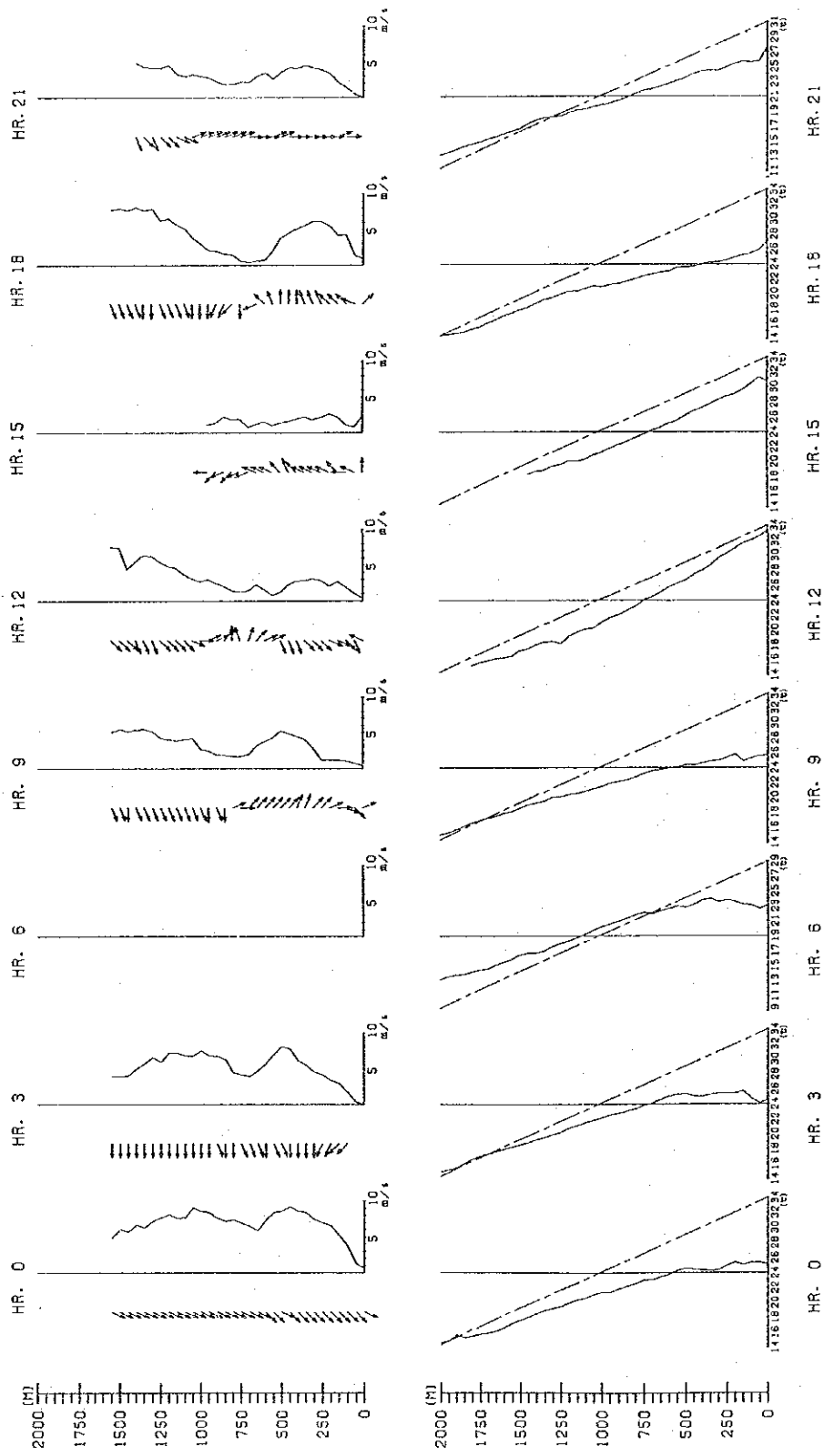
Date : 1992- 2-20



Upper Layer Meteorology

Point : U. P. M.

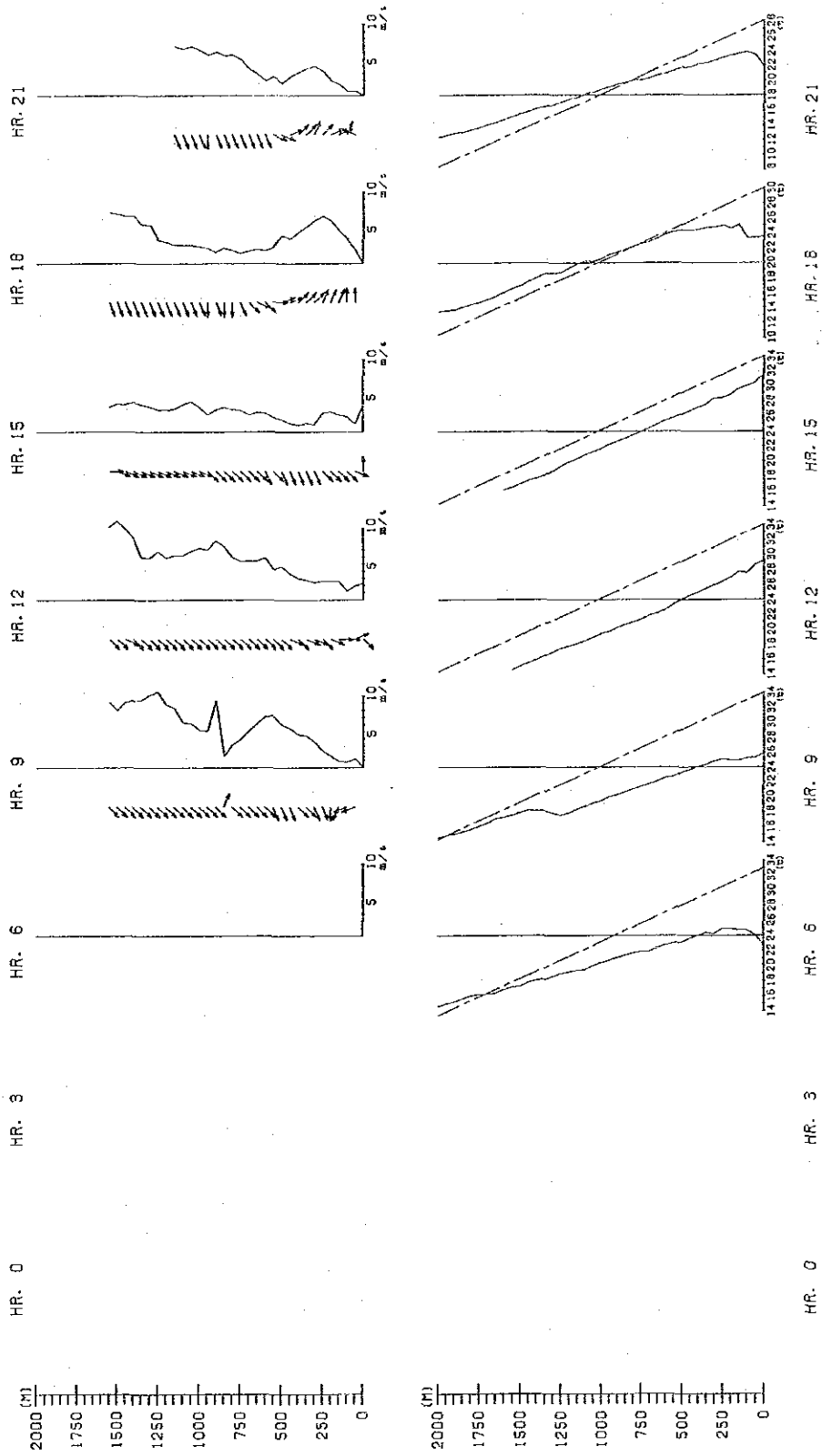
Date : 1992- 2-21



Upper Layer Meteorology

Point : U.P.M.

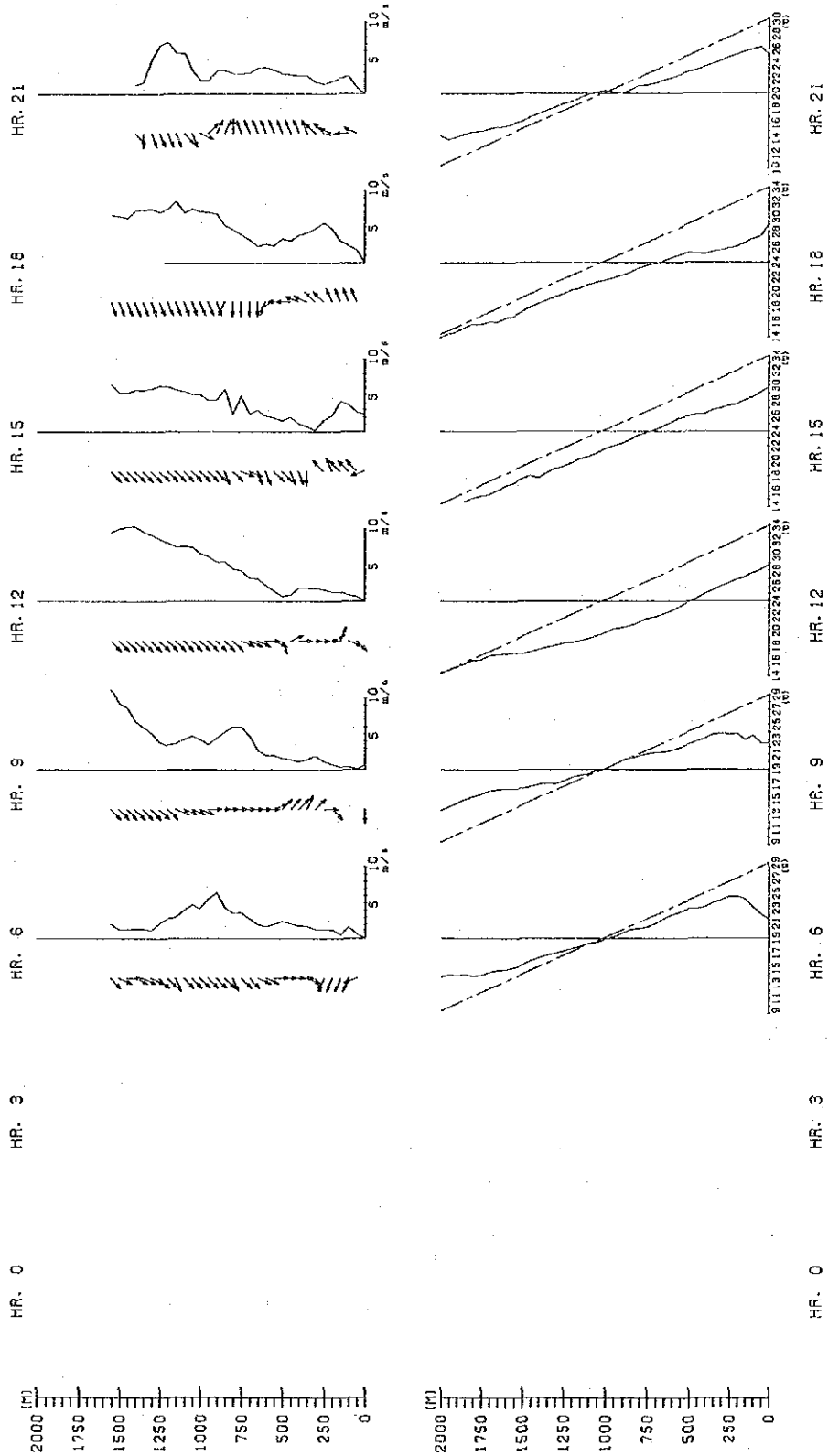
Date : 1992-2-22



Upper Layer Meteorology

Point : U. P. M.

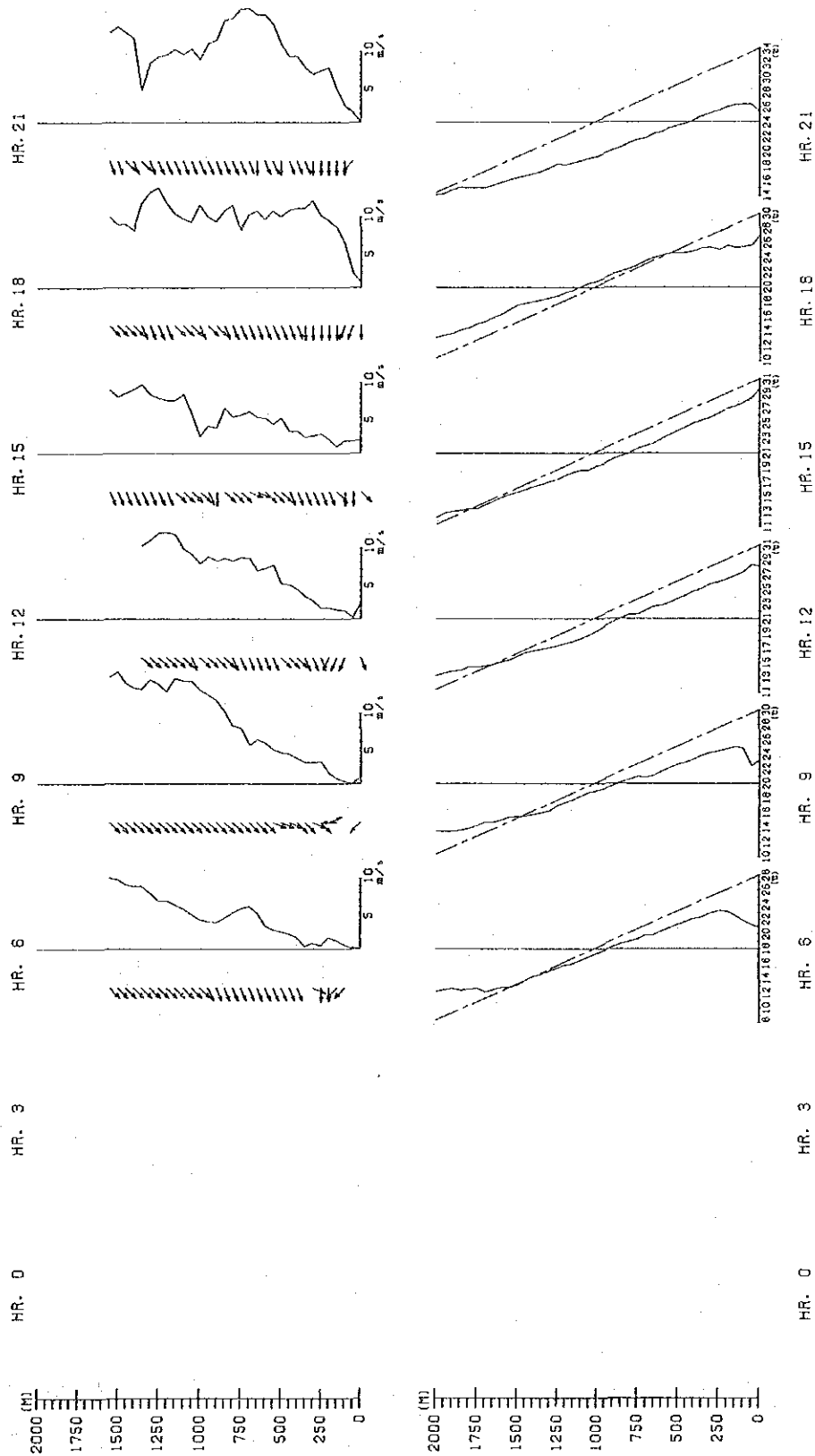
Date : 1992- 2-23



Upper Layer Meteorology

Point : U. P. M.

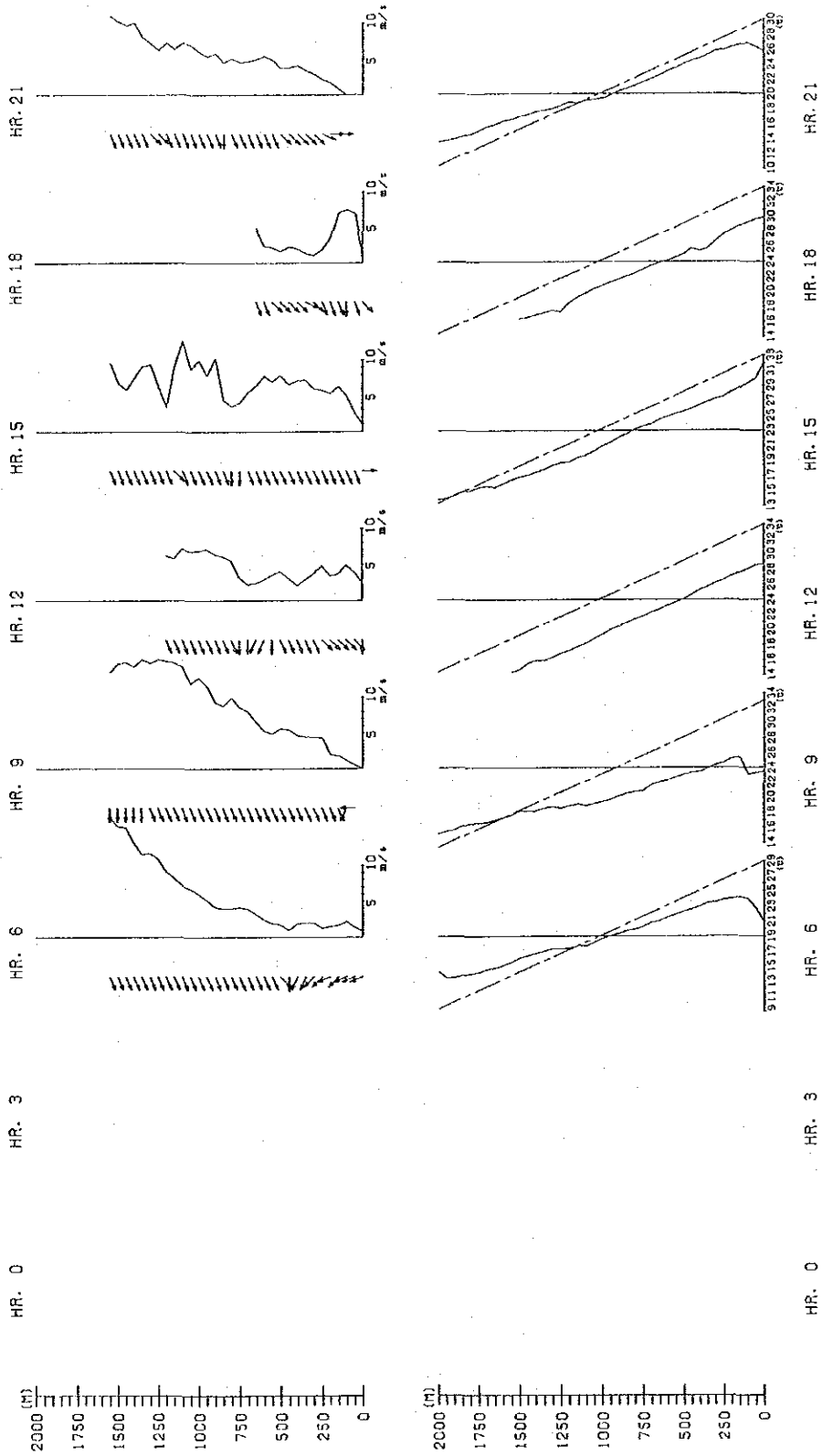
Date : 1992- 2-24



Upper Layer Meteorology

Point : U. P. M.

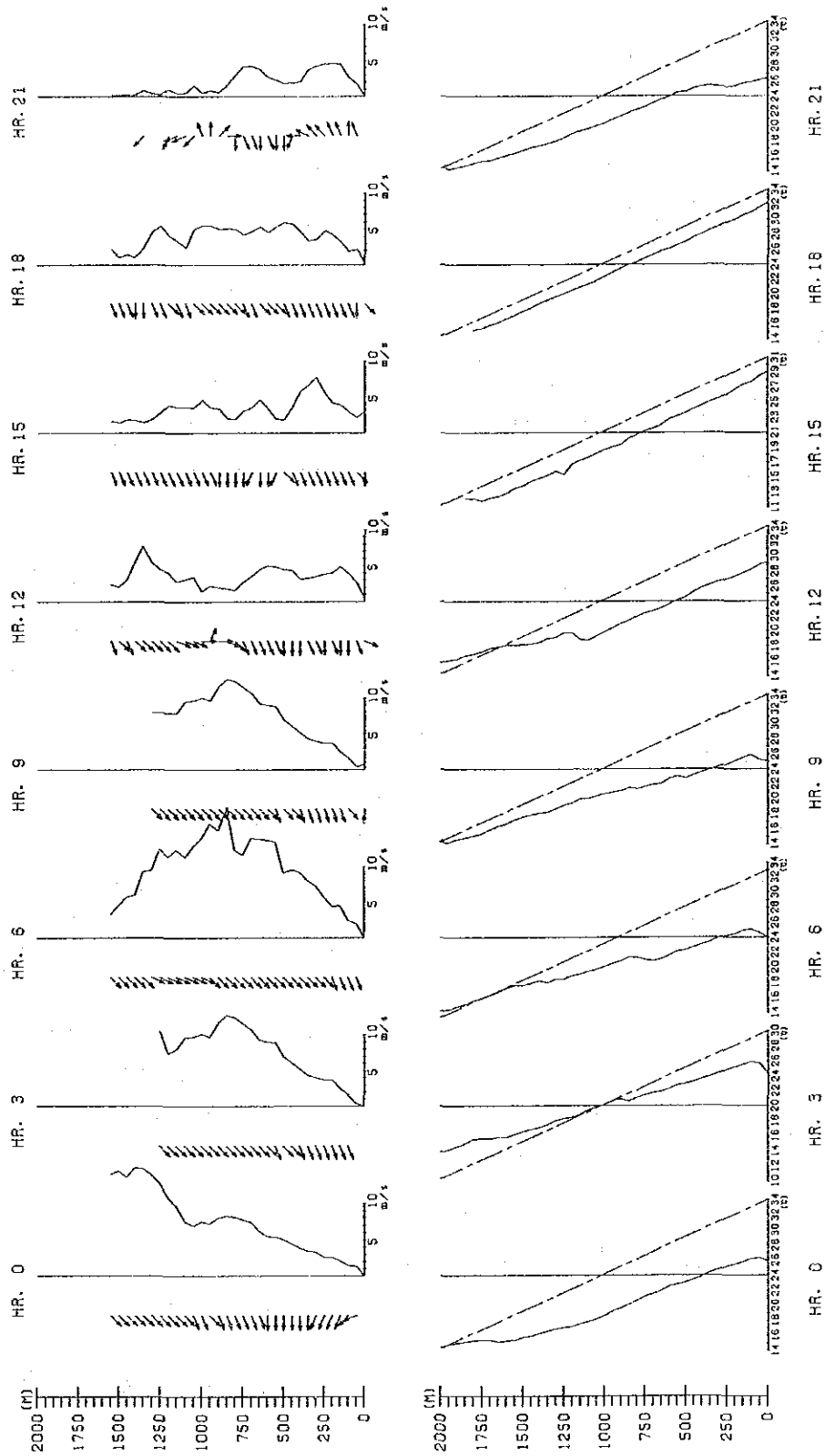
Date : 1992- 2-25



Upper Layer Meteorology

Point : U.F.M.

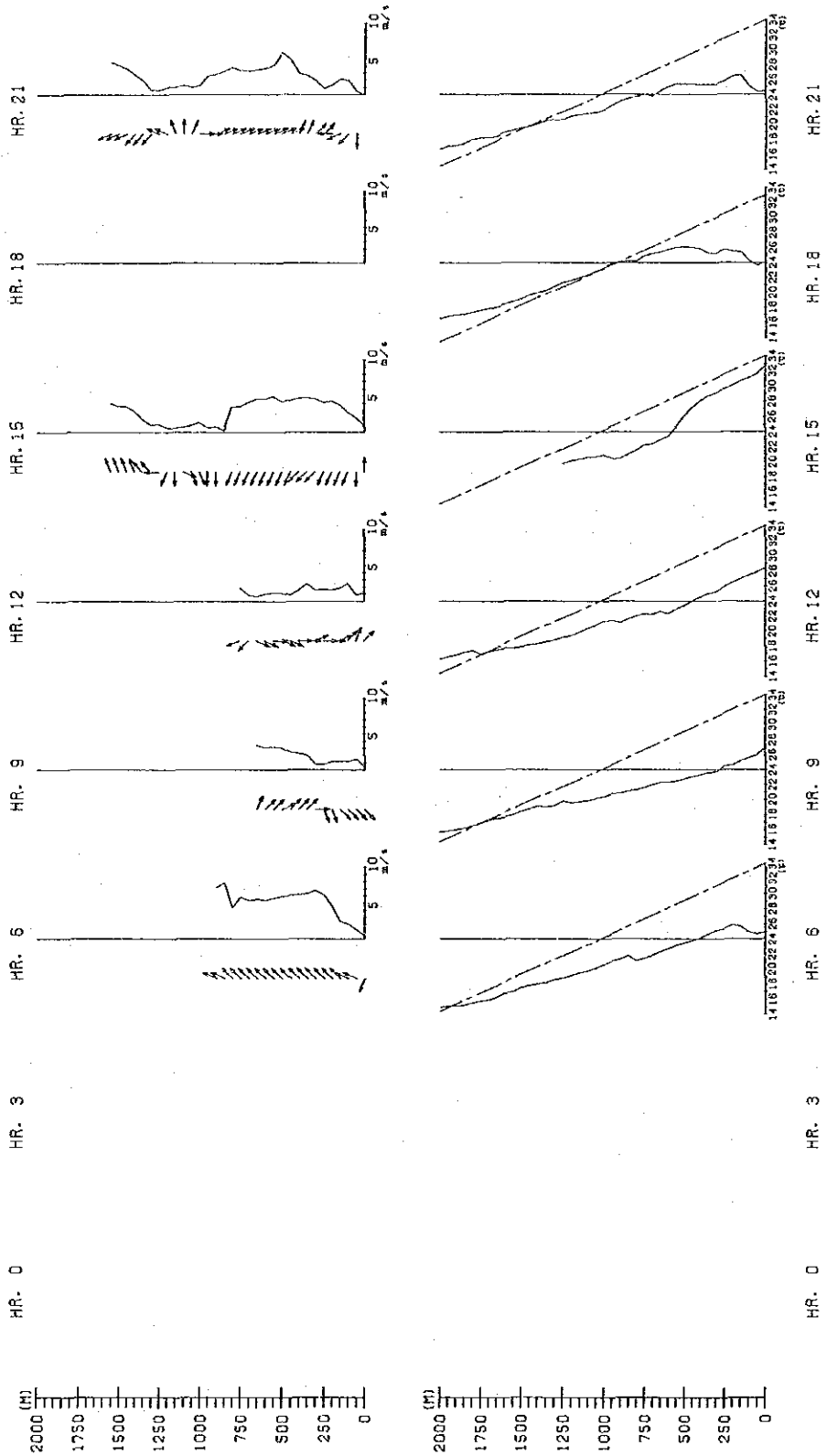
Date : 1992- 2-26



Upper Layer Meteorology

Point : U. P. M.

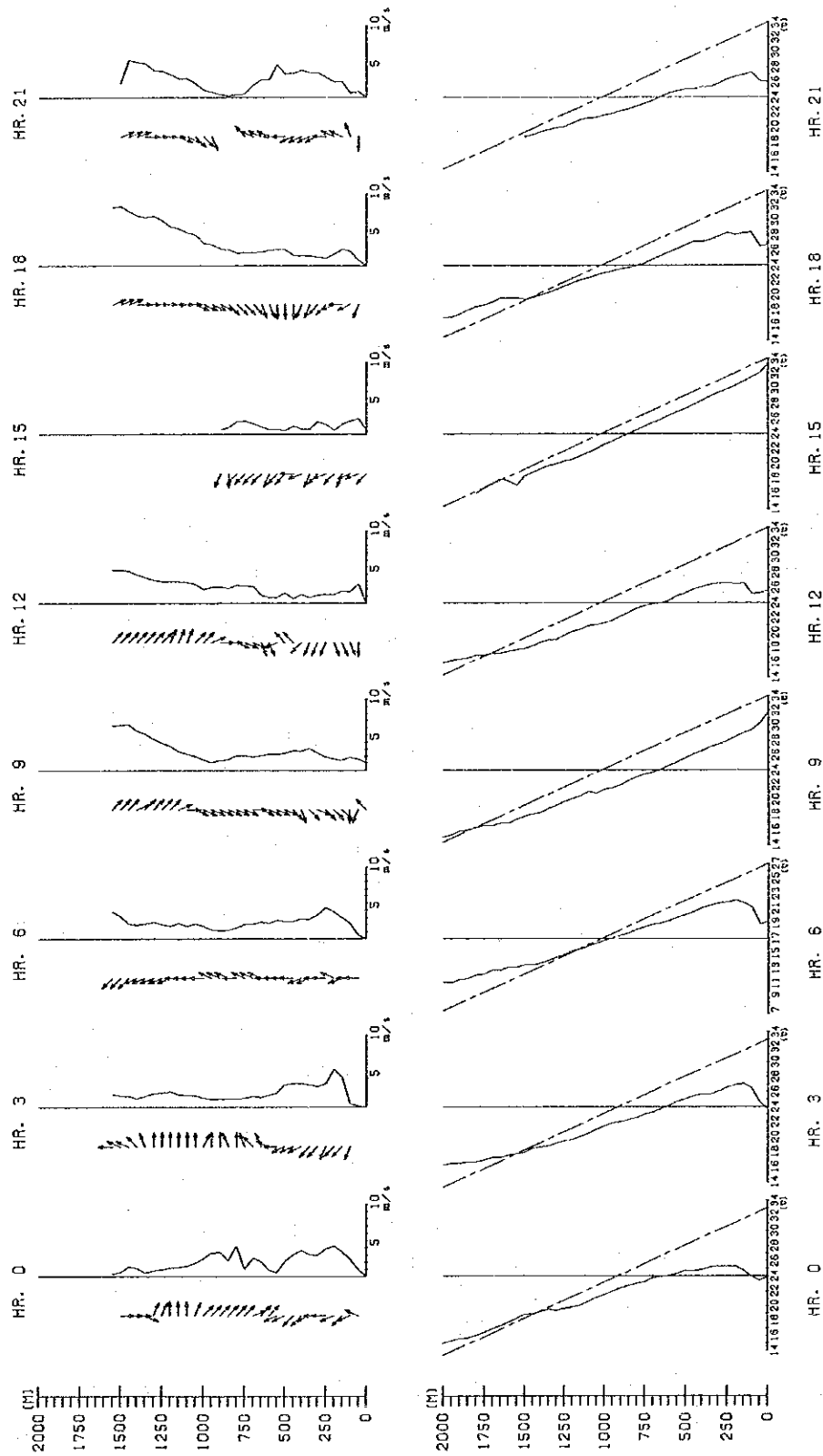
Date : 1992- 4-15



Upper Layer Meteorology

Date : 1992-4-16

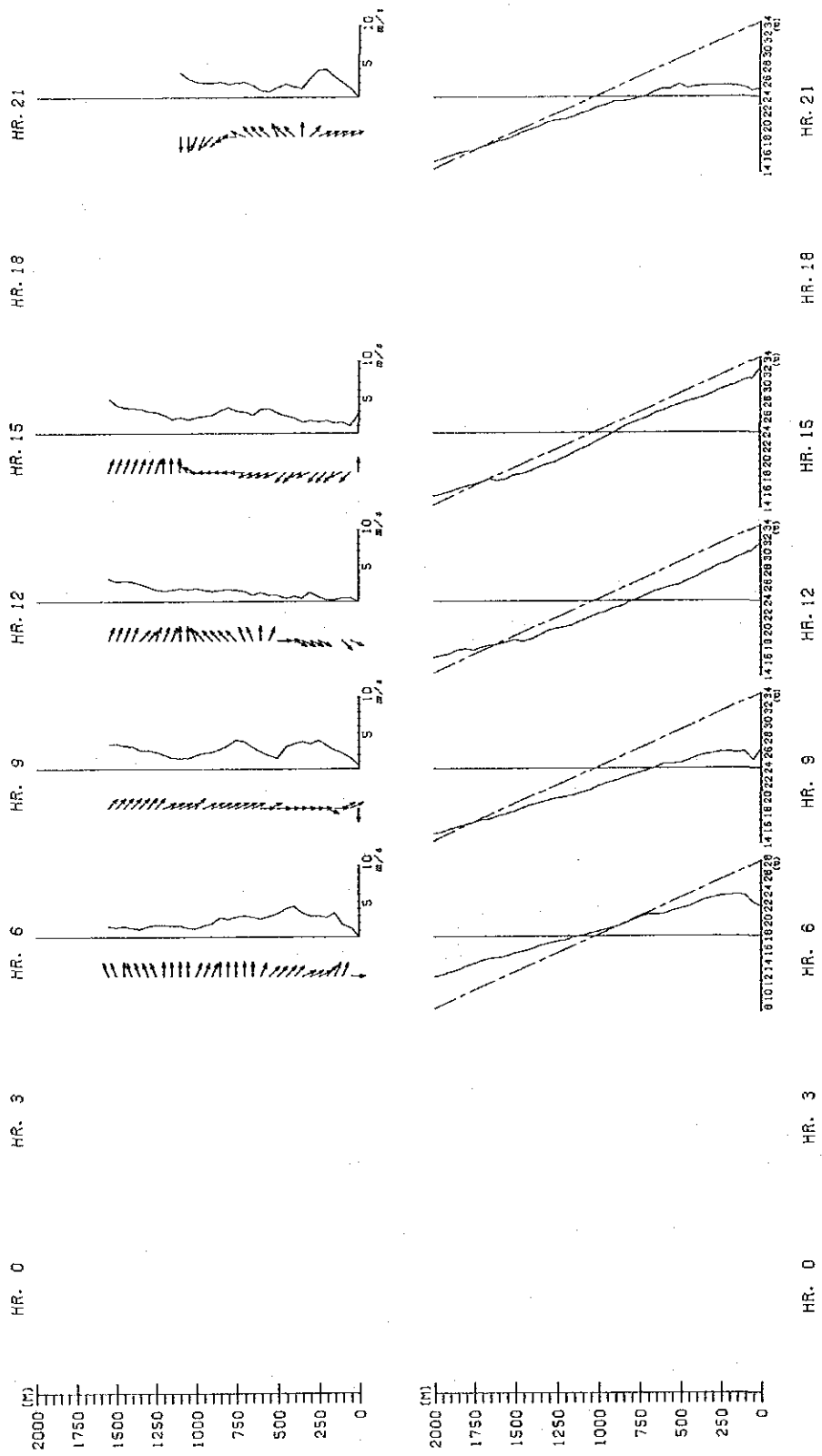
Point : U.P.M.



Upper Layer Meteorology

Point : U. P. M.

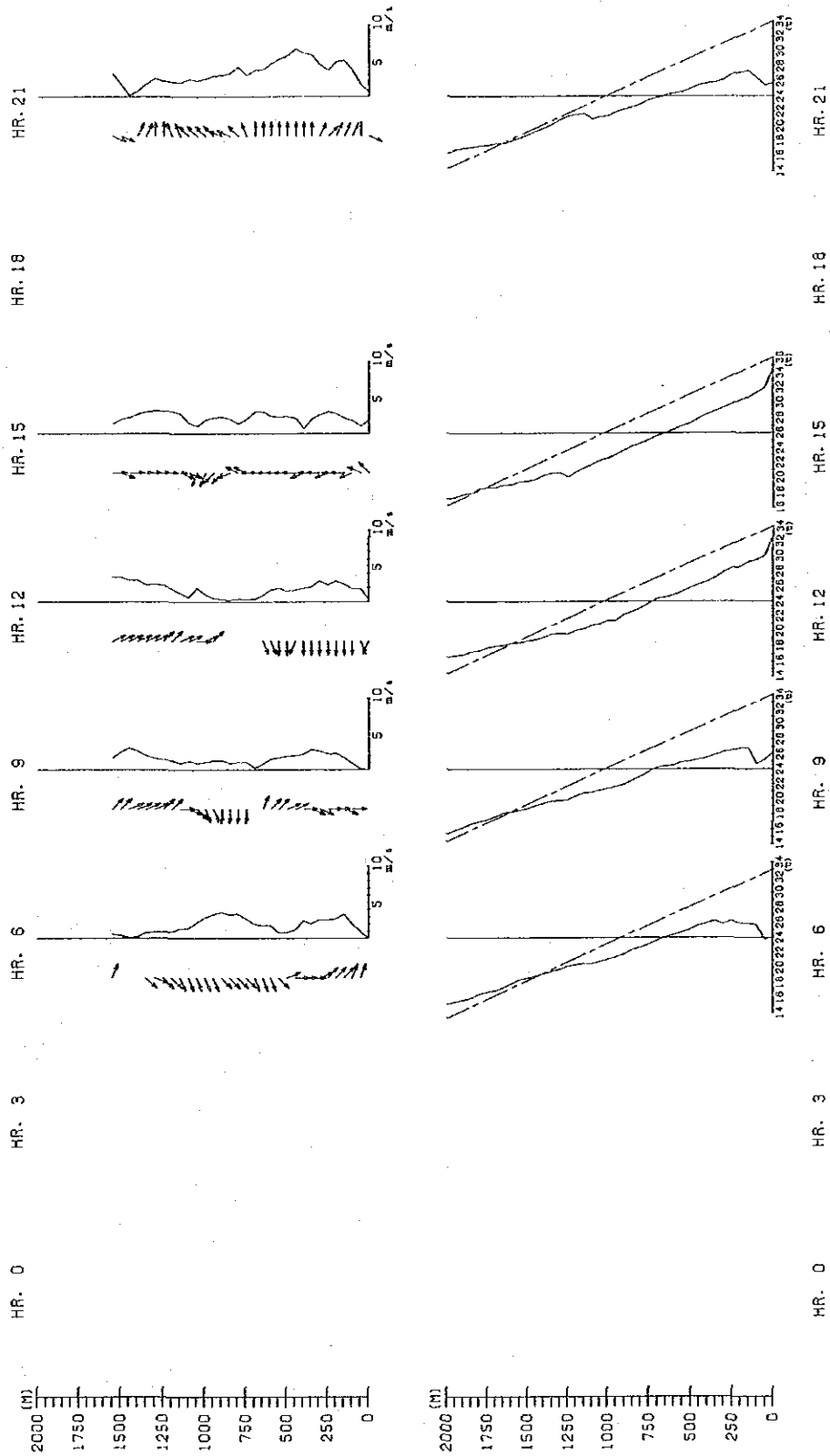
Date : 1992- 4-17



Upper Layer Meteorology

Point : U. P. M.

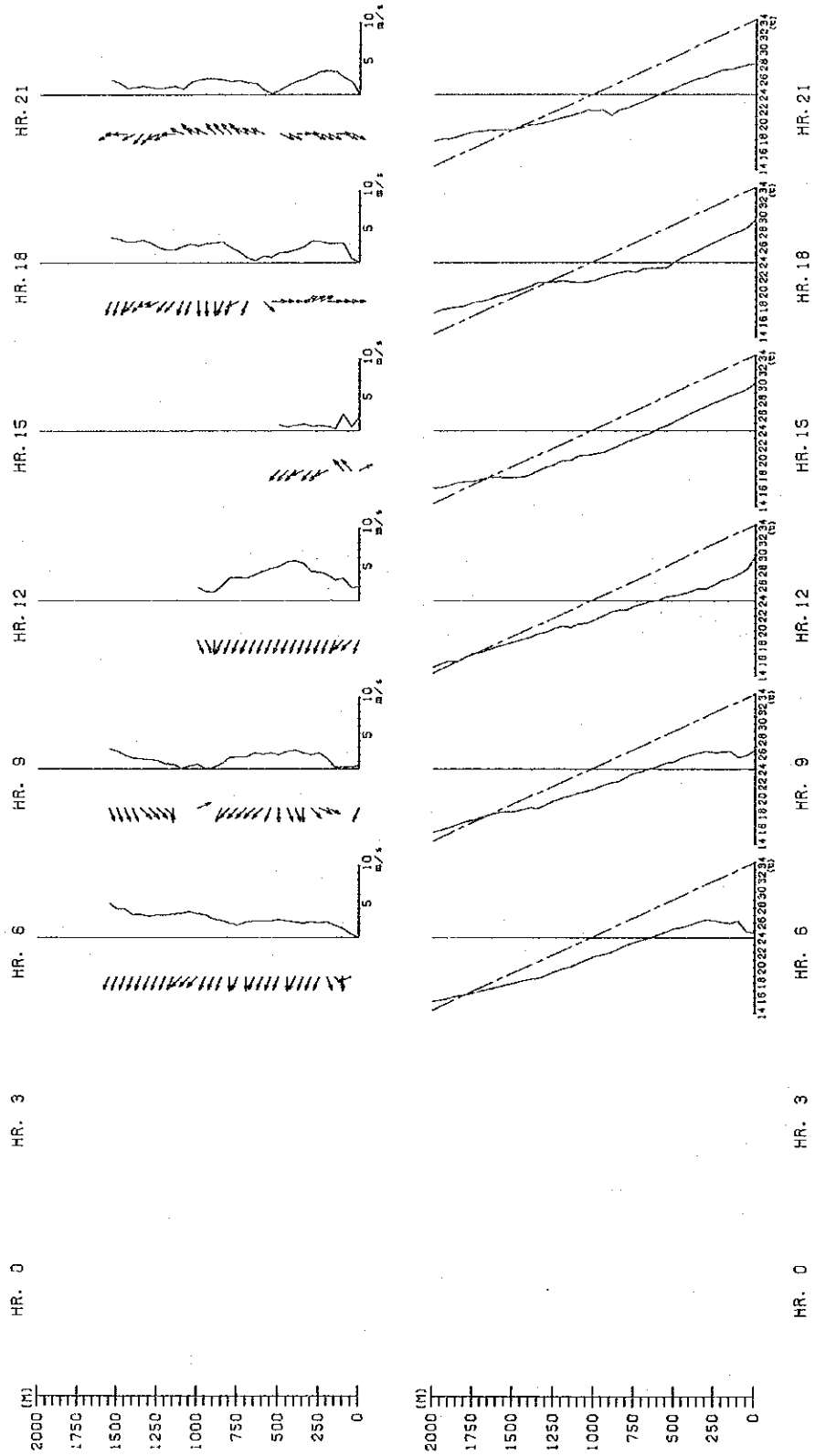
Date : 1992-4-18



Upper Layer Meteorology

Point : U. P. M.

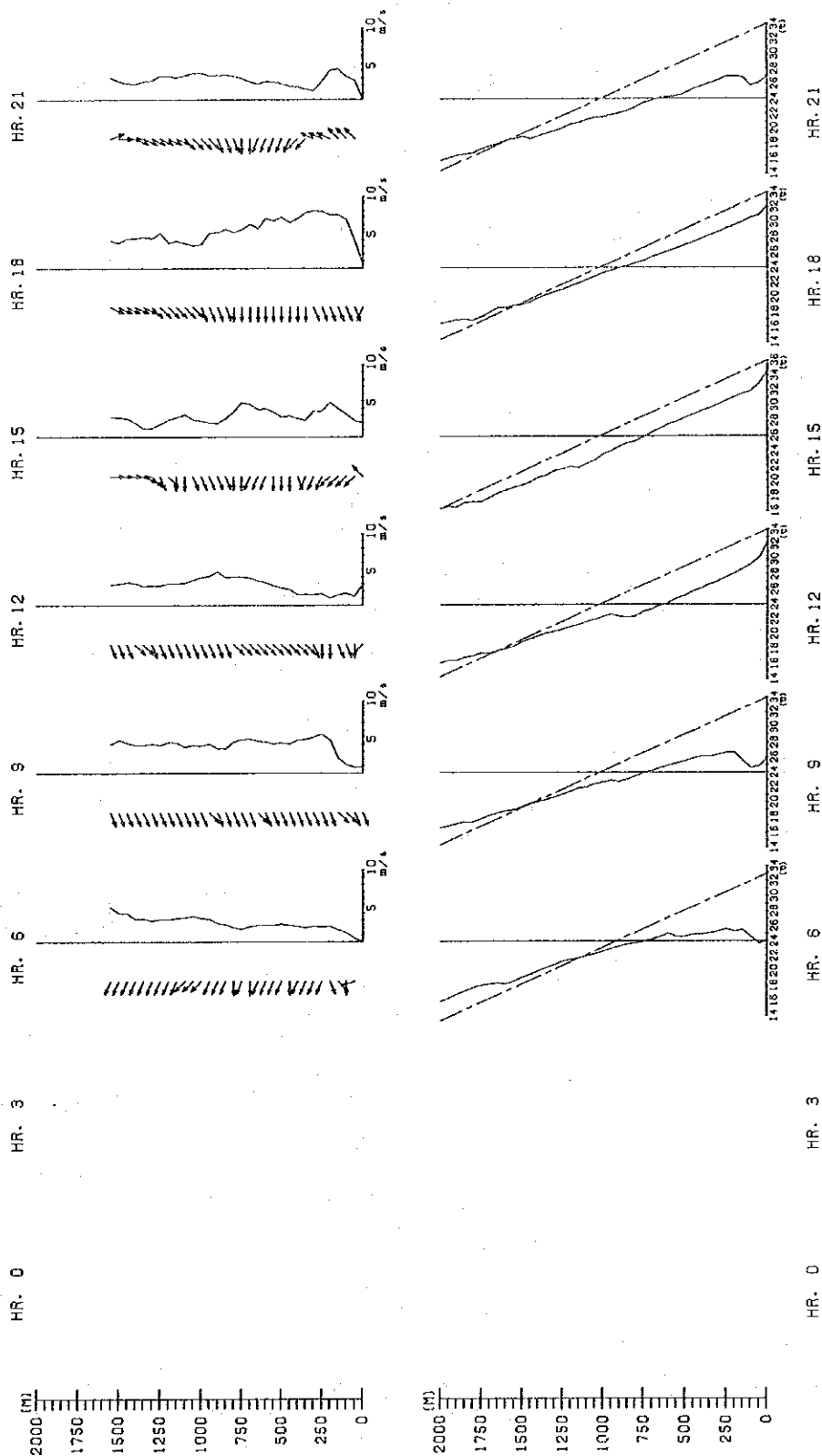
Date : 1992-4-19



Upper Layer Meteorology

Point : U. P. M.

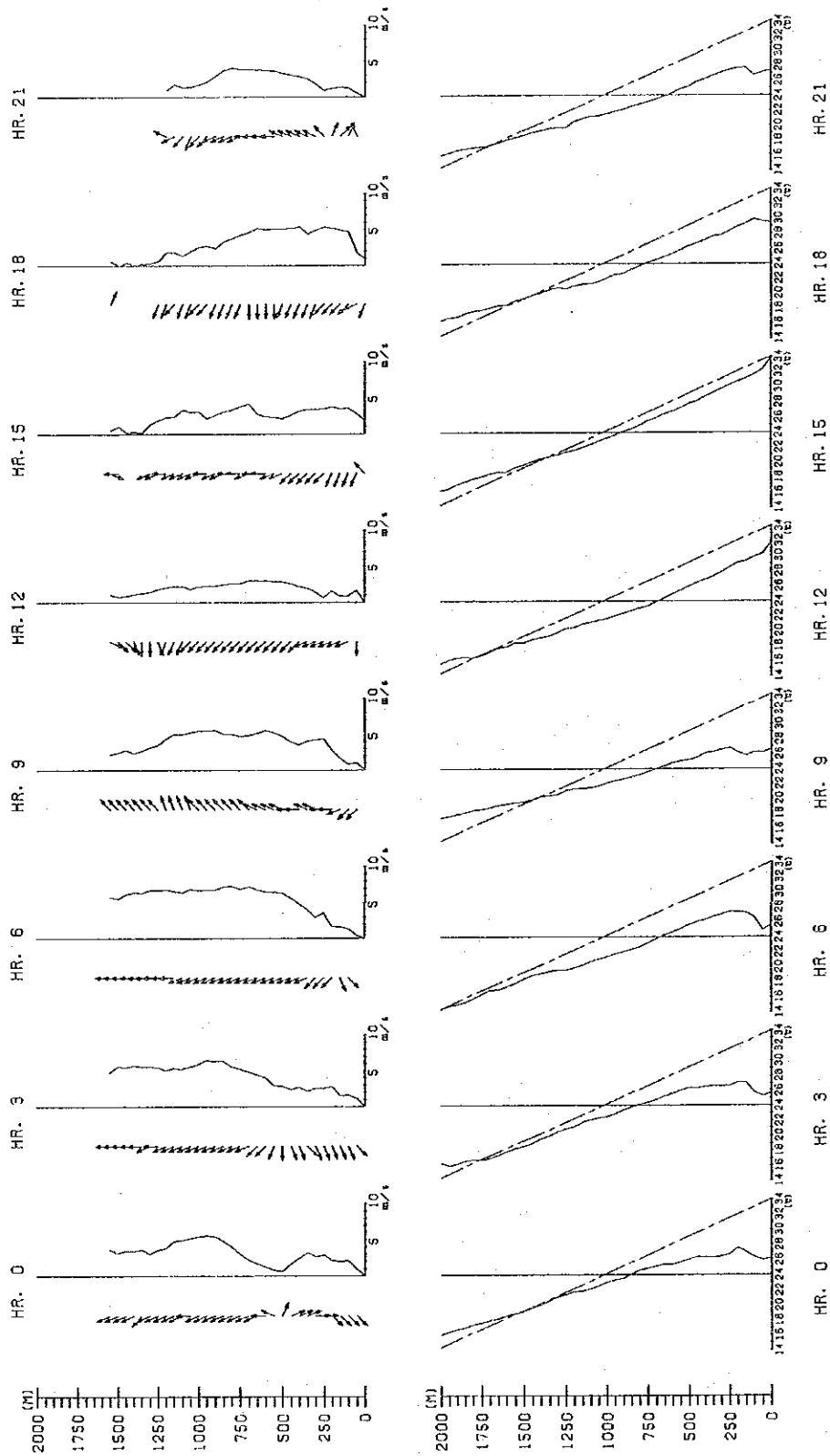
Date : 1992- 4-20



Upper Layer Meteorology

Point : U. P. M.

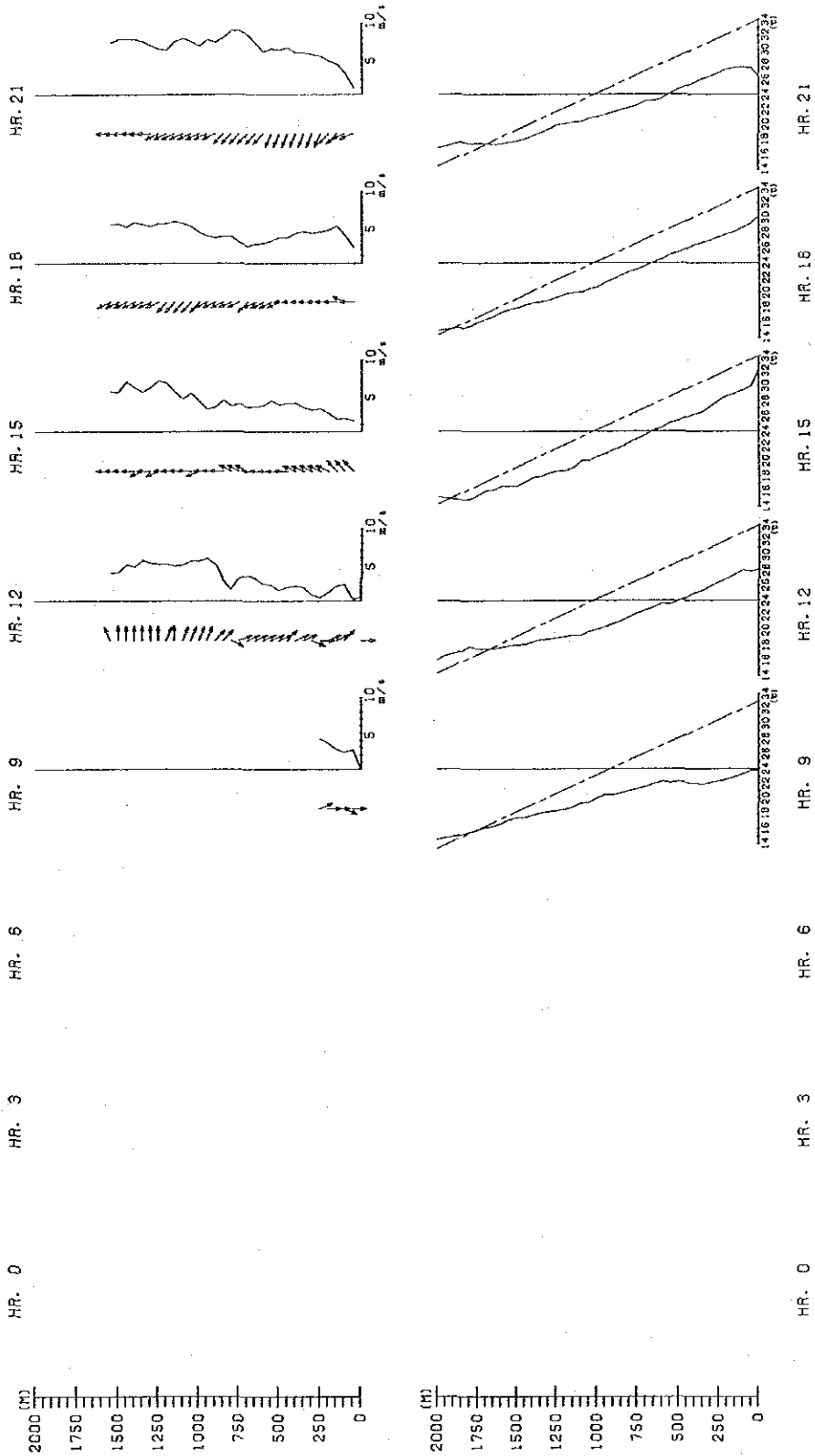
Date : 1992- 4-21



Upper Layer Meteorology

Point : U. P. M.

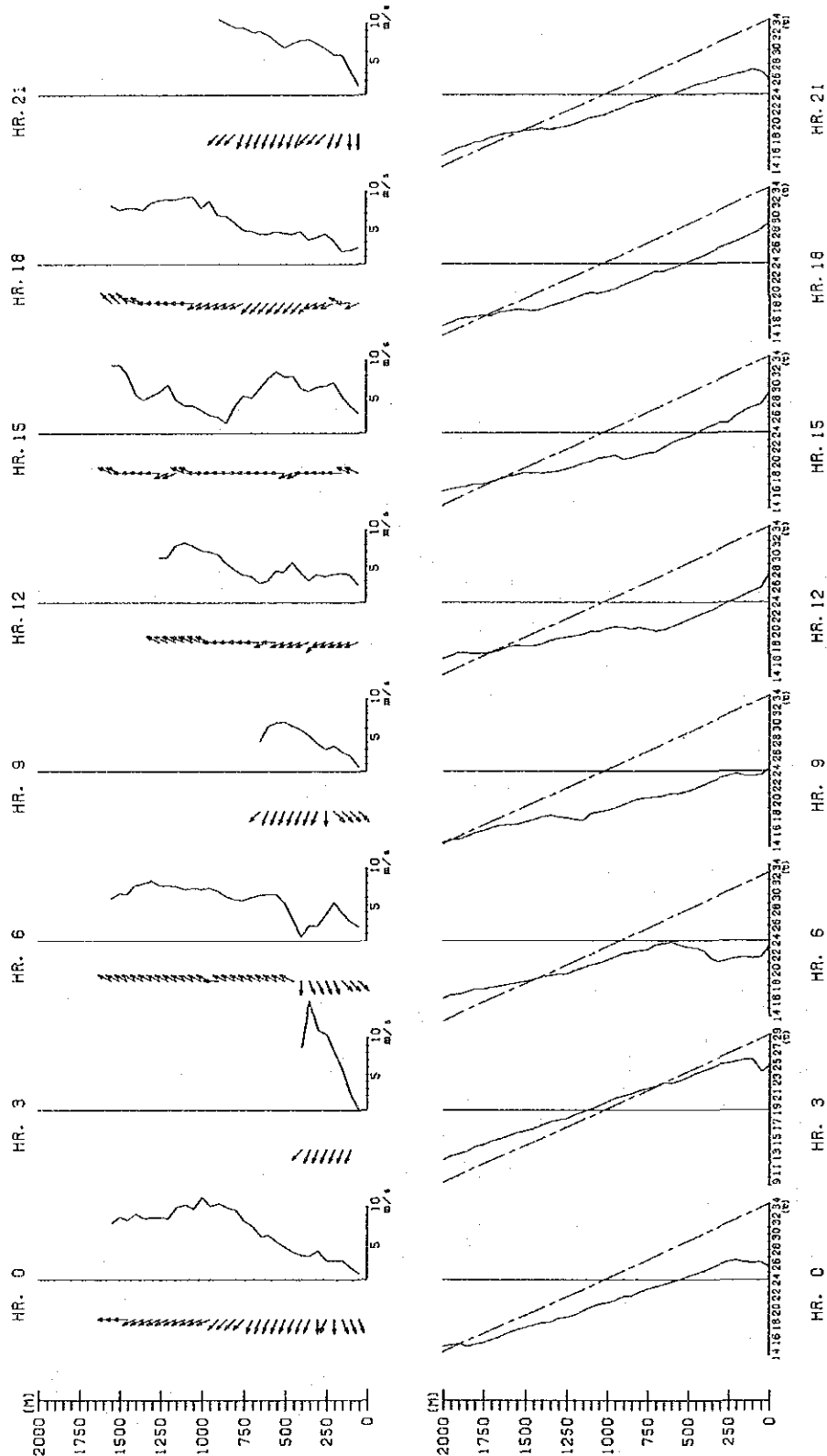
Date : 1992- 7-29



Upper Layer Meteorology

Point : U. P. M.

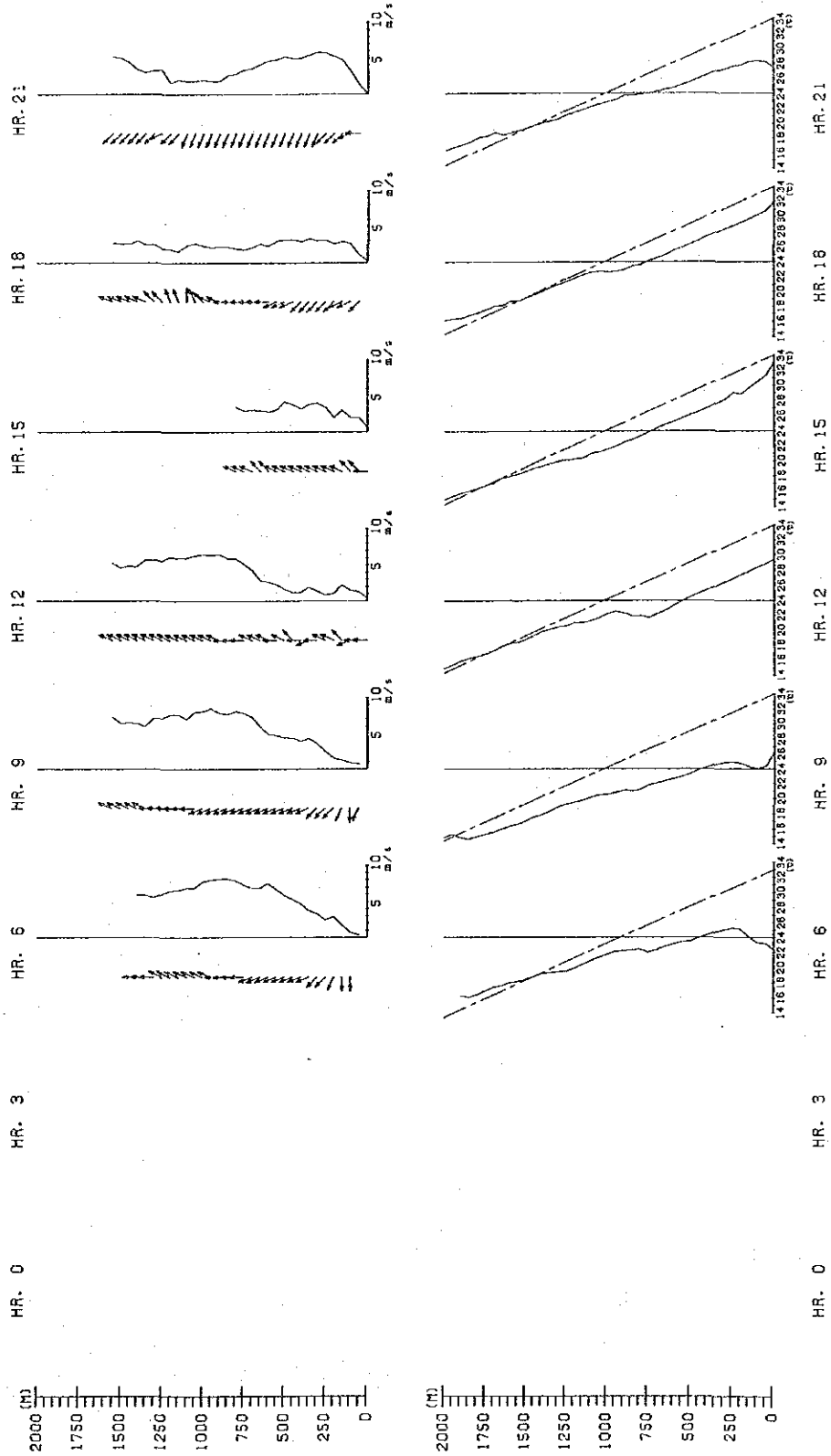
Date : 1992- 7-30



Upper Layer Meteorology

Point : U.P.M.

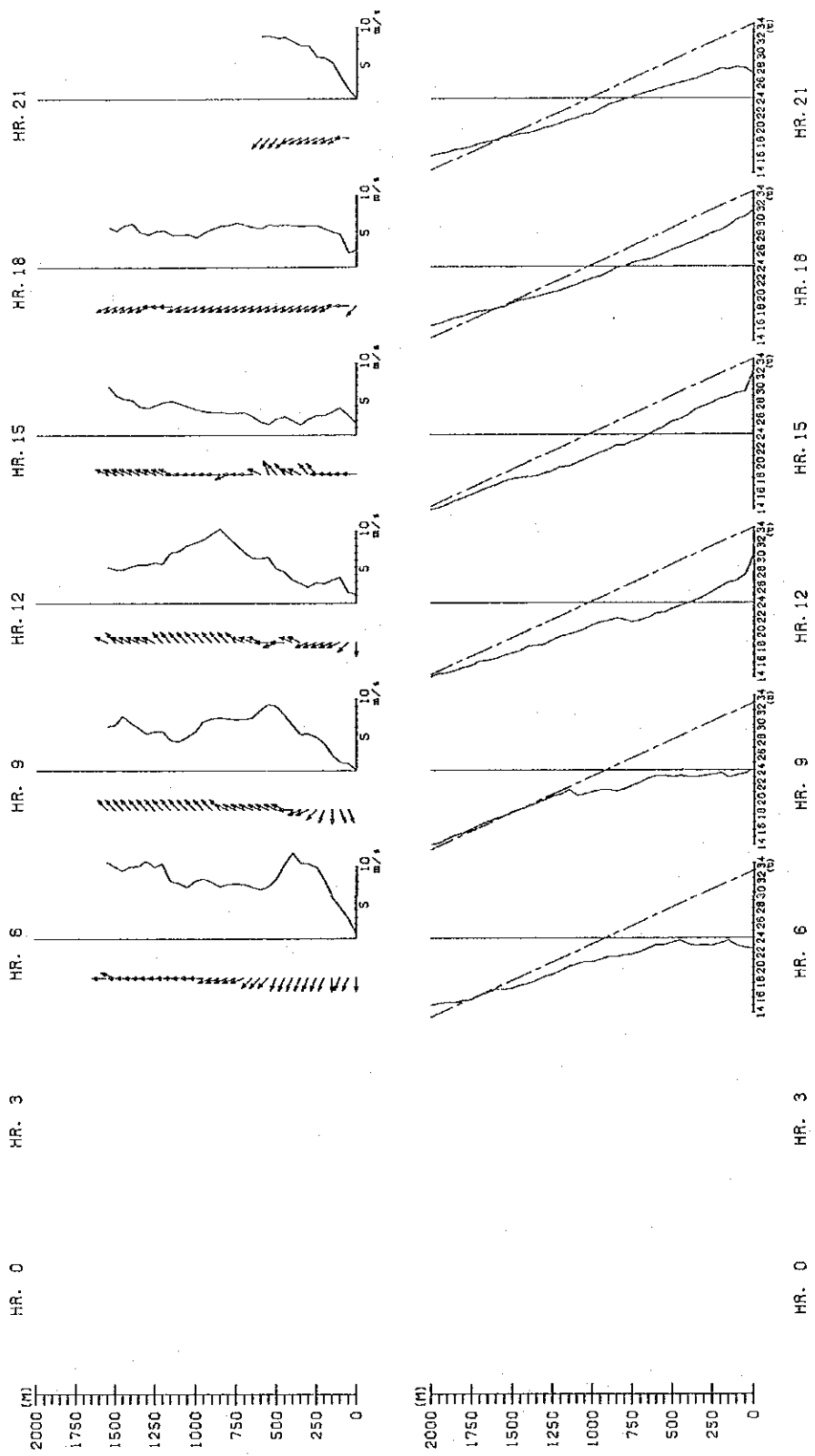
Date : 1992-7-31



Upper Layer Meteorology

Point : U.P.M.

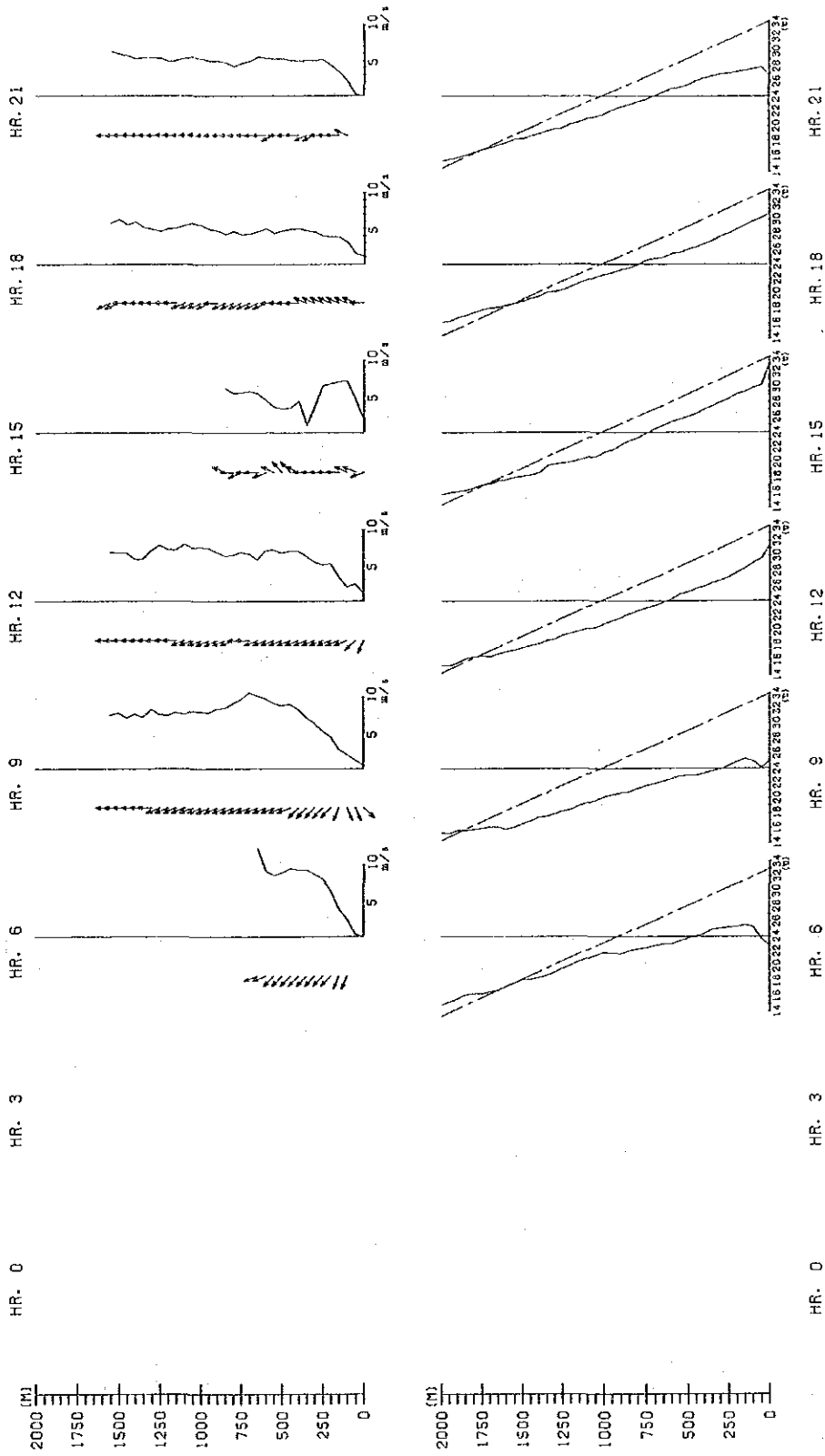
Date : 1992-8-1



Upper Layer Meteorology

Point : U. P. M.

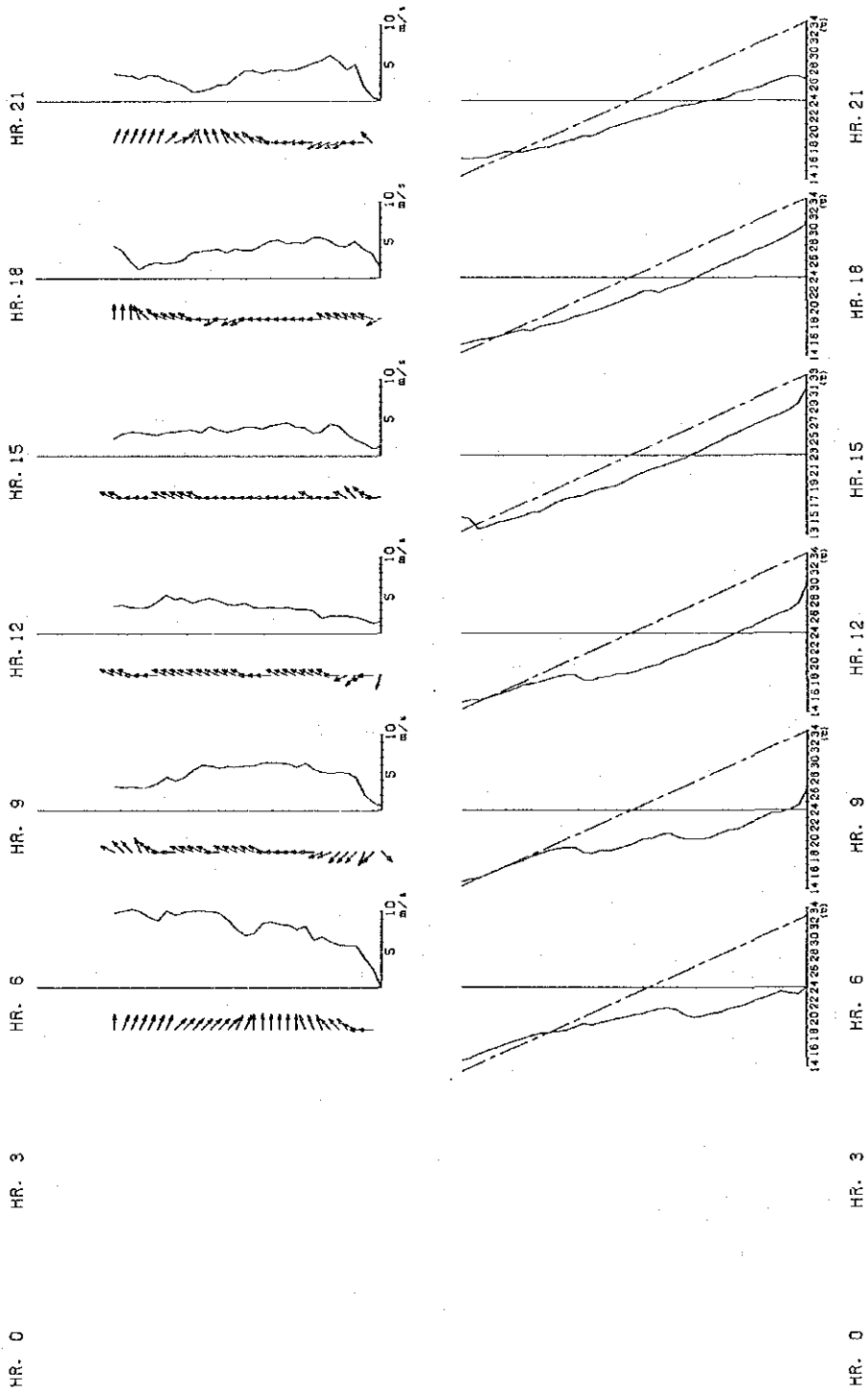
Date : 1992-8-2



Upper Layer Meteorology

Point : U. P. M.

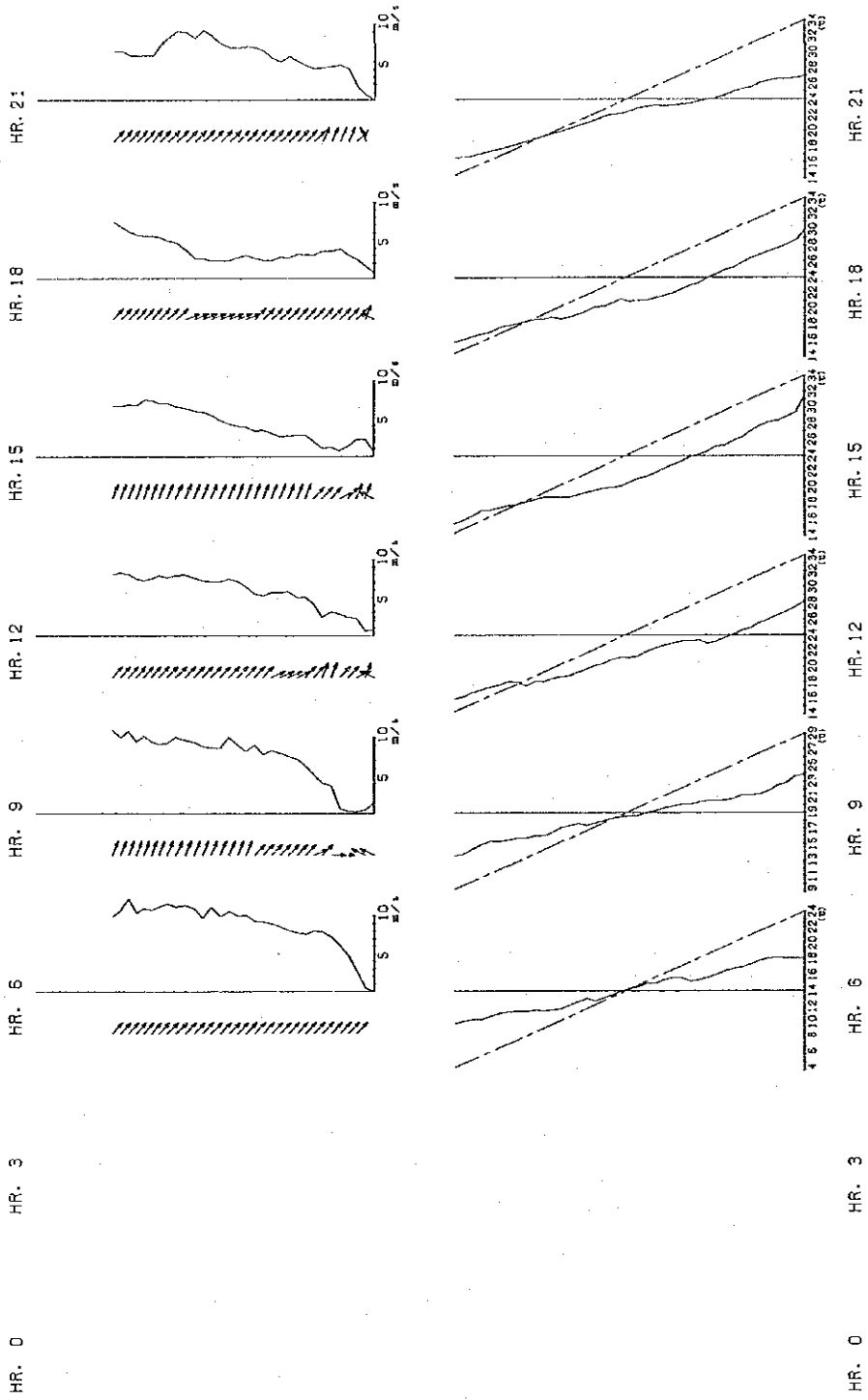
Date : 1992- 8- 3



Upper Layer Meteorology

Point : U. P. M.

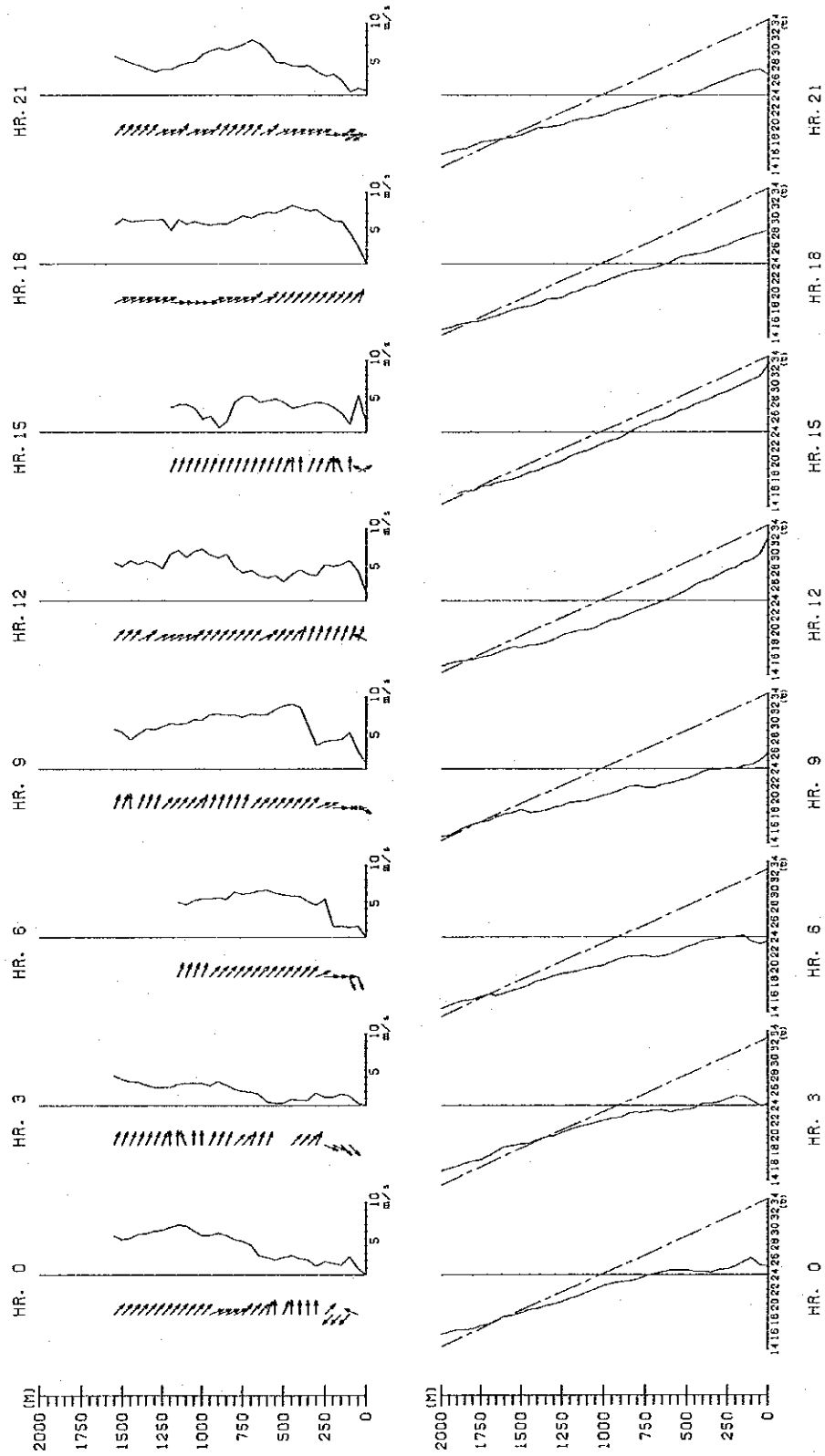
Date : 1992-10-21



Upper Layer Meteorology

Point : U.P.M.

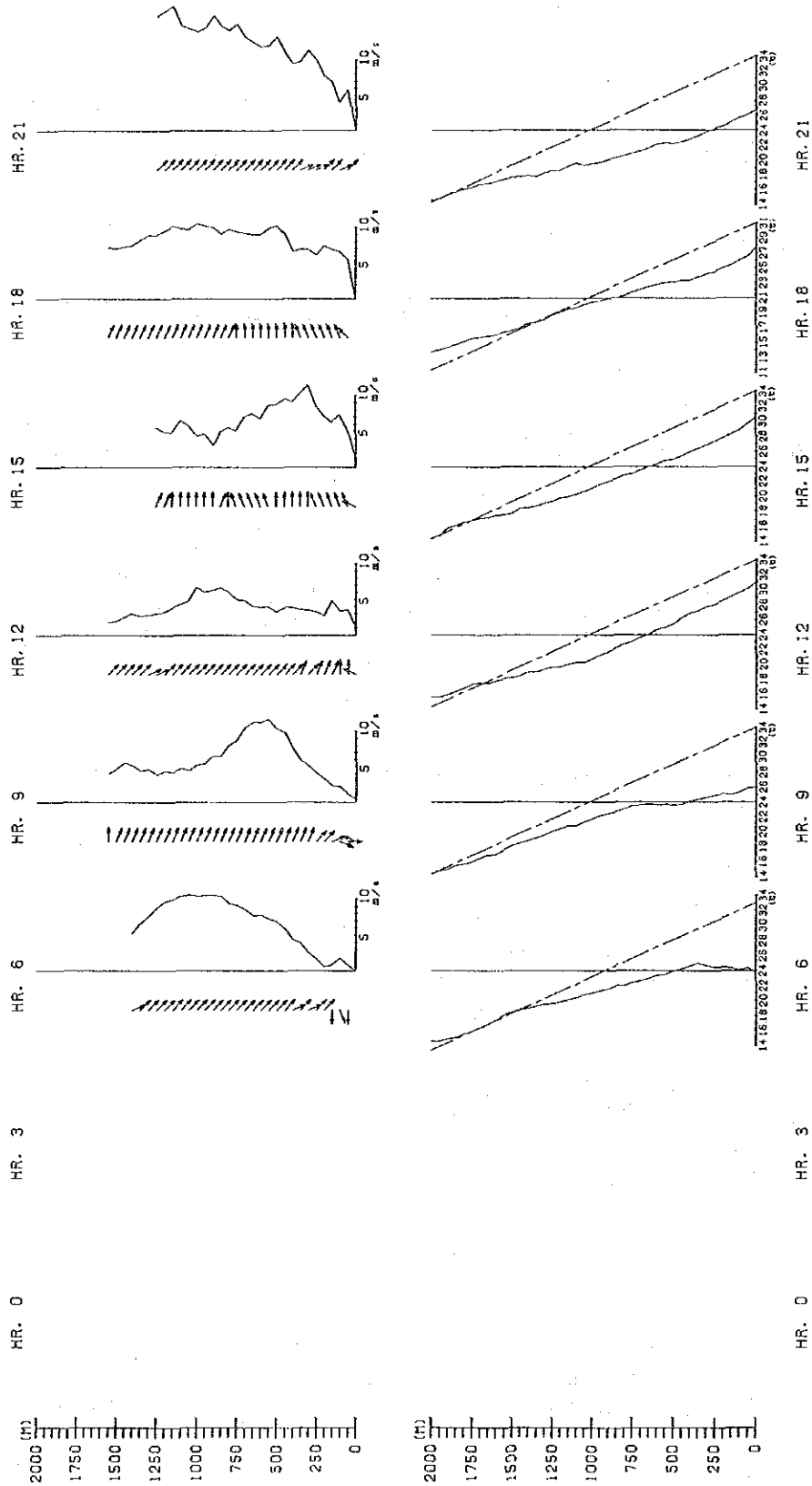
Date : 1992-10-22



Upper Layer Meteorology

Point : U.P.M.

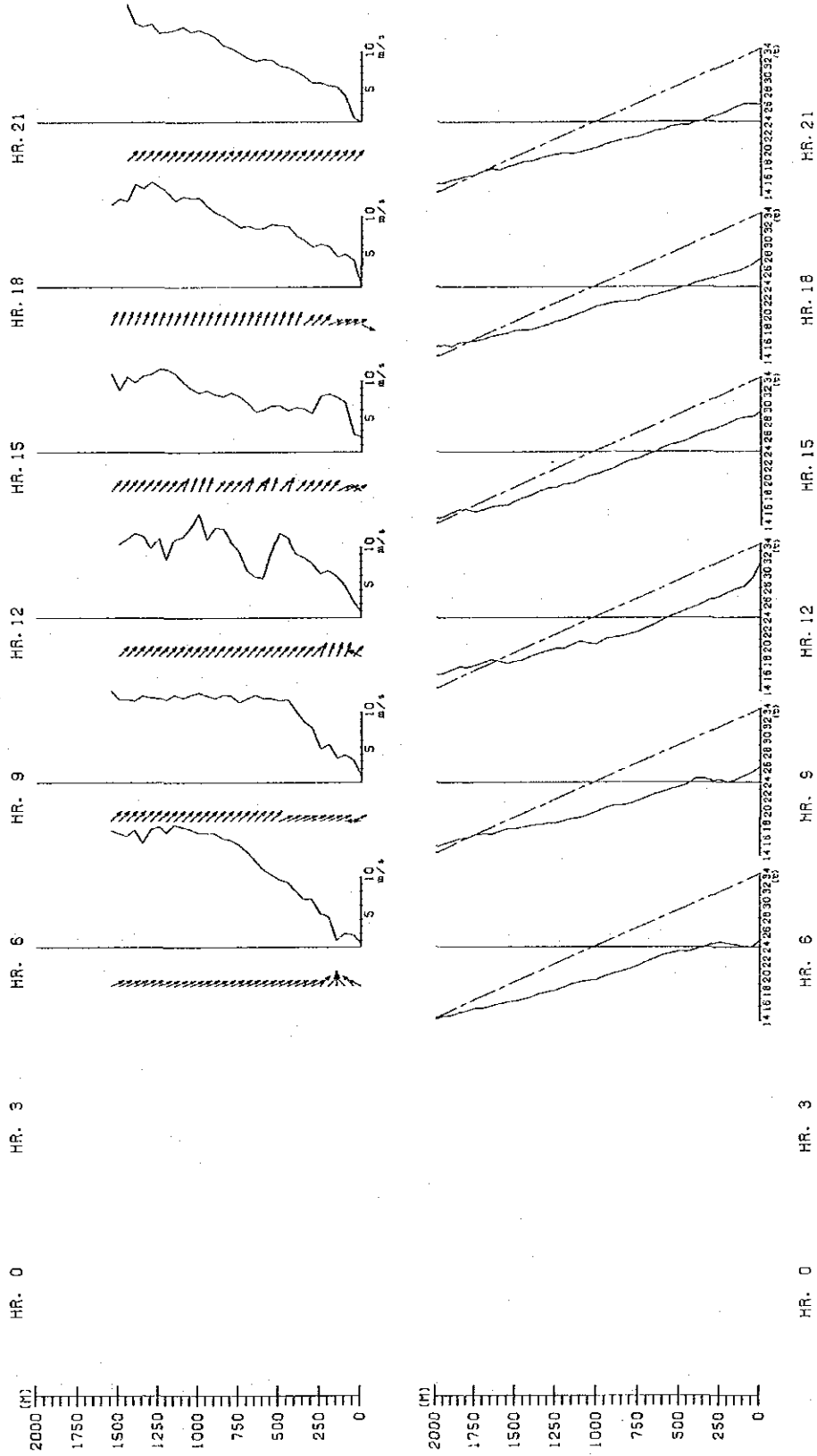
Date : 1992-10-23



Upper Layer Meteorology

Point : U. P. M.

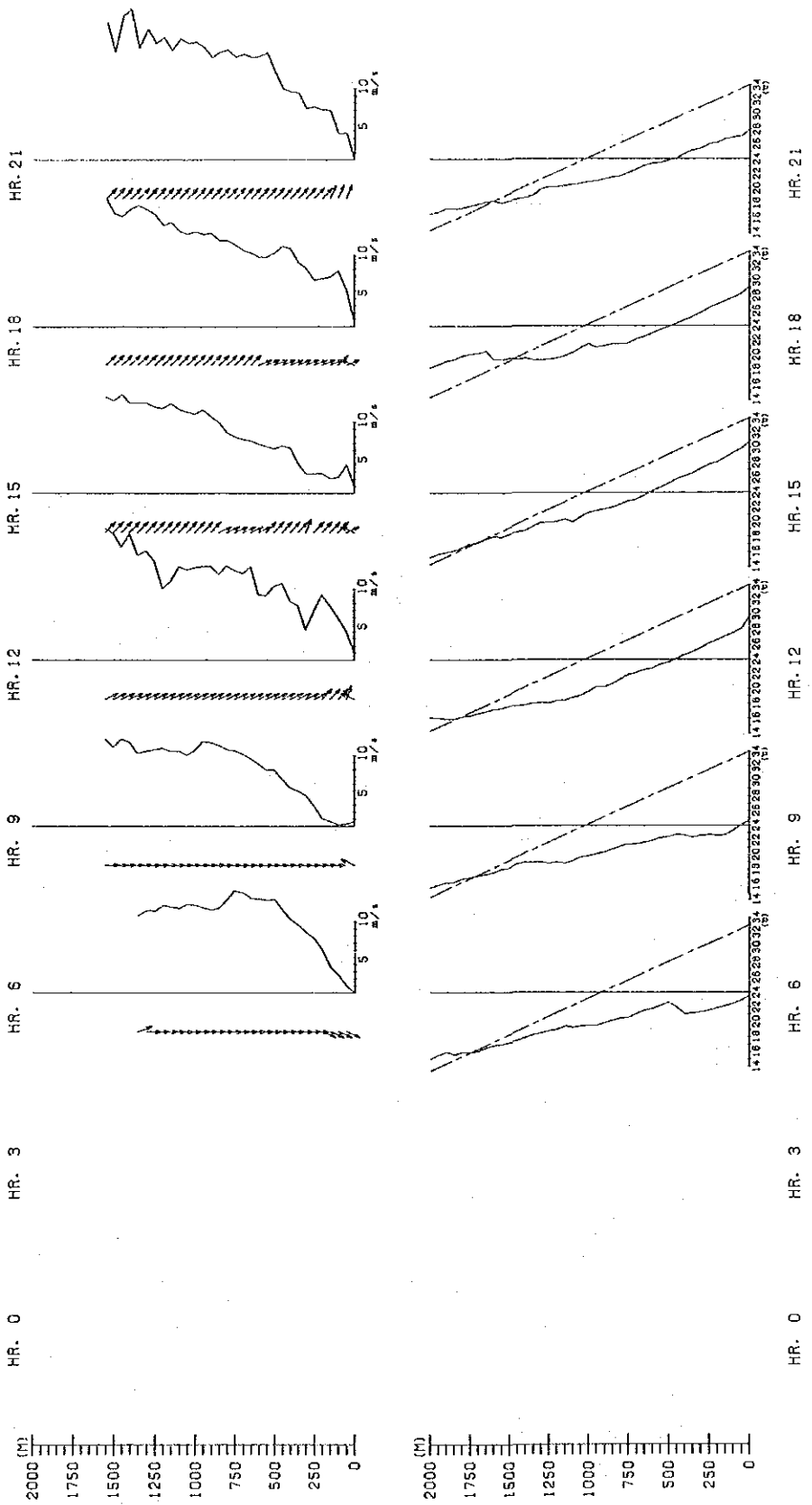
Date : 1992-10-24



Upper Layer Meteorology

Point : U.P.M.

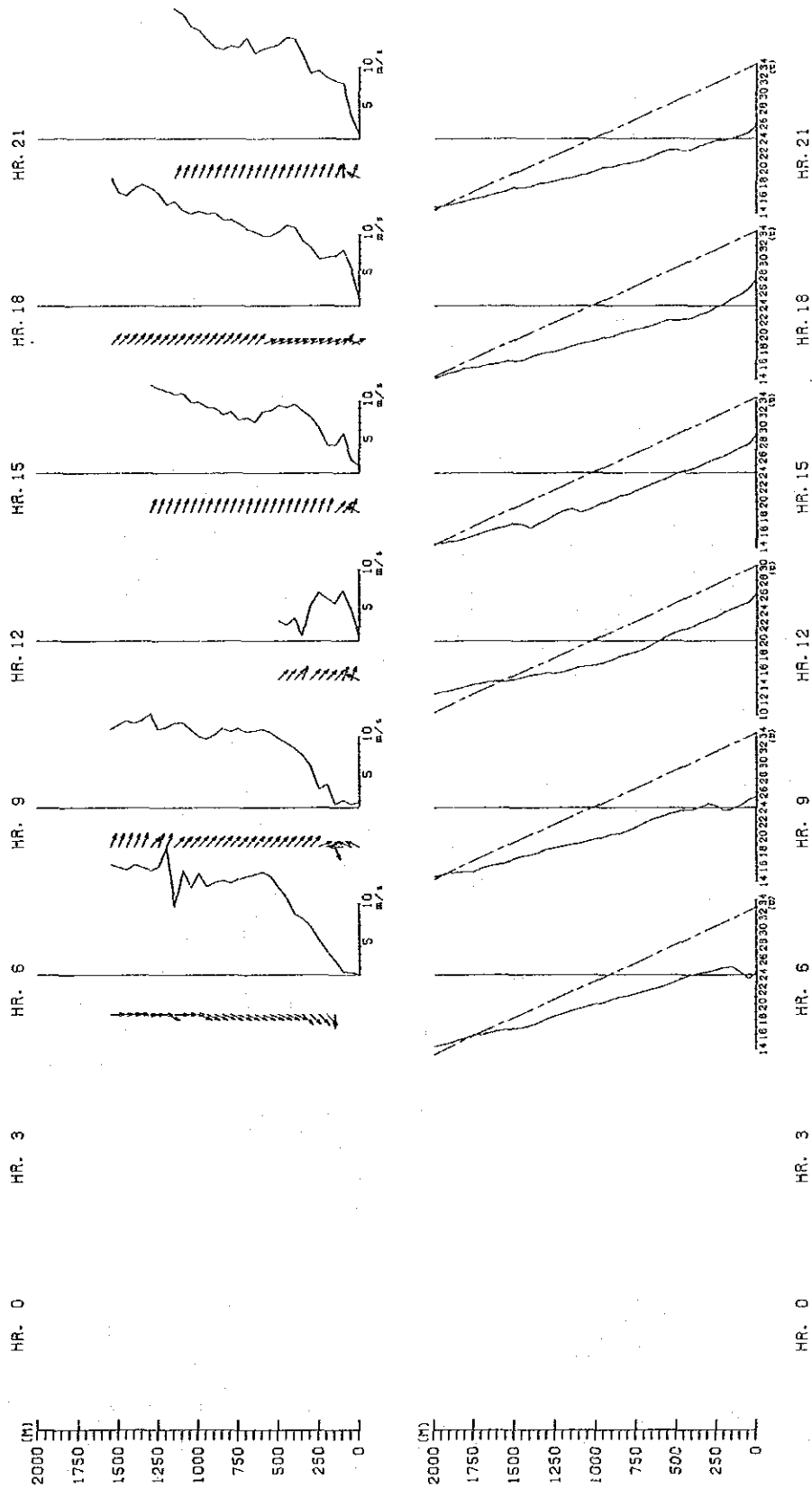
Date : 1992-10-25



Upper Layer Meteorology

Point : U. P. M.

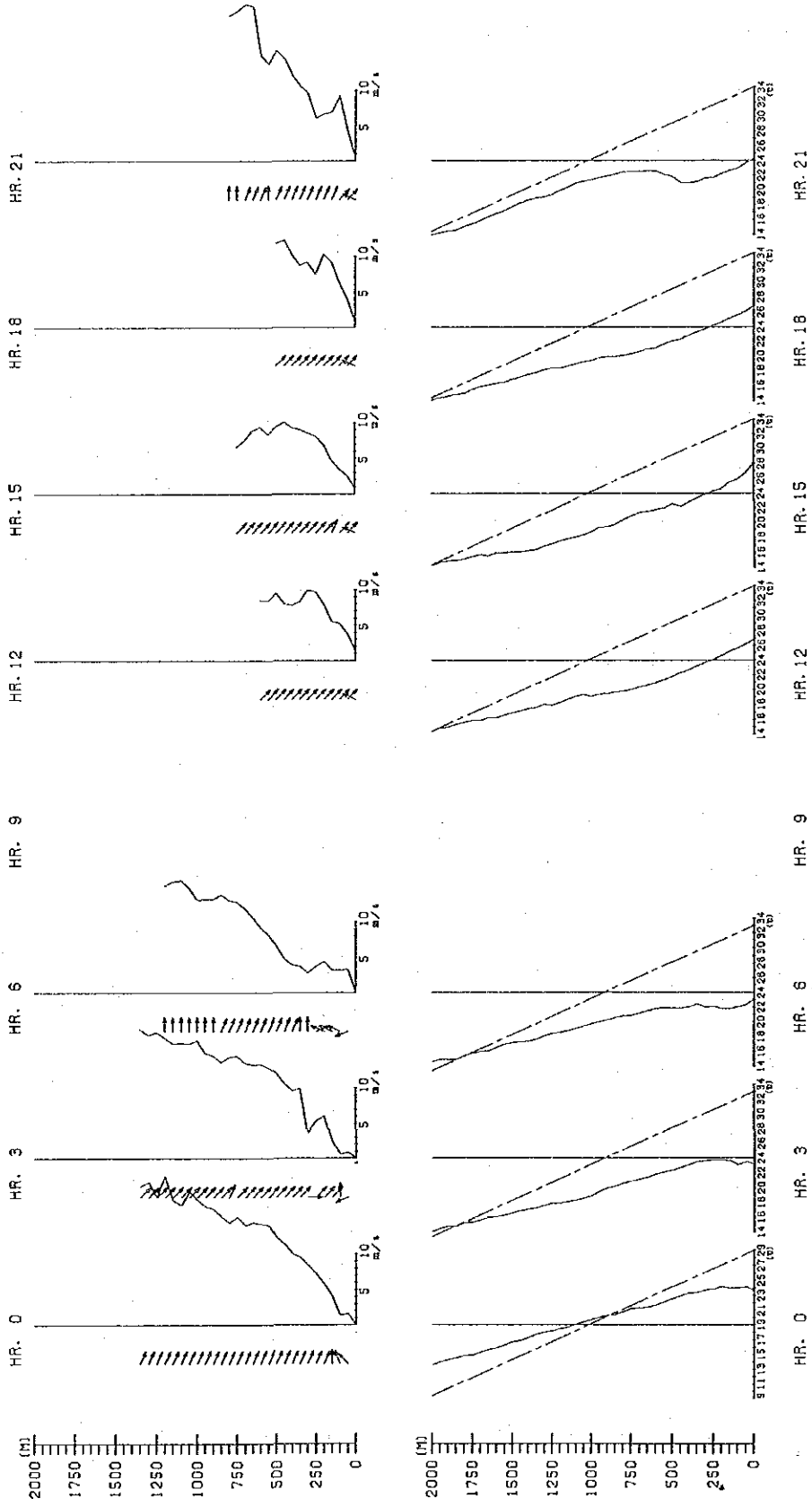
Date : 1992-10-26



Upper Layer Meteorology

Point : U.P.M.

Date : 1992-10-27



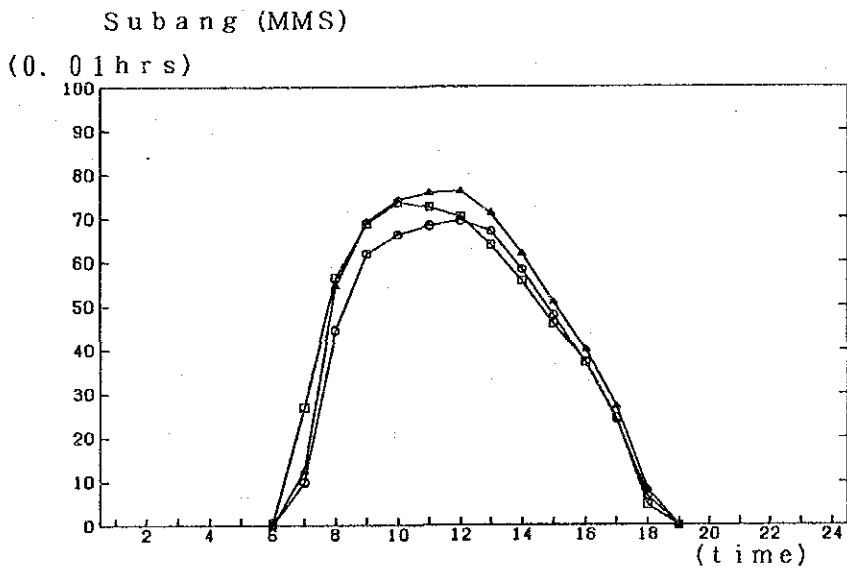
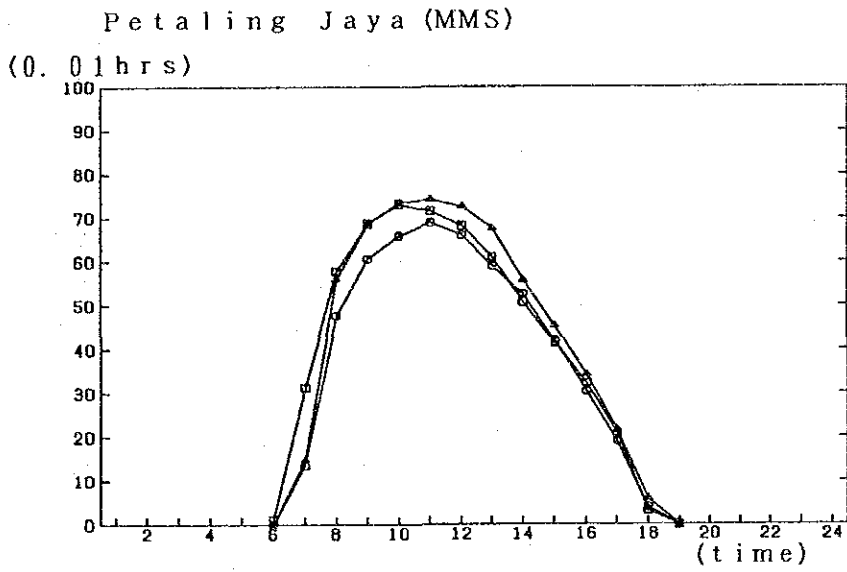
1.3 Analysis of Other Related Data

1.3.1 Diurnal Change of Sunshine Duration

Diurnal Change (Sunshine Duration)

Year: 1980~1992

□ 1981~1990
○ 1991
△ 1992



1.3.2 Monthly Change of Sunshine Duration
and Relative Humidity

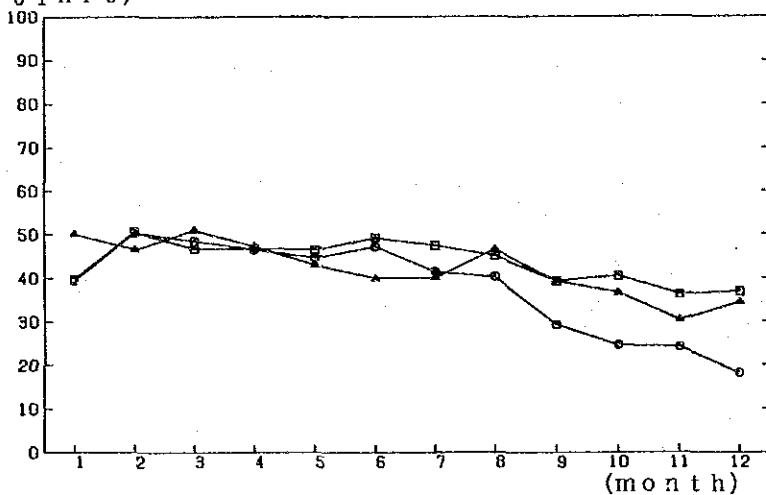
Monthly Change (Sunshine Duration)

Year: 1980~1992

□ 1981~1990
○ 1991
△ 1992

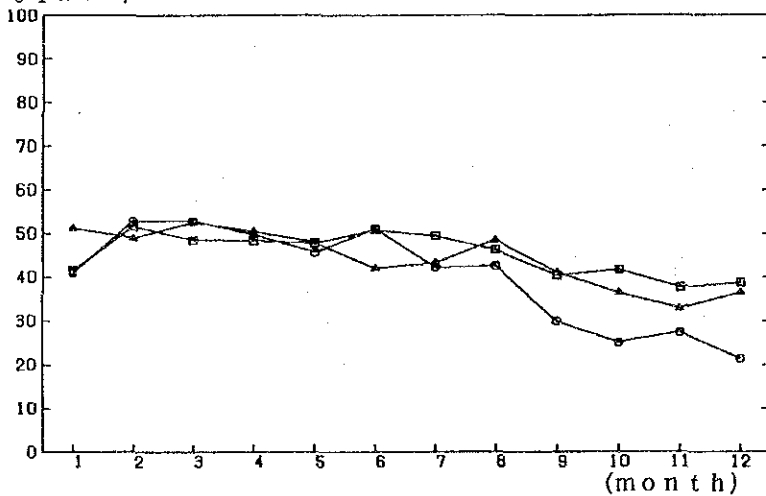
Petaling Jaya (MMS)

(0.01 hrs)



Subang (MMS)

(0.01 hrs)

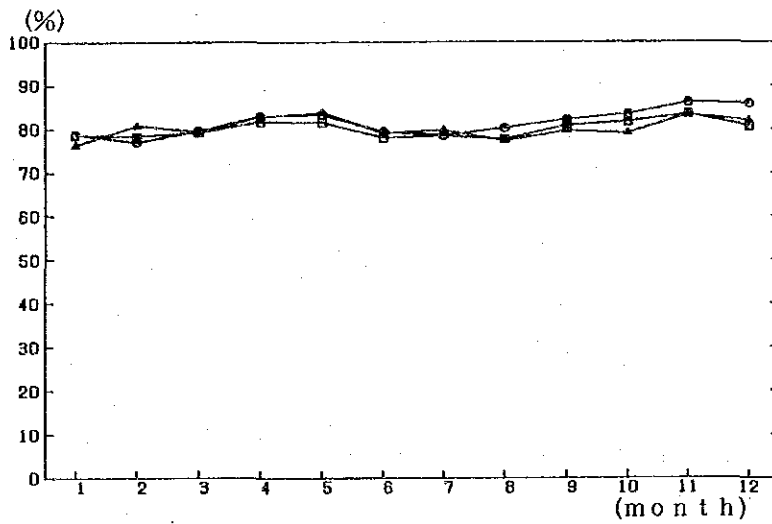


Monthly Change (R. Humidity)

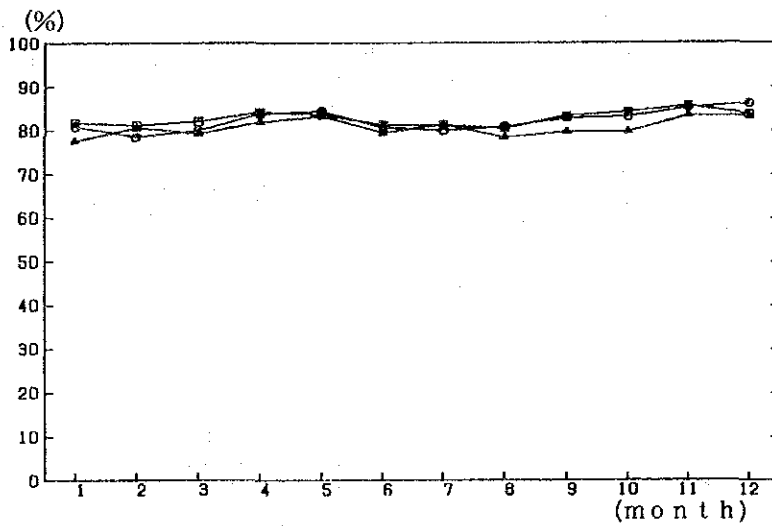
Year: 1980~1992

▣ 1981~1990
○ 1991
△ 1992

Petaling Jaya (MMS)



Subang (MMS)



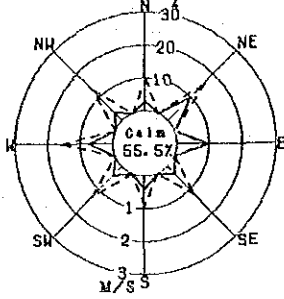
1.3.3 Wind Roses in 1981 through 1990

Wind Rose 1981

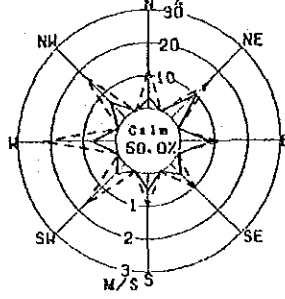
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

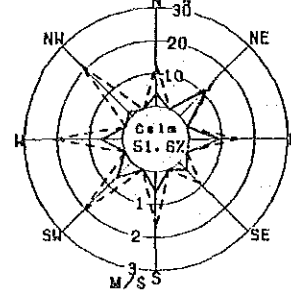
January



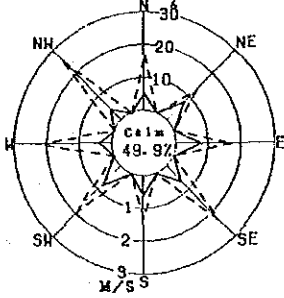
February



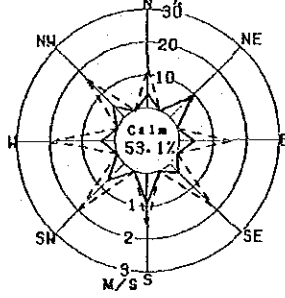
March



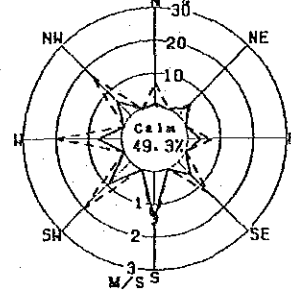
April



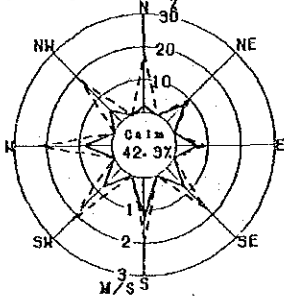
May



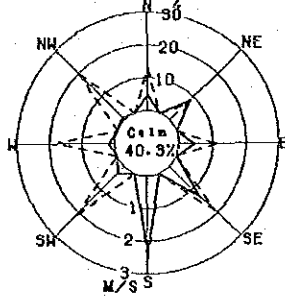
June



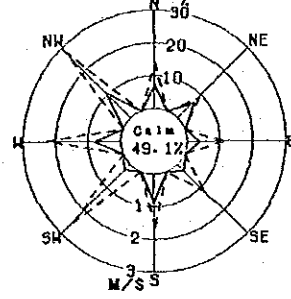
July



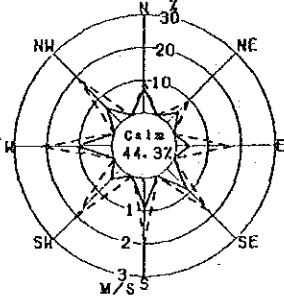
August



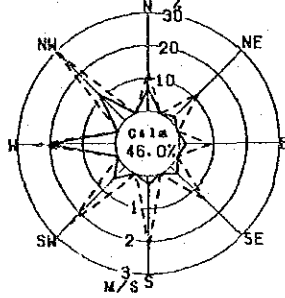
September



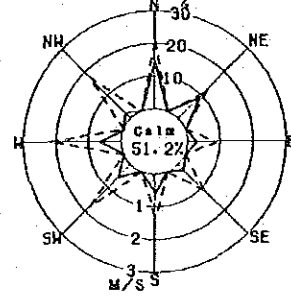
October



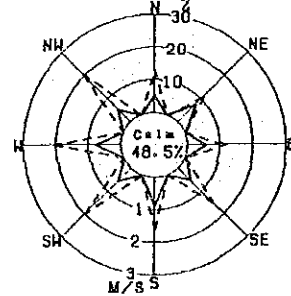
November



December



Year



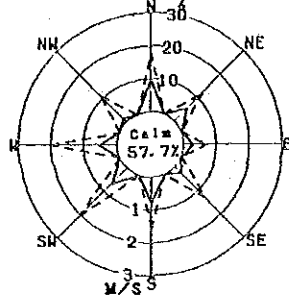
Wind Rose

1982

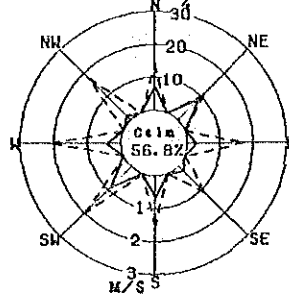
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

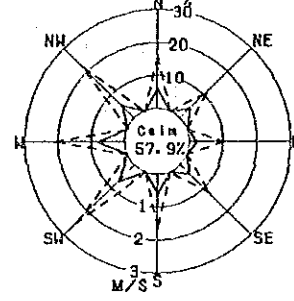
January



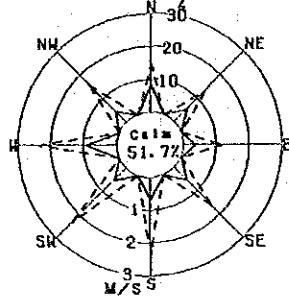
February



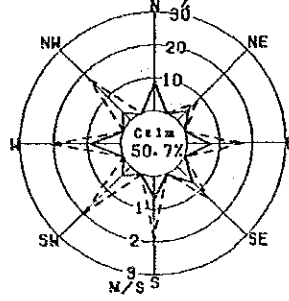
March



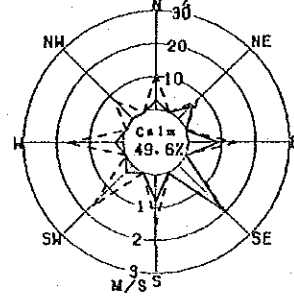
April



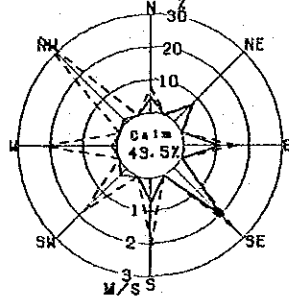
May



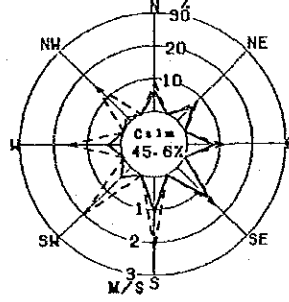
June



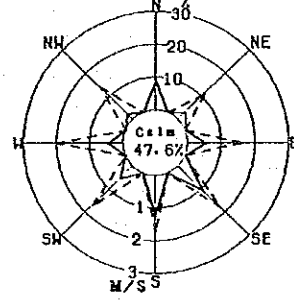
July



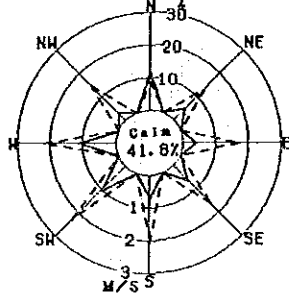
August



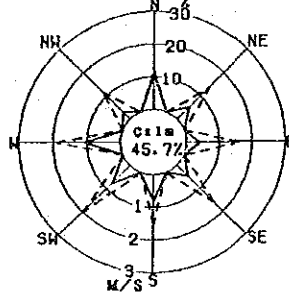
September



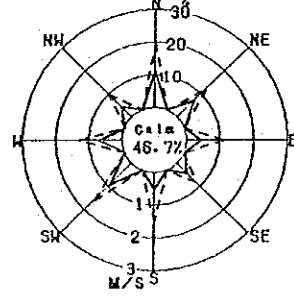
October



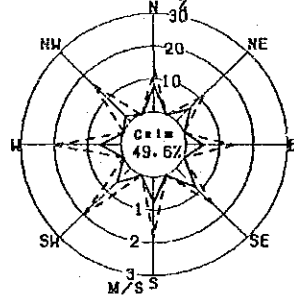
November



December



Year



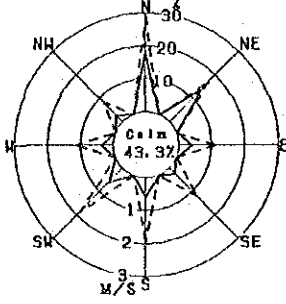
Wind Rose

1983

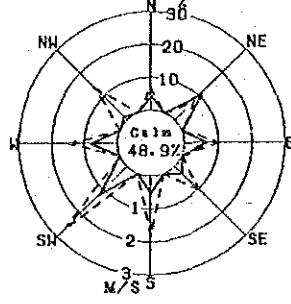
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

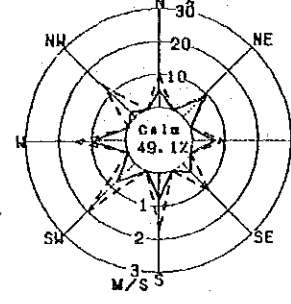
January



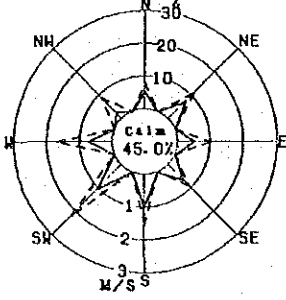
February



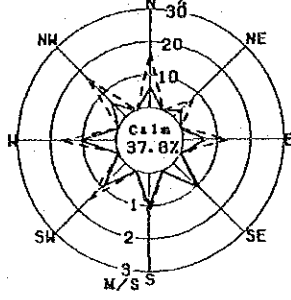
March



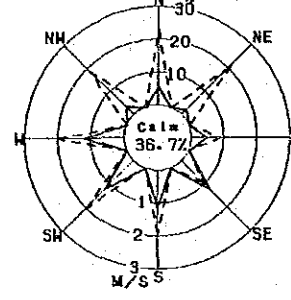
April



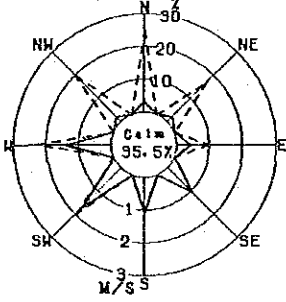
May



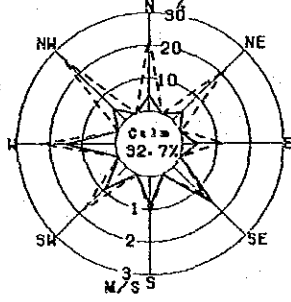
June



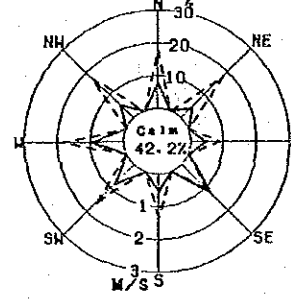
July



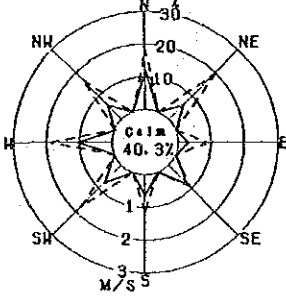
August



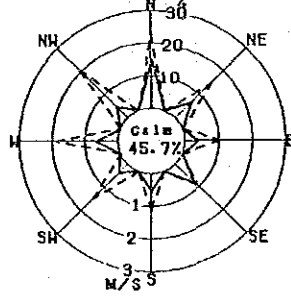
September



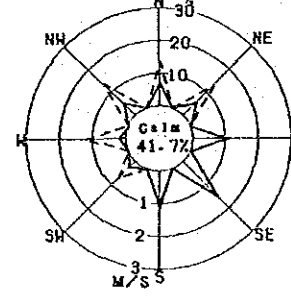
October



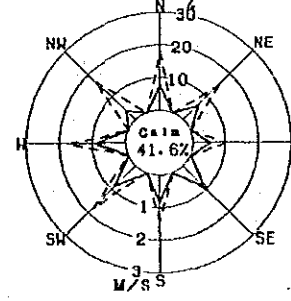
November



December



Year

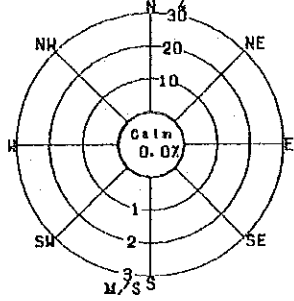


Wind Rose

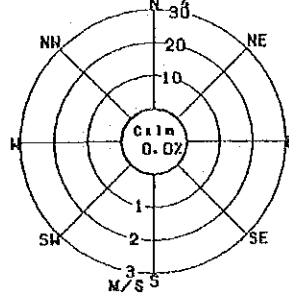
1984

— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

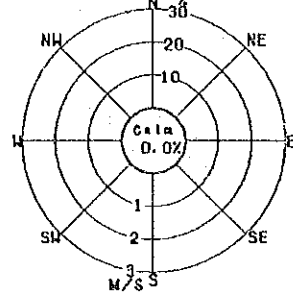
Petaling Jaya
 January



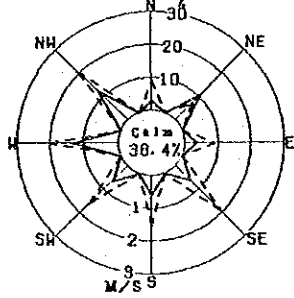
February



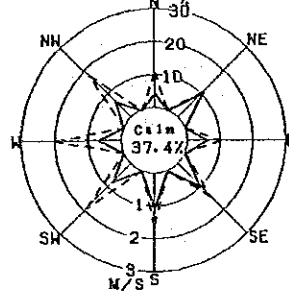
March



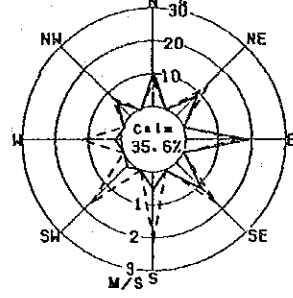
April



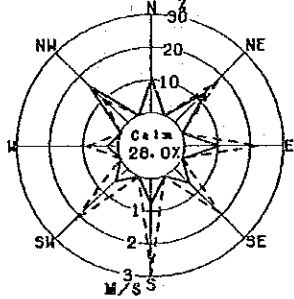
May



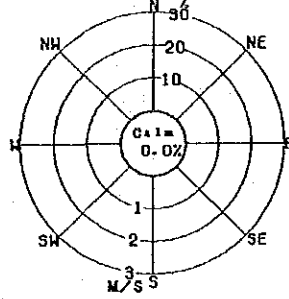
June



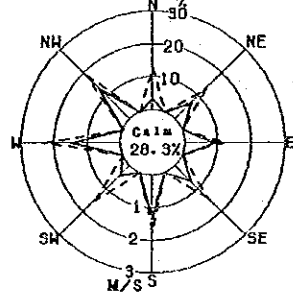
July



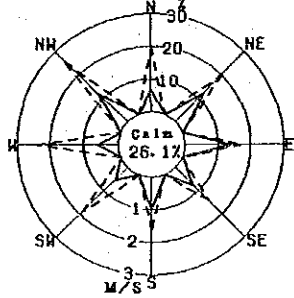
August



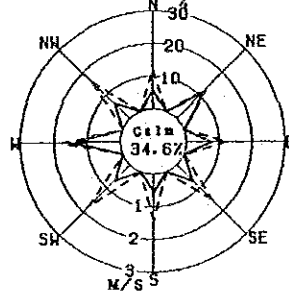
September



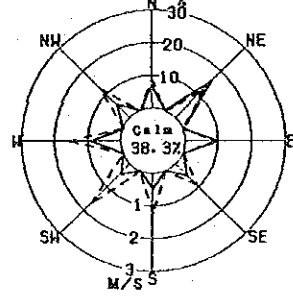
October



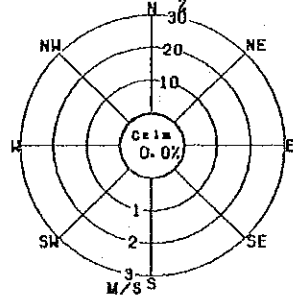
November



December



Year



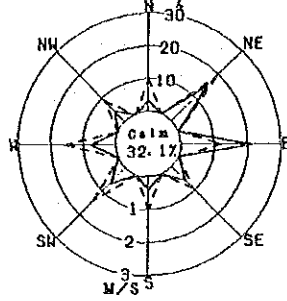
Wind Rose

1985

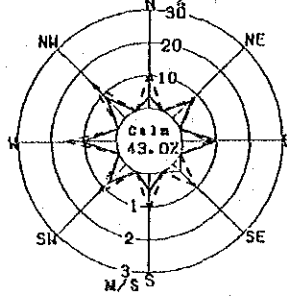
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

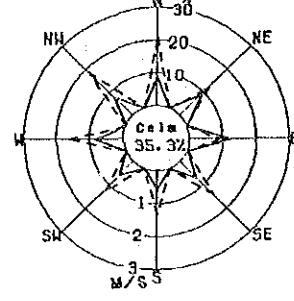
January



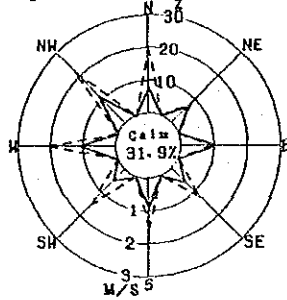
February



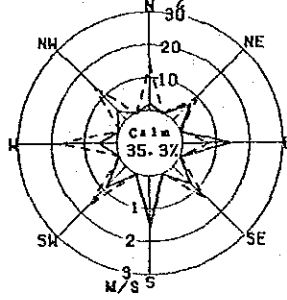
March



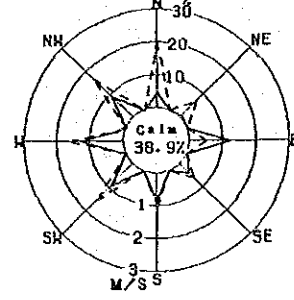
April



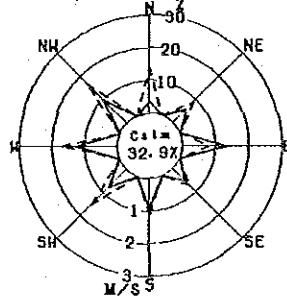
May



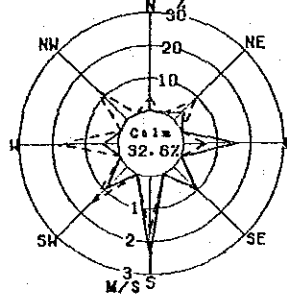
June



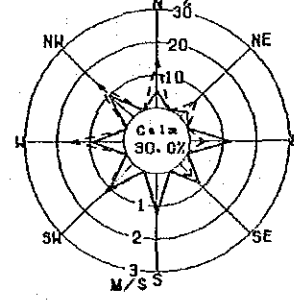
July



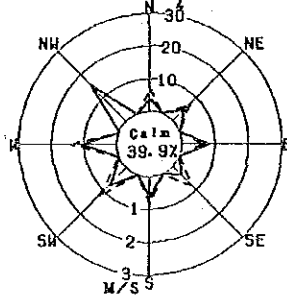
August



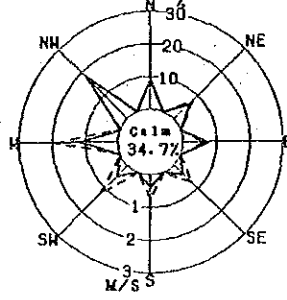
September



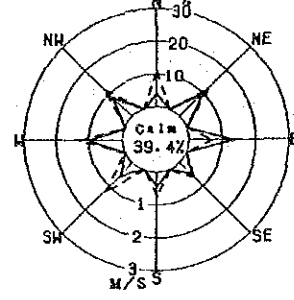
October



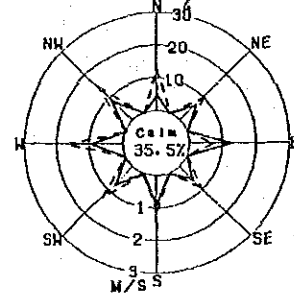
November



December



Year

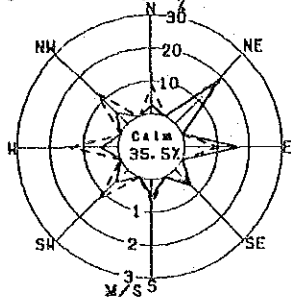


Wind Rose

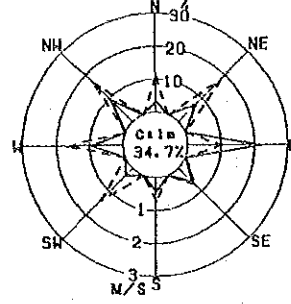
1986

— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

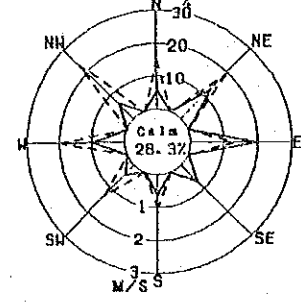
Petaling Jaya
 January



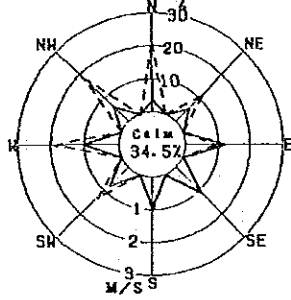
February



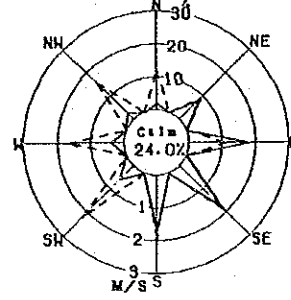
March



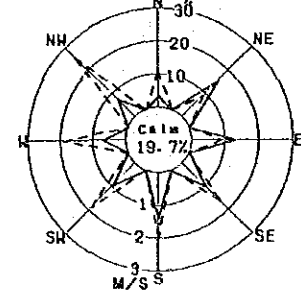
April



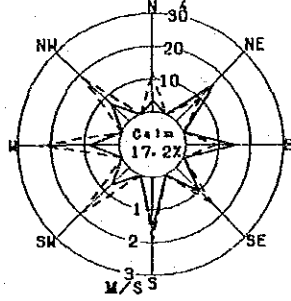
May



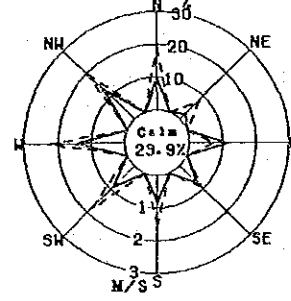
June



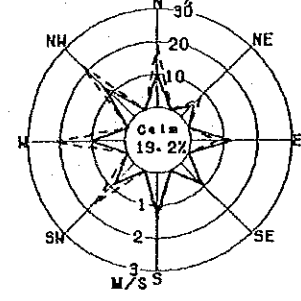
July



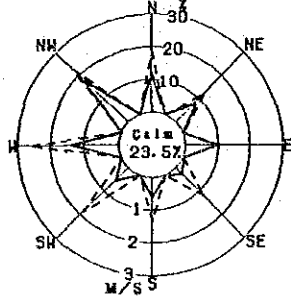
August



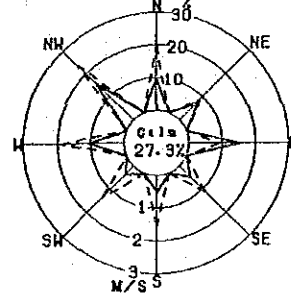
September



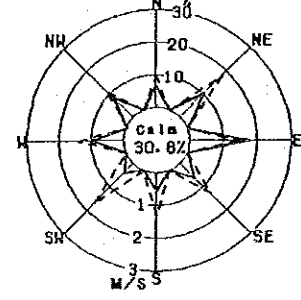
October



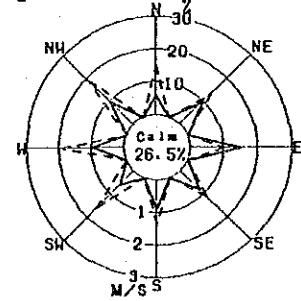
November



December



Year



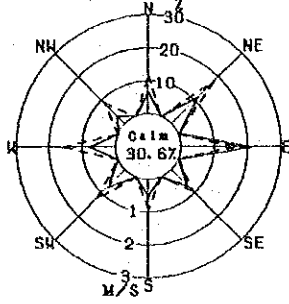
Wind Rose

1987

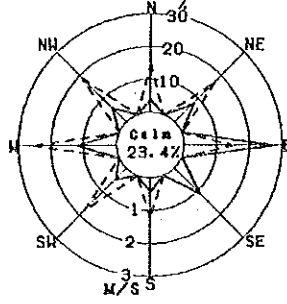
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

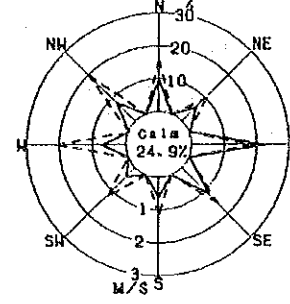
January



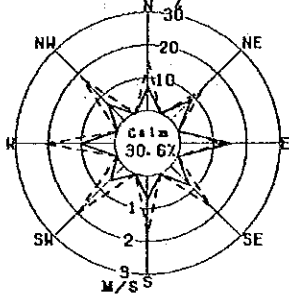
February



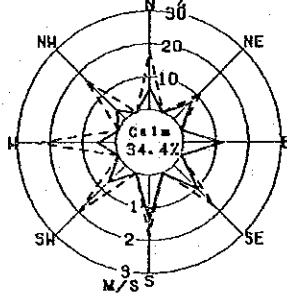
March



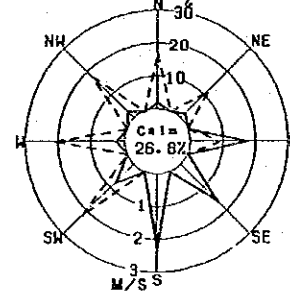
April



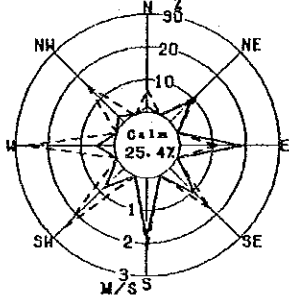
May



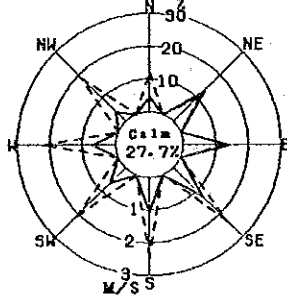
June



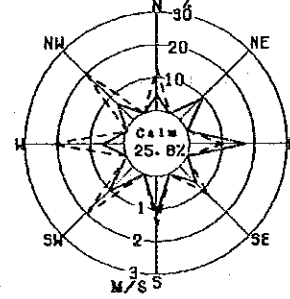
July



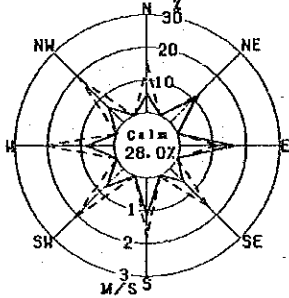
August



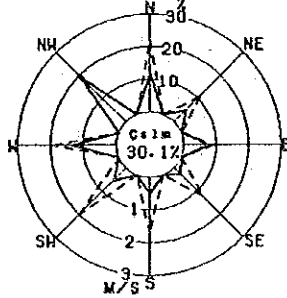
September



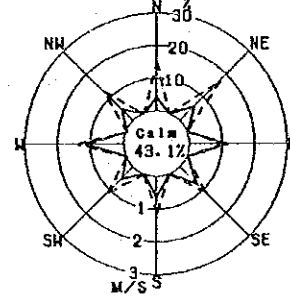
October



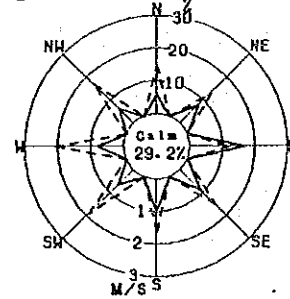
November



December



Year



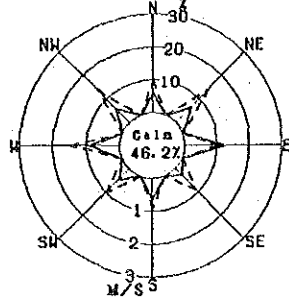
Wind Rose

1988

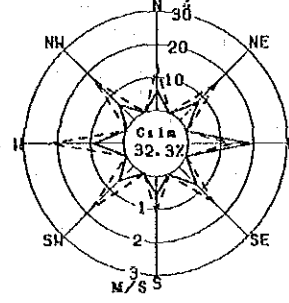
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

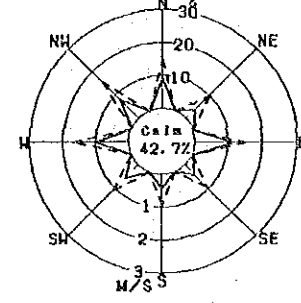
January



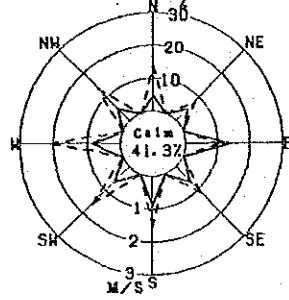
February



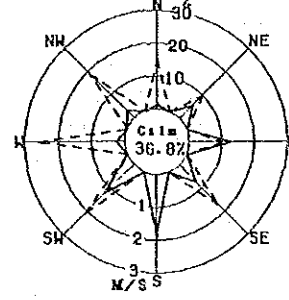
March



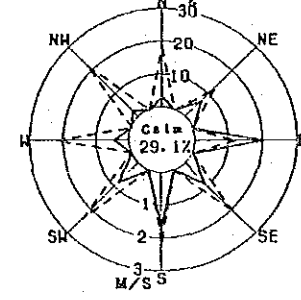
April



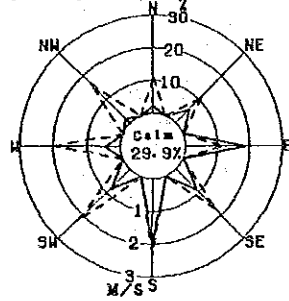
May



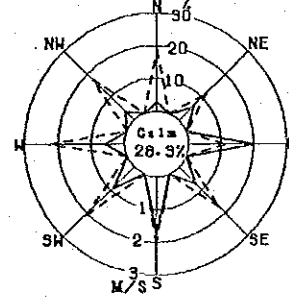
June



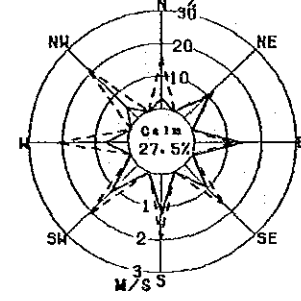
July



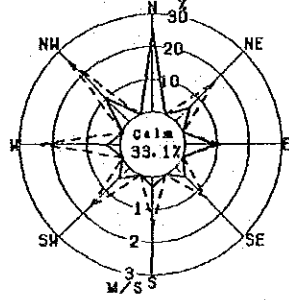
August



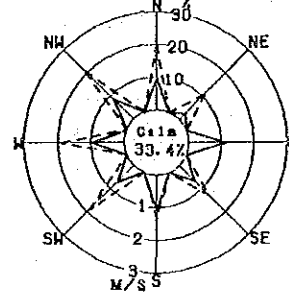
September



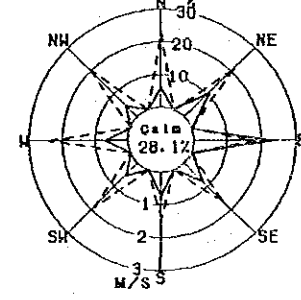
October



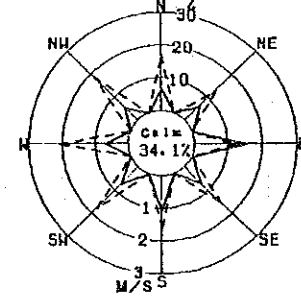
November



December



Year

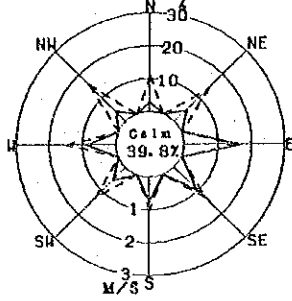


Wind Rose

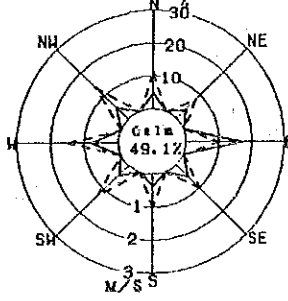
1989

— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

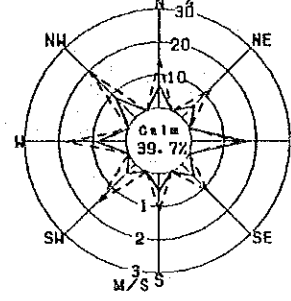
Petaling Jaya
 January



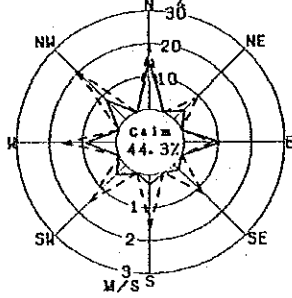
February



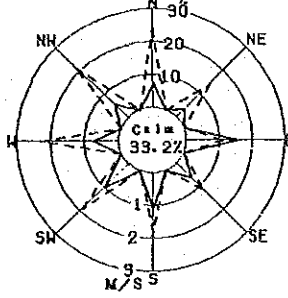
March



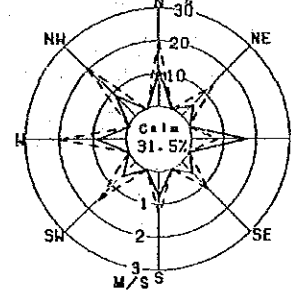
April



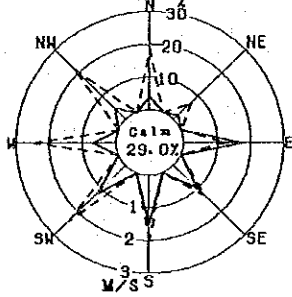
May



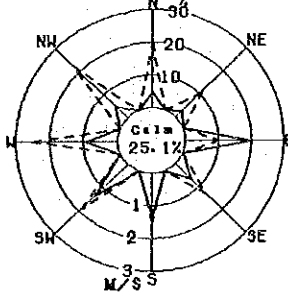
June



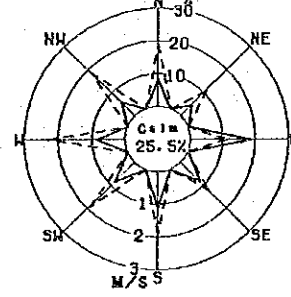
July



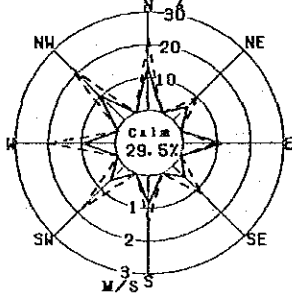
August



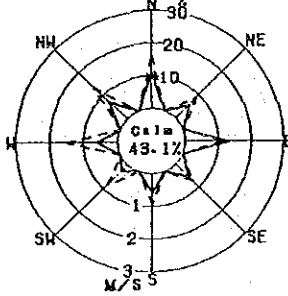
September



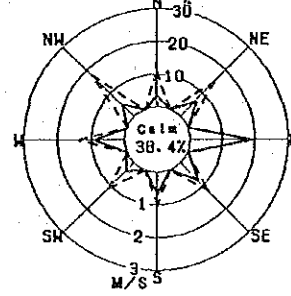
October



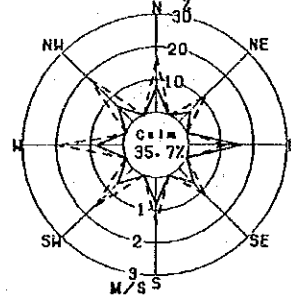
November



December



Year



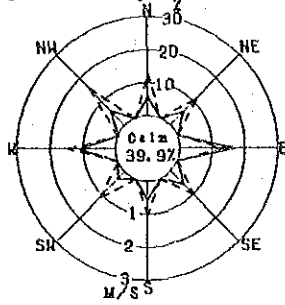
Wind Rose

1990

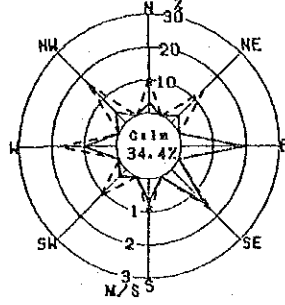
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Petaling Jaya

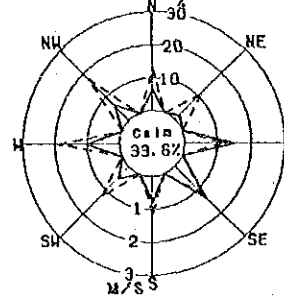
January



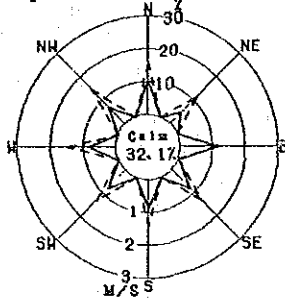
February



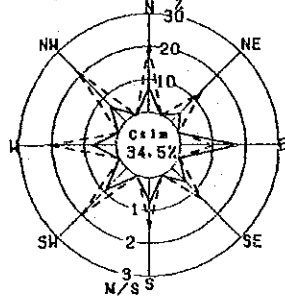
March



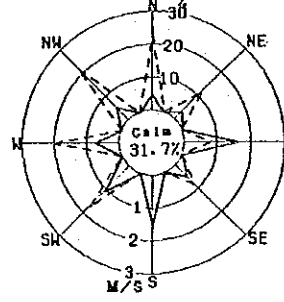
April



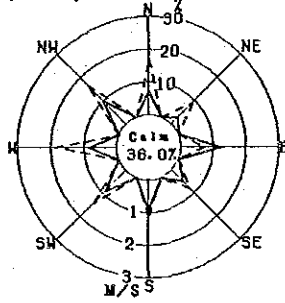
May



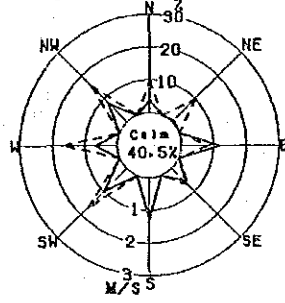
June



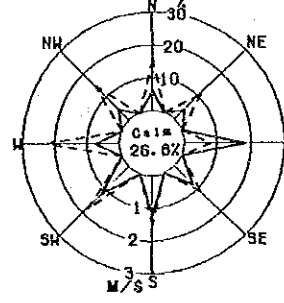
July



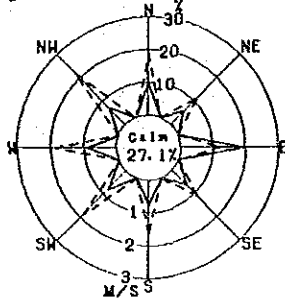
August



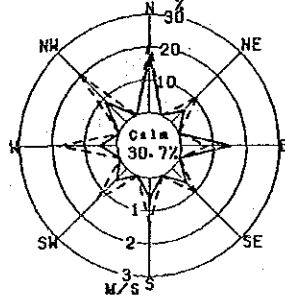
September



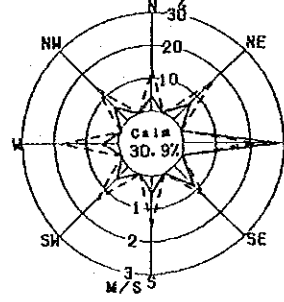
October



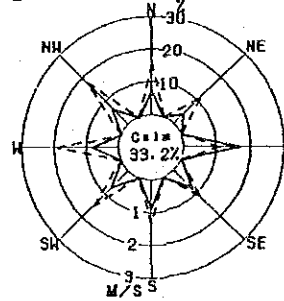
November



December



Year



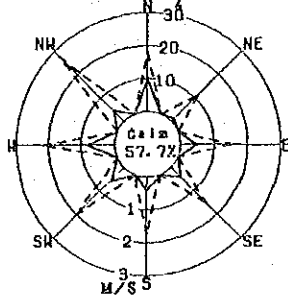
Wind Rose

1981

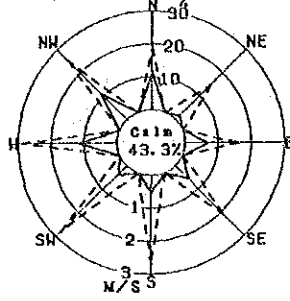
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

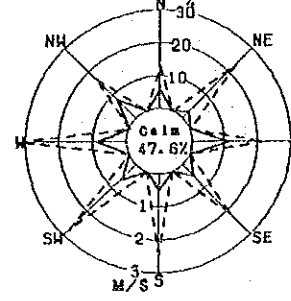
January



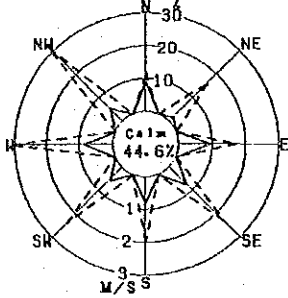
February



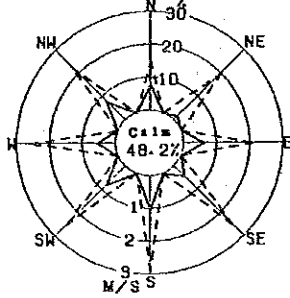
March



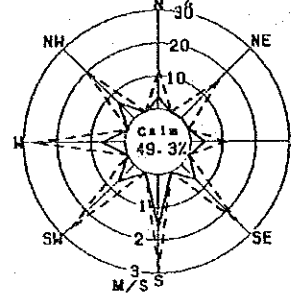
April



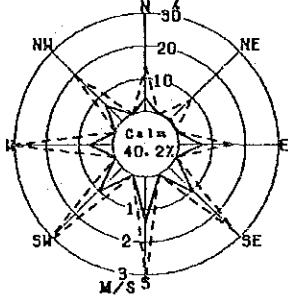
May



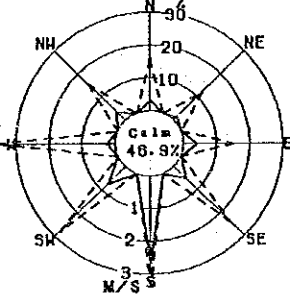
June



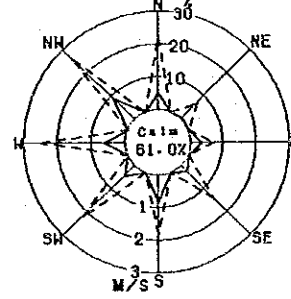
July



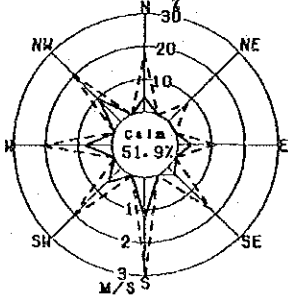
August



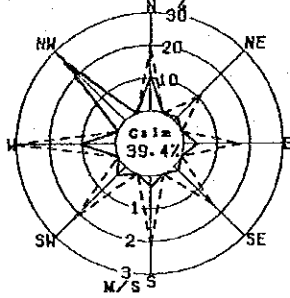
September



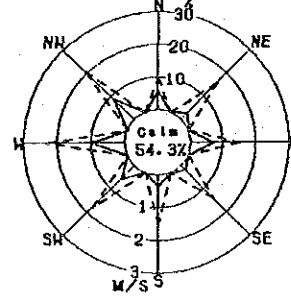
October



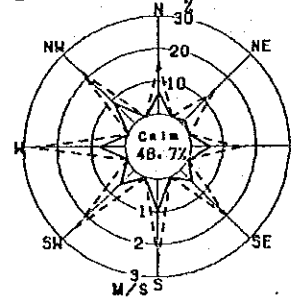
November



December



Year



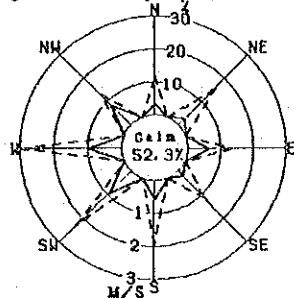
Wind Rose

1982

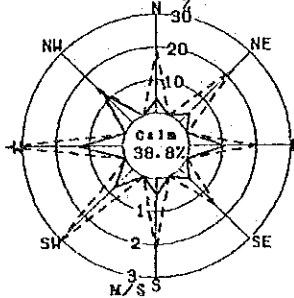
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

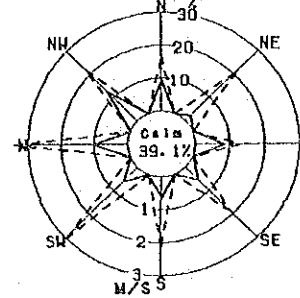
January



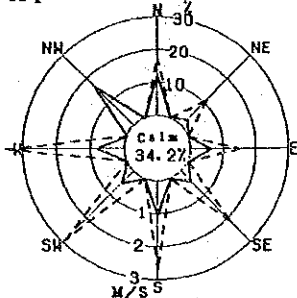
February



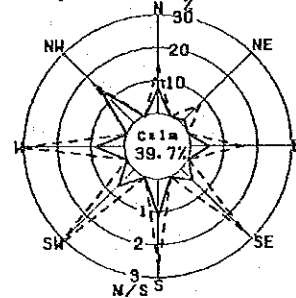
March



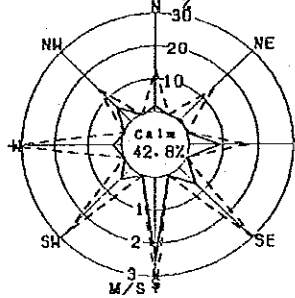
April



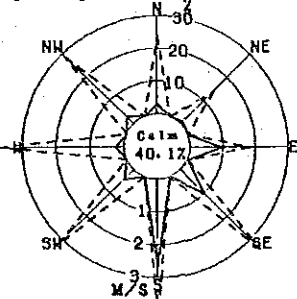
May



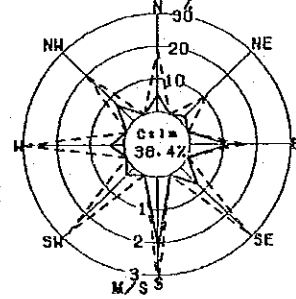
June



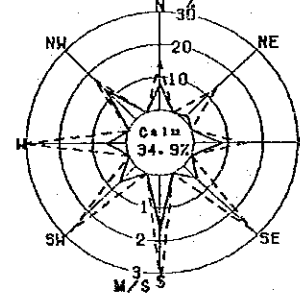
July



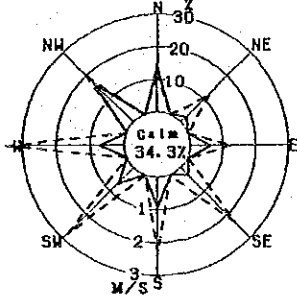
August



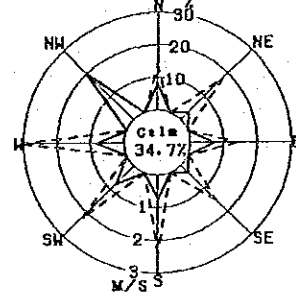
September



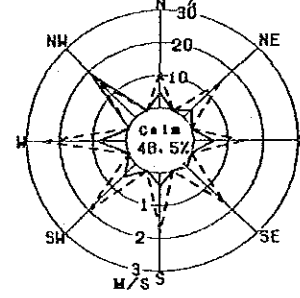
October



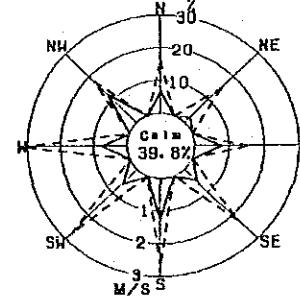
November



December



Year



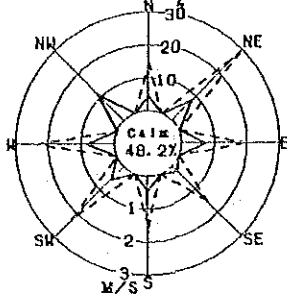
Wind Rose

1983

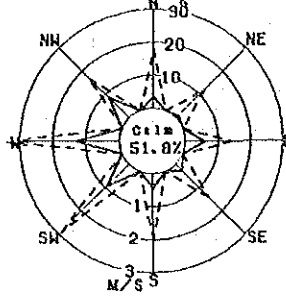
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

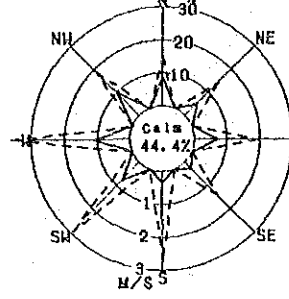
January



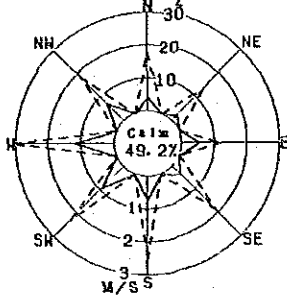
February



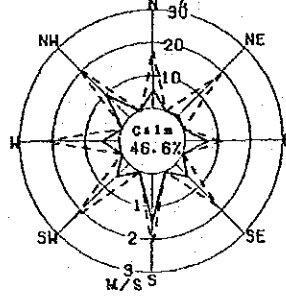
March



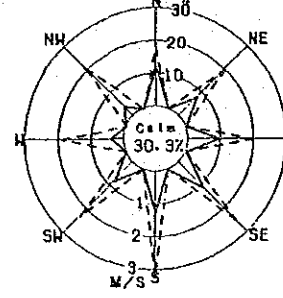
April



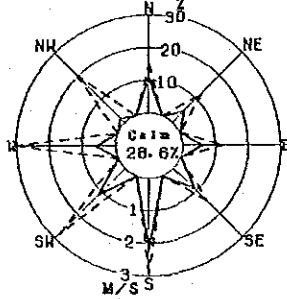
May



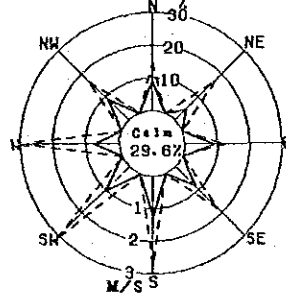
June



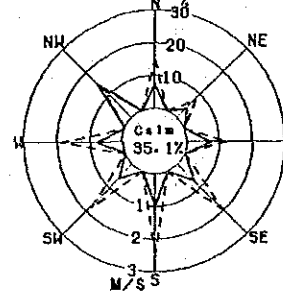
July



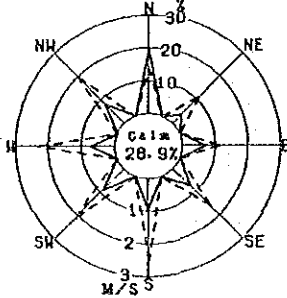
August



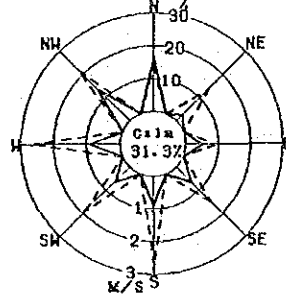
September



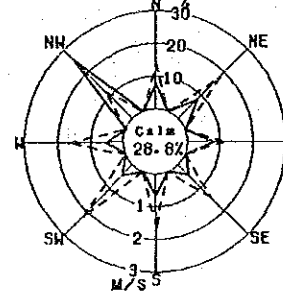
October



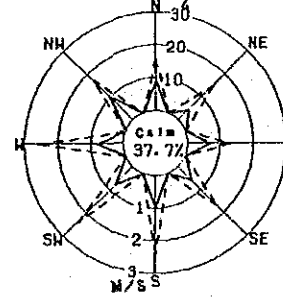
November



December



Year



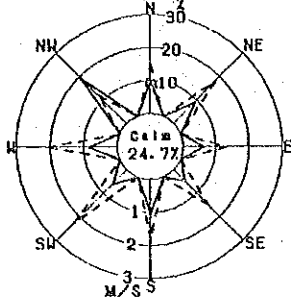
Wind Rose

1984

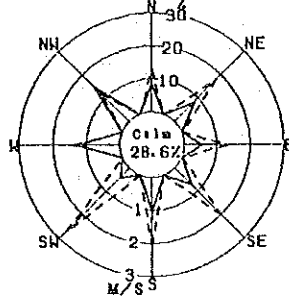
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

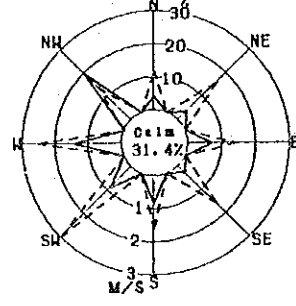
January



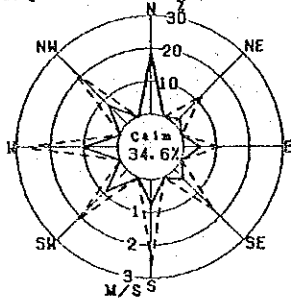
February



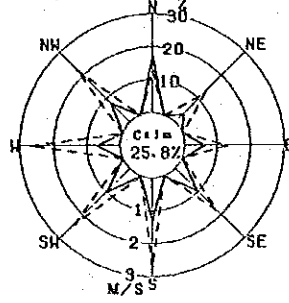
March



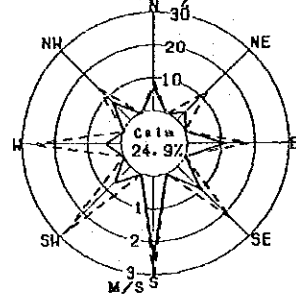
April



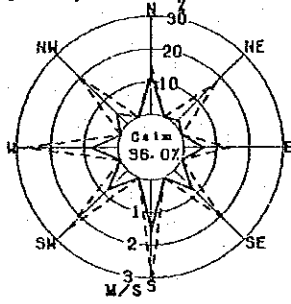
May



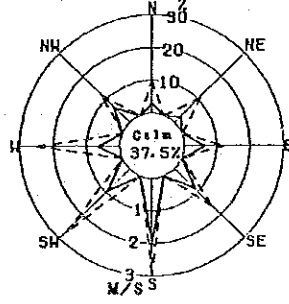
June



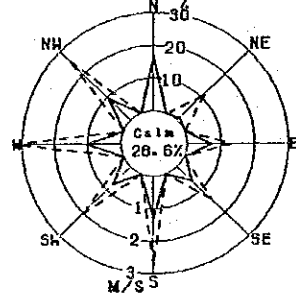
July



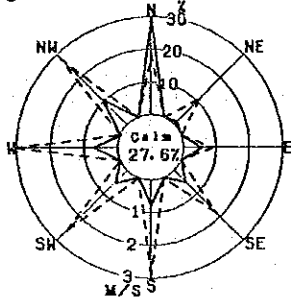
August



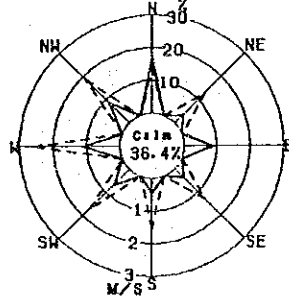
September



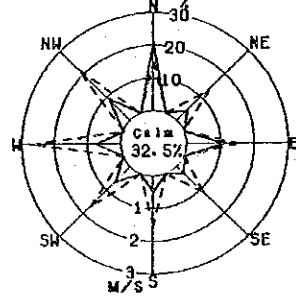
October



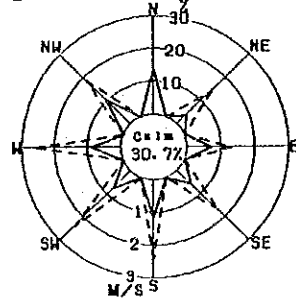
November



December



Year



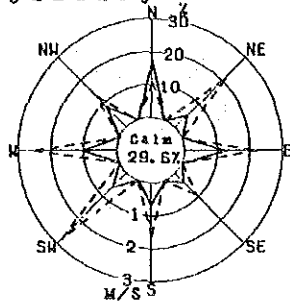
Wind Rose

1985

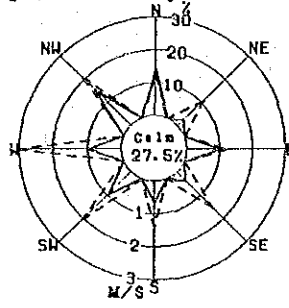
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

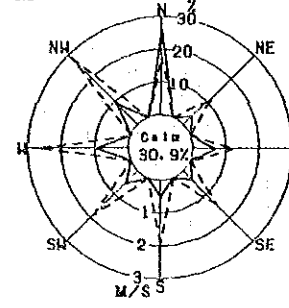
January



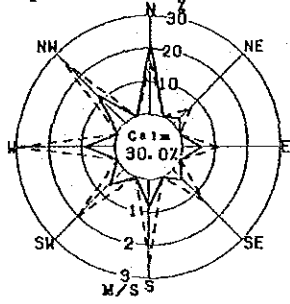
February



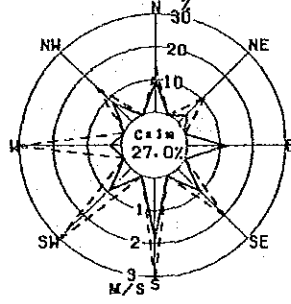
March



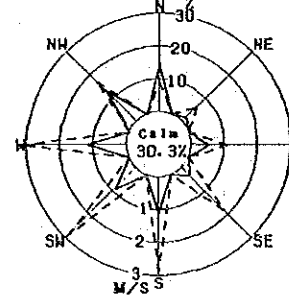
April



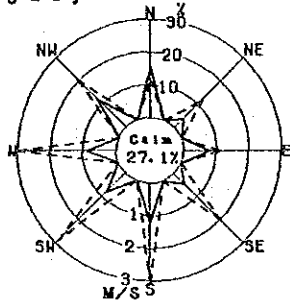
May



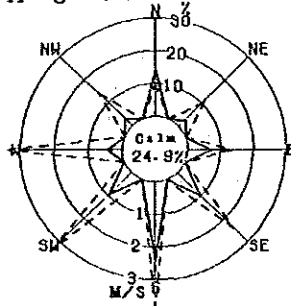
June



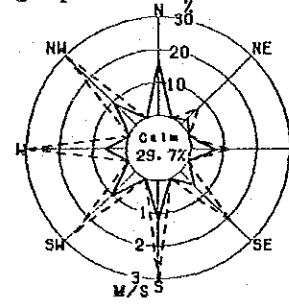
July



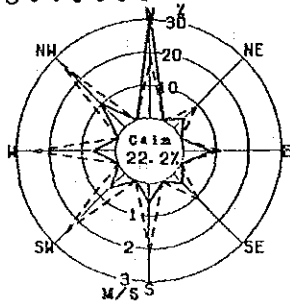
August



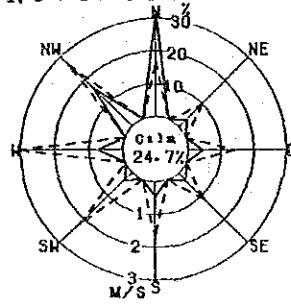
September



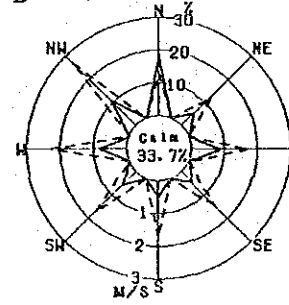
October



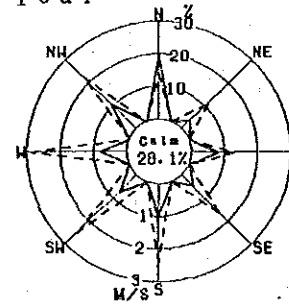
November



December



Year



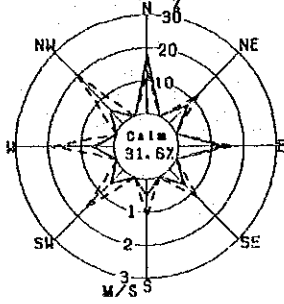
Wind Rose

1986

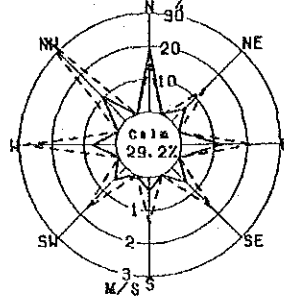
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

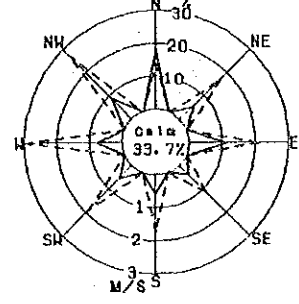
January



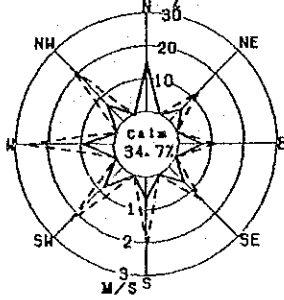
February



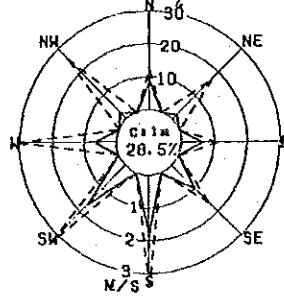
March



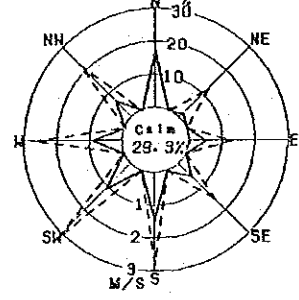
April



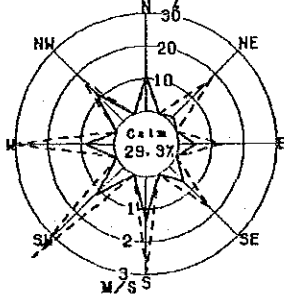
May



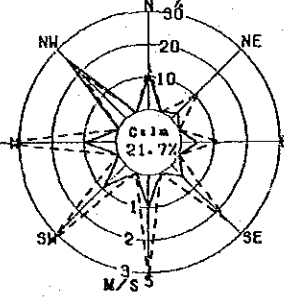
June



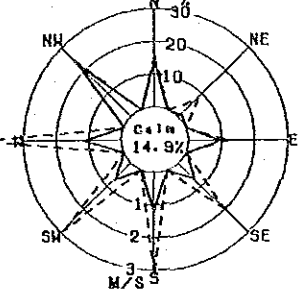
July



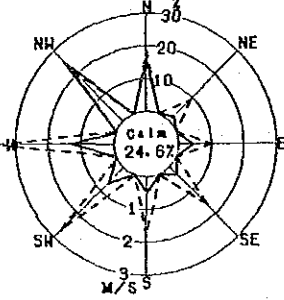
August



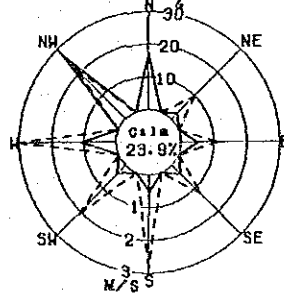
September



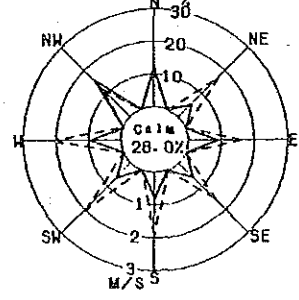
October



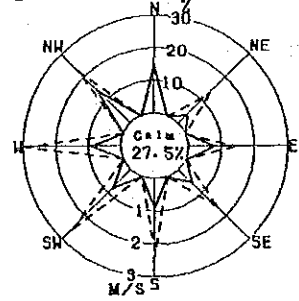
November



December



Year



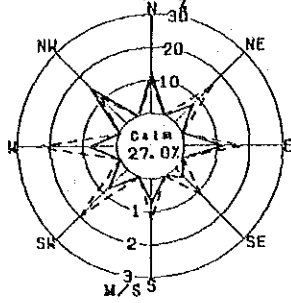
Wind Rose

1987

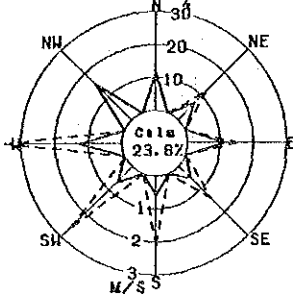
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

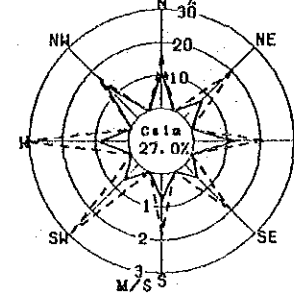
January



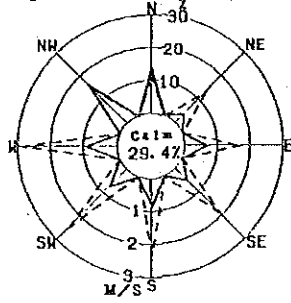
February



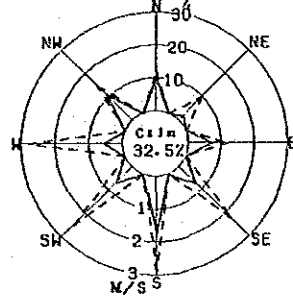
March



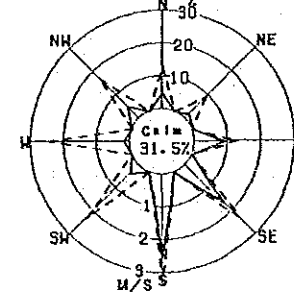
April



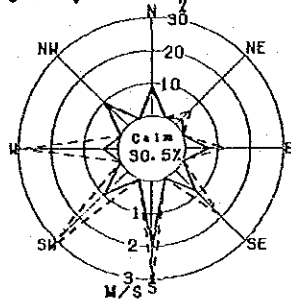
May



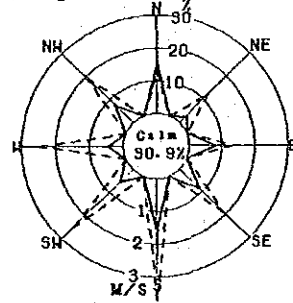
June



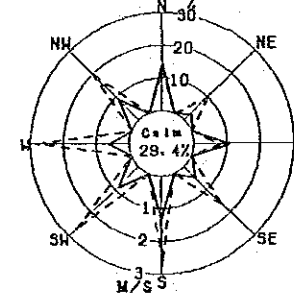
July



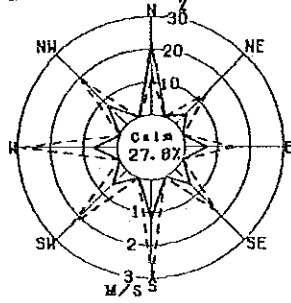
August



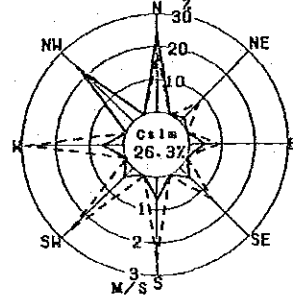
September



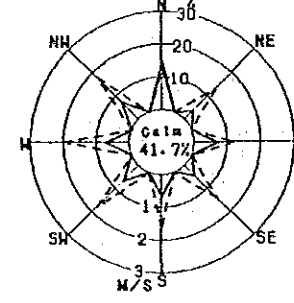
October



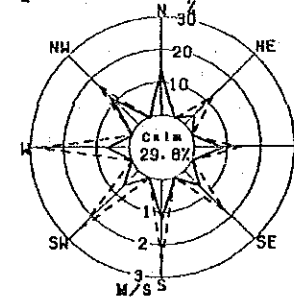
November



December



Year



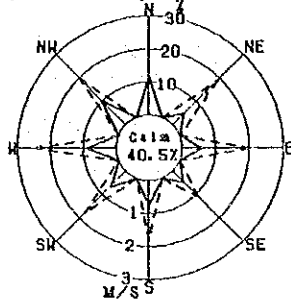
Wind Rose

1988

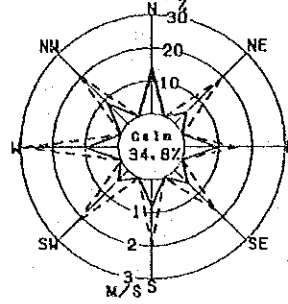
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

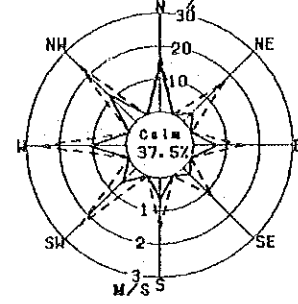
January



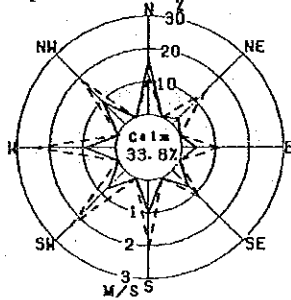
February



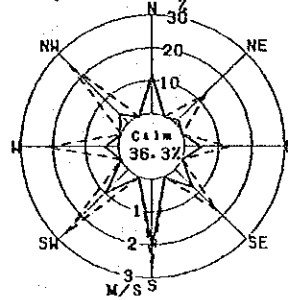
March



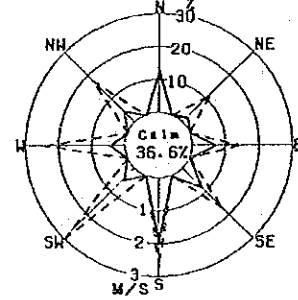
April



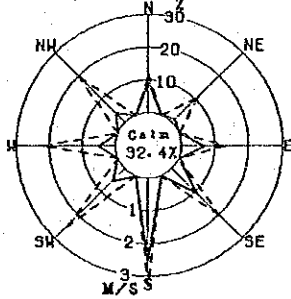
May



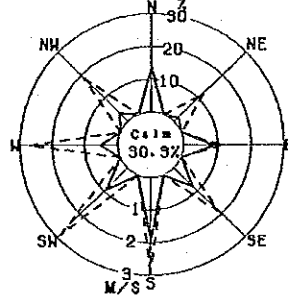
June



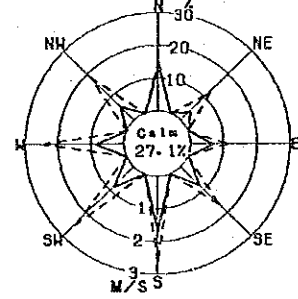
July



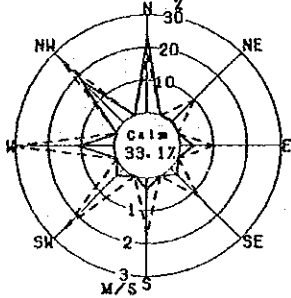
August



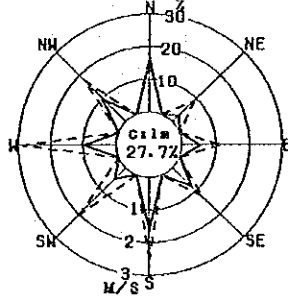
September



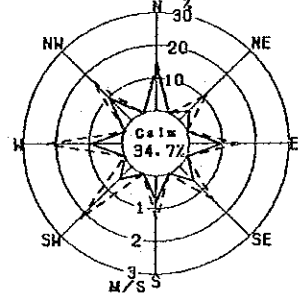
October



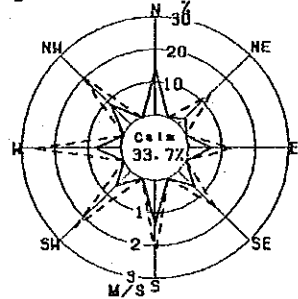
November



December



Year



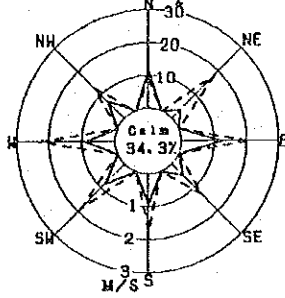
Wind Rose

1989

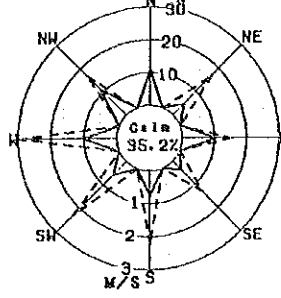
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2m/s

Subang

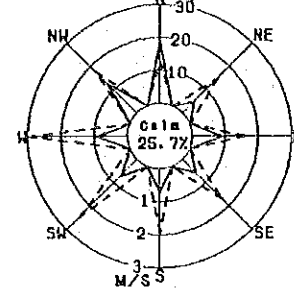
January



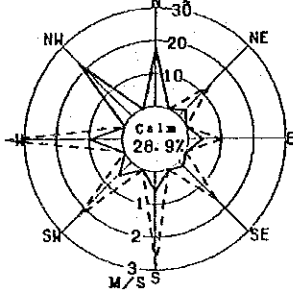
February



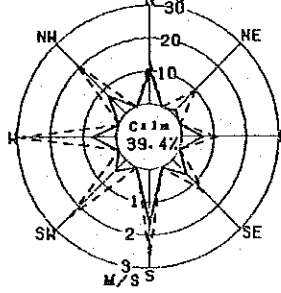
March



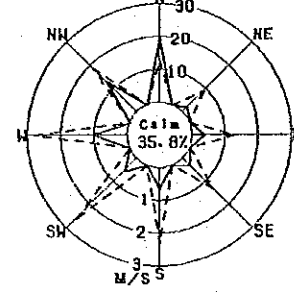
April



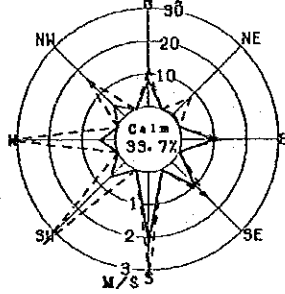
May



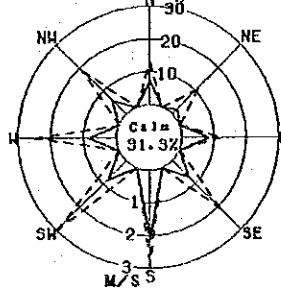
June



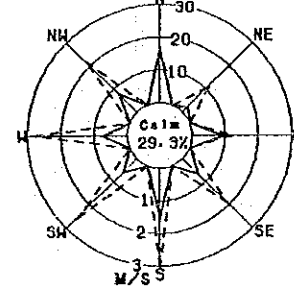
July



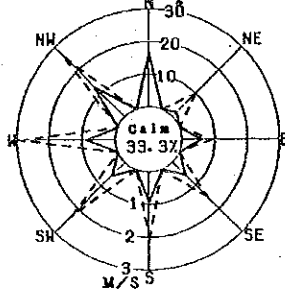
August



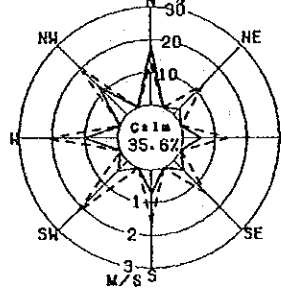
September



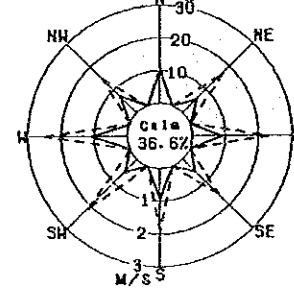
October



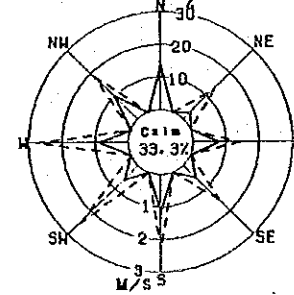
November



December



Year



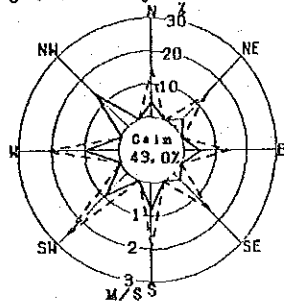
Wind Rose

1990

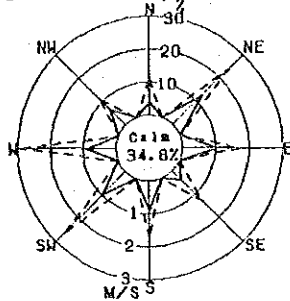
— Frequency (%)
 --- Wind Speed (m/s)
 Calm 0.0~0.2 m/s

Subang

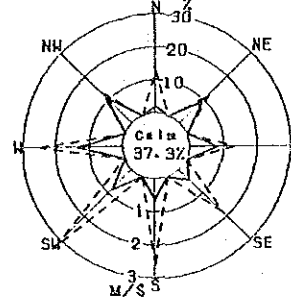
January



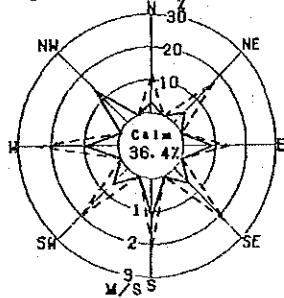
February



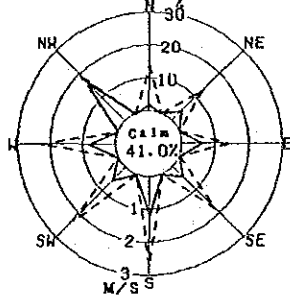
March



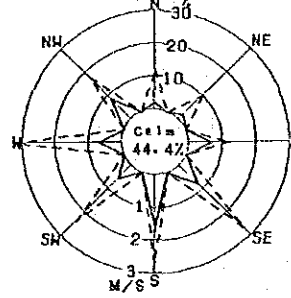
April



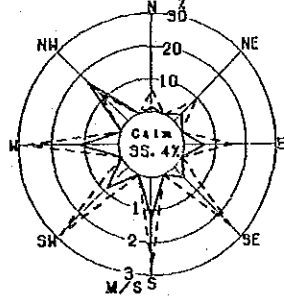
May



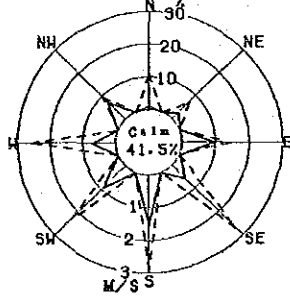
June



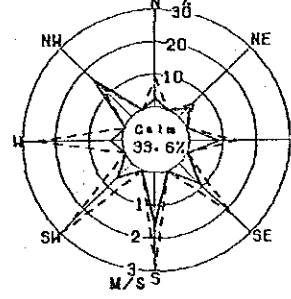
July



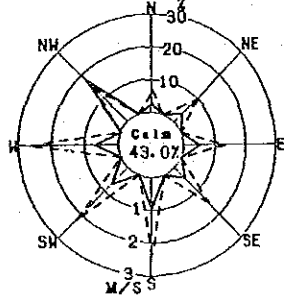
August



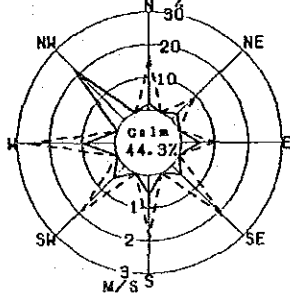
September



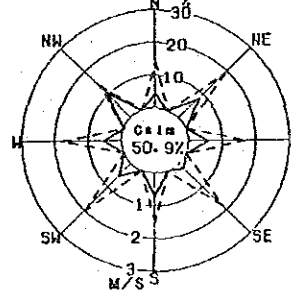
October



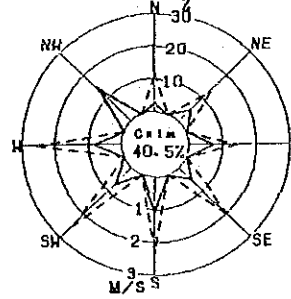
November



December



Year



1.3.4 F-test of Meteorological Parameters

Tested sample (X_0) and the other samples of size (n) like $X_1, X_2, \dots, X_1, \dots, X_n$ are drawn from normal population. X_A is a mean value of the samples of size (n). Judged by the variance of the samples, this method tests the hypothesis that X_0 is equal to X_A .

$$X_A = \sum_{i=1}^n \frac{X_i}{n} \quad (1)$$

Practical procedures of this method are as follows.

a) Hypothesis: There is no significant difference between X_0 and X_A .

$$H_0 : X_0 = X_A$$

b) Calculation of F_0

$$F_0 = \frac{(n-1)(X_0 - X_A)^2}{(n+1)S^2} \quad (2)$$

$$S^2 = \sum_{i=1}^n \frac{(X_i - X_A)^2}{(n-1)} \quad (3)$$

c) Getting $F^{v_1, v_2}(a)$ value from F-distribution table

$$v_1 = 1, v_2 = n-1, a = 1\%$$

d) Comparison of F_0 with $F^{v_1, v_2}(a)$

$$F_0 \geq F^{v_1, v_2}(a) \rightarrow \text{hypothesis } H_0 \text{ is rejected}$$

$$F_0 < F^{v_1, v_2}(a) \rightarrow \text{hypothesis } H_0 \text{ is accepted}$$

e) Calculation of critical range with probability a

$$X_{0+} = X_A + S \sqrt{F^{v_1, v_2}(a) (n+1) / (n-1)} \quad (4)$$

$$X_{0-} = X_A - S \sqrt{F^{v_1, v_2}(a) (n+1) / (n-1)}$$

*** F-TEST ***

WIND DIRECTION		Subang (MMS)															
YEAR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	C
1 1981	6.8	0.0	1.3	0.0	5.9	0.0	4.7	0.0	9.7	0.0	6.0	0.0	7.9	0.0	9.0	0.0	48.7
2 1982	7.0	0.0	2.2	0.0	7.8	0.0	4.7	0.0	12.3	0.0	6.0	0.0	7.5	0.0	12.6	0.0	39.9
3 1983	9.3	0.0	4.4	0.0	6.9	0.0	5.8	0.0	9.5	0.0	7.7	0.0	8.1	0.0	10.5	0.0	37.8
4 1984	14.0	0.0	3.7	0.0	7.1	0.0	5.9	0.0	11.5	0.0	7.3	0.0	9.1	0.0	10.7	0.0	30.7
5 1985	19.5	0.0	3.4	0.0	7.9	0.0	4.9	0.0	9.9	0.0	7.3	0.0	8.1	0.0	10.8	0.0	28.2
6 1986	14.9	0.0	3.6	0.0	7.7	0.0	5.6	0.0	8.9	0.0	8.1	0.0	9.3	0.0	14.4	0.0	27.5
7 1987	13.8	0.0	3.9	0.0	8.5	0.0	6.5	0.0	12.1	0.0	6.5	0.0	6.9	0.0	11.8	0.0	30.0
8 1988	14.3	0.0	2.8	0.0	6.6	0.0	6.5	0.0	13.2	0.0	6.2	0.0	8.1	0.0	8.5	0.0	33.8
9 1989	13.9	0.0	2.9	0.0	7.8	0.0	5.3	0.0	11.3	0.0	6.0	0.0	9.0	0.0	10.7	0.0	33.1
10 1990	2.7	0.0	5.0	0.0	7.1	0.0	4.7	0.0	10.7	0.0	7.1	0.0	8.5	0.0	13.5	0.0	40.7
11 1991	2.7	0.0	3.4	0.0	7.4	0.0	8.0	0.0	10.4	0.0	6.0	0.0	7.3	0.0	11.4	0.0	43.3
12 1992	7.3	0.0	3.6	0.0	5.4	0.0	4.0	0.0	9.9	0.0	5.8	0.0	8.4	0.0	12.3	0.0	43.4

*** RESULT ***

YEAR=1992 (1,N-1=10,IX)= 10.04

WIND DIRECTION		Subang (MMS)															
YEAR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	C
XA	10.8	0.0	3.3	0.0	7.3	0.0	5.7	0.0	10.9	0.0	6.8	0.0	8.2	0.0	11.3	0.0	35.8
X0	7.3	0.0	3.6	0.0	5.4	0.0	4.0	0.0	9.9	0.0	5.8	0.0	8.4	0.0	12.3	0.0	43.4
S**2	27.	0.	1.	0.	0.	0.	1.	0.	2.	0.	1.	0.	1.	0.	3.	0.	42.
FO	0.4	0.0	0.1	0.0	6.6	0.0	2.6	0.0	0.5	0.0	1.5	0.0	0.1	0.0	0.3	0.0	1.1
X0-	-7.2	0.0	0.0	0.0	5.0	0.0	2.3	0.0	6.4	0.0	4.2	0.0	5.6	0.0	5.4	0.0	13.2
X0+	28.8	0.0	6.7	0.0	9.7	0.0	9.1	0.0	15.3	0.0	9.3	0.0	10.7	0.0	17.1	0.0	58.4
RESULT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+,X-: REJECTED

*** F-TEST ***

Petaling Jaya (MMS)

WIND DIRECTION

YEAR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	C
1 1985	4.8	0.0	6.7	0.0	12.5	0.0	5.5	0.0	8.9	0.0	7.3	0.0	9.7	0.0	9.1	0.0	35.5
2 1986	6.1	0.0	9.8	0.0	15.2	0.0	8.1	0.0	9.0	0.0	6.1	0.0	9.6	0.0	9.5	0.0	26.6
3 1987	5.9	0.0	8.0	0.0	16.7	0.0	8.9	0.0	10.1	0.0	6.6	0.0	8.1	0.0	6.3	0.0	29.4
4 1988	6.8	0.0	6.4	0.0	15.5	0.0	6.7	0.0	10.7	0.0	7.3	0.0	6.9	0.0	5.5	0.0	34.2
5 1989	7.8	0.0	4.5	0.0	16.0	0.0	6.2	0.0	8.0	0.0	6.5	0.0	8.5	0.0	6.7	0.0	35.8
6 1990	7.4	0.0	3.9	0.0	16.9	0.0	7.7	0.0	8.6	0.0	7.2	0.0	8.2	0.0	6.8	0.0	33.3
7 1991	4.7	0.0	8.4	0.0	20.0	0.0	8.3	0.0	11.9	0.0	8.7	0.0	7.9	0.0	5.8	0.0	24.3
8 1992	6.2	0.0	12.1	0.0	7.8	0.0	6.6	0.0	7.8	0.0	5.8	0.0	10.0	0.0	5.7	0.0	38.0

*** RESULT ***

YEAR=1992 (1-N-1= 6.18)= 13.74

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	C
XA	6.2	0.0	6.8	0.0	16.1	0.0	7.3	0.0	9.6	0.0	7.1	0.0	8.4	0.0	7.1	0.0	31.3
XO	6.2	0.0	12.1	0.0	7.8	0.0	6.6	0.0	7.8	0.0	5.8	0.0	10.0	0.0	5.7	0.0	38.0
S**2	1.	0.	4.	0.	4.	0.	1.	0.	2.	0.	1.	0.	1.	0.	2.	0.	18.
FO	0.0	0.0	5.6	0.0	12.0	0.0	0.3	0.0	1.5	0.0	2.3	0.0	2.2	0.0	0.7	0.0	1.9
XO-	1.5	0.0	-1.6	0.0	7.2	0.0	2.4	0.0	4.2	0.0	3.8	0.0	4.5	0.0	0.9	0.0	13.3
XO+	10.9	0.0	15.2	0.0	25.0	0.0	12.3	0.0	15.0	0.0	10.4	0.0	12.3	0.0	13.3	0.0	49.4
RESULT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+,X-: REJECTED

*** F-TEST ***

TEMPERATURE 0.1DEGC Subang (MMS)

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
1 1981	256.2	263.8	271.8	270.0	267.9	274.6	267.8	271.2	262.5	266.2	262.8	262.8
2 1982	261.7	266.0	267.1	266.2	269.9	272.1	266.3	265.4	267.0	260.0	260.2	264.8
3 1983	269.2	277.9	281.3	283.9	274.7	274.0	269.6	267.1	263.0	267.6	265.0	258.9
4 1984	256.2	255.7	265.5	267.2	270.7	268.8	261.7	267.5	266.0	262.7	259.4	258.7
5 1985	263.2	267.0	261.4	269.9	269.1	270.6	264.6	266.5	262.5	263.1	258.8	260.1
6 1986	258.5	264.9	264.9	267.2	273.5	271.0	269.0	273.1	266.3	264.2	258.3	265.0
7 1987	261.5	271.5	276.7	271.7	272.3	279.7	273.7	270.4	269.0	269.1	272.0	263.3
8 1988	270.8	272.2	274.4	275.4	282.2	272.0	269.9	266.6	267.0	273.1	266.2	261.4
9 1989	267.5	266.0	264.9	272.5	278.7	273.0	274.9	273.5	265.0	268.3	267.4	266.9
10 1990	267.1	279.5	283.1	279.9	277.8	278.5	271.0	275.4	268.7	268.3	267.2	266.6
11 1991	269.0	274.2	278.2	272.0	273.4	280.5	275.1	272.2	268.2	265.1	261.5	259.3
12 1992	269.7	270.3	279.1	278.9	276.4	279.6	270.0	275.6	272.6	270.4	264.4	263.2

*** RESULT ***

YEAR=1992 (1-N-1=10,1%)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
XA	263.7	269.0	271.8	272.3	273.7	274.1	269.4	269.9	265.9	266.2	263.5	262.5
X0	269.7	270.3	279.1	278.9	276.4	279.6	270.0	275.6	272.6	270.4	264.4	263.2
S**2	26.	43.	51.	28.	18.	14.	16.	11.	5.	12.	17.	9.
F0	1.2	0.0	0.9	1.3	0.4	1.9	0.0	2.5	7.0	1.2	0.0	0.1
X0-	246.0	246.2	247.0	254.1	259.0	261.1	255.4	258.6	258.0	254.1	249.1	252.4
X0+	281.4	291.7	296.5	290.6	288.3	287.0	283.4	281.2	273.9	278.2	278.0	272.6
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+X-: REJECTED

*** F-TEST ***

YEAR	Subang (MMS)											
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
1 1981	83.9	82.5	80.3	85.4	87.2	81.1	81.9	77.7	85.0	84.8	85.5	83.0
2 1982	80.7	82.2	84.8	86.1	85.4	84.1	81.7	82.8	83.1	86.4	88.2	85.2
3 1983	80.4	81.0	81.2	81.8	85.4	82.2	83.3	84.6	86.5	83.9	85.2	85.3
4 1984	84.9	86.2	84.8	85.1	83.6	82.4	84.5	80.8	81.3	84.2	87.1	86.0
5 1985	79.5	85.1	86.5	84.8	85.2	77.0	80.8	80.0	83.5	84.9	87.6	85.8
6 1986	83.2	80.5	82.7	86.0	82.7	81.5	80.3	77.8	82.3	86.0	86.4	82.8
7 1987	82.4	77.9	79.5	84.4	84.4	81.6	82.6	83.1	84.0	85.1	84.0	86.3
8 1988	82.0	82.0	84.0	84.2	81.7	83.1	81.3	83.6	84.0	80.3	84.4	81.5
9 1989	81.2	79.0	82.4	82.7	80.5	80.3	77.2	78.3	82.0	82.3	83.6	80.6
10 1990	80.2	76.2	75.5	81.7	81.1	79.5	79.8	77.2	81.5	83.9	83.5	81.2
11 1991	80.9	78.5	80.0	83.8	84.4	80.7	80.0	80.9	82.9	83.2	85.2	86.2
12 1992	77.6	80.7	79.3	82.0	83.3	79.4	81.4	78.5	79.7	79.7	83.4	83.3

*** RESULT ***

YEAR=1992 (1,N-1=10,1X)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
XA	81.8	81.0	82.0	84.2	83.8	81.2	81.2	80.6	83.3	84.1	85.5	84.0
XO	77.6	80.7	79.3	82.0	83.3	79.4	81.4	78.5	79.7	79.7	83.4	83.3
S**2	3.	8.	9.	2.	4.	3.	4.	6.	2.	3.	2.	4.
FO	5.6	0.0	0.7	1.8	0.0	0.8	0.0	0.6	4.9	5.8	1.6	0.1
XO-	76.2	70.9	71.6	79.0	77.0	74.9	74.7	71.8	78.1	78.3	80.2	76.7
XO+	87.3	91.1	92.3	89.3	90.6	87.5	87.8	89.4	88.4	89.8	90.9	91.3
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+X-: REJECTED

*** F-TEST ***

YEAR	SUNSHINE DURATION 0.01HRS											
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV.	DEC.
1 1981	29.6	49.9	62.8	47.7	42.5	59.5	52.0	60.5	35.1	40.8	35.6	41.3
2 1982	45.8	51.5	46.2	45.0	44.6	48.8	52.3	36.9	42.3	43.1	40.8	37.3
3 1983	50.8	61.9	61.5	48.1	50.8	50.4	50.8	40.4	35.8	44.2	40.0	23.8
4 1984	34.2	31.2	46.2	47.3	47.3	48.8	45.4	52.7	46.5	38.5	37.7	34.6
5 1985	52.7	45.8	42.3	46.2	49.6	59.6	48.8	50.0	45.0	40.4	38.5	44.2
6 1986	30.4	55.8	41.9	48.1	54.6	53.5	53.8	49.6	44.6	41.5	36.2	51.2
7 1987	37.7	63.8	56.2	54.6	49.2	51.2	55.8	44.2	40.0	46.5	38.8	35.8
8 1988	44.6	50.0	37.9	46.4	47.9	44.6	41.1	38.6	35.4	41.8	33.2	35.7
9 1989	44.3	47.9	34.6	50.4	47.1	45.4	51.1	42.1	41.1	39.6	42.1	41.8
10 1990	45.4	59.3	55.4	50.0	45.4	47.1	44.3	48.6	38.6	41.4	33.6	42.1
11 1991	41.0	52.9	52.9	49.7	45.7	51.3	42.3	42.6	30.0	25.1	27.4	21.4
12 1992	51.2	49.1	52.6	50.6	48.0	42.1	43.4	48.5	41.2	36.5	32.9	36.5

Subang (MMS)

*** RESULT ***

YEAR=1992 (1,N-1=10,1X)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV.	DEC.
XA	41.5	51.8	48.9	48.5	47.7	50.9	48.9	46.0	39.5	40.3	36.7	37.2
X0	51.2	49.1	52.6	50.6	48.0	42.1	43.4	48.5	41.2	36.5	32.9	36.5
S**2	54.	73.	81.	6.	10.	23.	22.	44.	23.	27.	16.	68.
F0	1.5	0.1	0.1	0.6	0.0	2.9	1.2	0.1	0.1	0.4	0.8	0.0
X0-	16.0	22.1	17.6	39.8	36.8	34.4	32.7	22.9	22.7	22.1	22.9	8.7
X0+	67.0	81.5	80.2	57.2	58.7	67.5	65.1	69.1	56.3	58.4	50.6	65.8
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+,X-: REJECTED

*** F-TEST ***

TEMPERATURE 0.1DEGC Petaling Jaya (MMS)

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
1 1981	261.6	270.5	280.3	273.2	272.7	284.2	275.5	279.3	266.7	270.9	268.8	268.0
2 1982	268.7	270.0	270.2	269.6	274.5	277.2	271.9	270.4	272.2	264.4	264.5	269.7
3 1983	273.6	283.5	286.3	290.1	280.2	281.7	274.8	272.2	268.0	273.5	271.3	264.7
4 1984	261.0	258.0	271.2	272.9	273.6	273.7	265.0	272.4	269.7	268.4	261.8	262.3
5 1985	269.5	272.4	266.0	275.4	273.7	281.5	271.3	273.4	268.7	266.3	262.7	264.0
6 1986	261.9	269.9	268.8	271.2	278.4	279.1	275.2	280.4	271.6	269.6	262.8	271.0
7 1987	267.0	277.5	283.6	274.1	275.7	281.2	274.7	271.2	271.0	268.9	272.5	262.2
8 1988	271.5	272.2	276.8	277.6	283.2	273.7	272.2	267.4	267.9	274.7	264.8	263.0
9 1989	268.6	267.8	267.2	275.1	279.7	277.2	278.1	275.5	266.1	269.6	268.1	268.4
10 1990	268.9	281.0	282.6	281.8	279.4	281.1	273.8	279.8	271.6	270.9	269.1	270.1
11 1991	272.6	276.0	278.2	272.0	274.9	283.1	279.1	275.7	272.5	266.4	259.7	258.3
12 1992	270.7	270.2	280.0	278.1	276.1	280.0	270.1	277.3	274.0	272.5	262.0	261.3

*** RESULT ***

YEAR=1992 (1,N-1=10,1X)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
XA	267.7	272.6	275.6	275.7	276.9	279.4	273.8	274.3	269.7	269.4	266.0	265.6
XO	270.7	270.2	280.0	278.1	276.1	280.0	270.1	277.3	274.0	272.5	262.0	261.3
S**2	18.	44.	47.	31.	11.	12.	13.	16.	5.	9.	16.	15.
FO	0.4	0.1	0.3	0.1	0.0	0.0	0.9	0.4	3.2	0.9	0.9	1.0
XO-	253.0	249.6	251.8	256.6	265.6	267.6	261.3	260.4	262.1	259.2	252.2	252.1
XO+	282.4	295.6	299.3	294.9	288.2	291.3	286.3	288.3	277.3	279.6	279.8	279.1
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+X-: REJECTED

*** F-TEST ***

Petalang Jaya (MMS)

RELATIVE HUMIDITY %

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
1 1981	80.3	80.2	76.9	83.7	85.2	77.0	78.1	74.2	82.8	81.8	82.5	78.6
2 1982	76.5	79.9	82.5	83.9	83.4	80.3	79.4	80.5	79.7	83.3	85.4	81.3
3 1983	76.9	75.8	76.9	77.6	82.5	78.7	79.9	81.4	82.9	80.3	81.1	80.2
4 1984	81.0	84.2	82.1	82.4	82.0	80.5	82.3	77.8	79.5	81.0	85.8	83.3
5 1985	75.4	81.2	83.3	81.4	82.4	71.3	77.3	75.1	78.9	82.0	85.3	83.2
6 1986	78.5	76.4	79.0	83.2	79.0	77.4	76.7	73.6	79.4	82.0	83.3	78.0
7 1987	77.6	73.0	74.1	81.7	81.3	78.5	78.4	79.1	81.0	82.9	81.4	84.1
8 1988	79.4	79.7	81.5	82.2	79.1	79.9	78.5	82.1	81.9	79.5	85.0	79.7
9 1989	80.8	78.2	81.5	81.4	80.0	78.5	77.1	78.2	82.4	81.6	83.1	79.0
10 1990	78.1	74.5	74.7	79.3	80.0	78.1	78.3	75.3	79.8	82.3	82.2	78.5
11 1991	78.7	77.0	79.6	82.9	83.3	79.4	78.5	80.2	82.2	83.4	86.1	85.9
12 1992	76.2	80.8	79.4	82.8	83.8	79.1	79.8	77.4	79.6	79.1	83.3	81.9

*** RESULT ***

YEAR=1992 (1,N-1=10,1%)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
XA	78.5	78.2	79.3	81.8	81.7	78.1	78.6	78.0	81.0	81.8	83.7	81.1
X0	76.2	80.8	79.4	82.8	83.8	79.1	79.8	77.4	79.6	79.1	83.3	81.9
S**2	3.	10.	10.	3.	4.	6.	2.	8.	2.	1.	3.	7.
F0	1.4	0.6	0.0	0.3	1.0	0.1	0.6	0.0	0.7	4.5	0.0	0.1
X0-	72.5	67.5	68.6	75.6	75.1	69.8	73.4	68.0	75.9	77.8	77.7	72.2
X0+	84.4	88.9	90.0	88.0	88.2	86.5	83.8	87.9	86.0	85.9	89.8	89.9
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+,X-: REJECTED

*** F-TEST ***

Petaling Jaya (MMS)

SUNSHINE DURATION 0.0IHRS

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
1 1981	26.9	50.0	60.1	44.2	42.1	55.8	50.6	58.8	35.7	40.0	35.8	39.0
2 1982	47.3	50.4	41.9	46.9	43.8	47.7	50.0	37.7	39.2	43.1	38.8	36.9
3 1983	48.1	58.8	56.9	44.6	48.1	50.0	48.8	36.9	33.5	41.9	39.2	23.1
4 1984	32.7	29.2	44.2	47.3	46.2	47.7	44.6	51.9	46.9	37.3	36.2	35.0
5 1985	50.8	45.8	39.2	45.4	46.2	56.9	44.6	47.7	43.8	37.7	34.2	38.5
6 1986	26.9	53.8	40.4	45.4	51.9	51.2	51.9	49.6	42.7	40.8	35.4	45.4
7 1987	35.8	64.2	56.2	51.5	47.7	49.6	51.5	43.5	38.1	44.6	40.4	33.5
8 1988	45.4	50.7	37.9	44.3	47.9	42.1	40.4	37.5	35.7	40.7	32.9	32.1
9 1989	40.7	45.4	35.0	47.9	46.4	45.7	47.9	43.6	40.7	39.6	38.6	41.8
10 1990	43.6	58.2	55.0	50.4	44.6	45.7	43.9	44.3	37.5	39.6	31.4	43.6
11 1991	39.5	50.4	48.5	46.5	44.6	47.2	41.5	40.3	29.3	24.7	24.2	18.2
12 1992	50.1	46.6	51.0	47.3	43.1	40.0	40.1	46.6	39.4	36.6	30.4	34.5

*** RESULT ***

YEAR=1992 (1,N-1=10,1X)= 10.04

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JULY.	AUG.	SEP.	OCT.	NOV	DEC.
XA	39.8	50.6	46.8	46.8	46.3	49.1	46.9	44.7	38.5	39.1	35.2	35.2
XO	50.1	46.6	51.0	47.3	43.1	40.0	40.1	46.6	39.4	36.6	30.4	34.5
S**2	63.	75.	71.	5.	6.	17.	15.	43.	23.	25.	19.	63.
FO	1.4	0.2	0.2	0.0	1.4	3.9	2.6	0.1	0.0	0.2	1.0	0.0
XO-	12.3	20.5	17.5	38.7	37.7	34.6	33.4	22.0	21.9	21.7	20.0	7.6
XO+	67.3	80.8	76.2	54.8	55.0	63.5	60.4	67.4	55.0	56.4	50.4	62.8
RESULT	0	0	0	0	0	0	0	0	0	0	0	0

O: ACCEPTED
X+X-: REJECTED