

ข้อมูลอากาศประเทศไทยสำหรับงานอนุรักษ์พลังงาน
จังหวัดพิษณุโลก



โดย

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สิงหาคม 2543

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ตารางสรุปรวมผลของข้อมูลทุกประเภทจังหวัดพิษณุโลก

CLIMATOLOGICAL DATA FOR THE PERIOD 1981-1998 station : PHITSANULOK

Elevation of station above MSL

44 Meters

Latitude: 16 47 N

Longitude: 100 16 E

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
TEMPERATURE (° C)													
Averages													
Daily Maximum	31.6	33.7	35.5	36.8	34.9	33.0	32.2	31.4	31.5	31.2	30.9	30.3	32.8
Monthly Mean	24.7	27.0	29.3	30.9	30.1	29.1	28.5	28.1	28.2	27.7	26.3	24.1	27.8
Daily Minimum	19.1	21.6	24.4	26.3	26.5	26.1	25.7	25.6	25.5	24.8	22.3	18.8	23.9
Dry bulb Standard Deviation	4.9	4.7	4.4	4.2	3.8	3.1	2.9	2.7	2.6	2.8	3.7	4.7	3.7
Extremes													
Highest	36.0	38.1	39.5	41.6	41.0	38.5	36.9	36.4	35.0	35.0	35.4	34.6	41.6
Lowest	11.8	13.5	12.9	20.5	21.0	23.0	22.5	22.8	22.4	17.6	12.7	11.2	11.2
Monthly Dew Point	17.0	18.3	20.2	21.8	23.2	23.8	23.7	24.0	24.2	23.3	20.6	16.8	21.4
Dew Point Standard Deviation	2.8	3.0	2.4	1.8	1.4	1.0	1.0	0.9	1.0	1.6	2.7	3.0	1.9
Monthly Wet bulb Temperature	19.9	21.4	23.3	24.7	25.3	25.4	25.2	25.2	25.4	24.7	22.6	19.5	23.6
DEGREE DAY BASE 18.3 ° C													
Heating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooling	197.6	251.8	339.2	376.1	365.7	321.6	315.2	301.9	295.1	289.9	239.6	177.3	3,471.0
RELATIVE HUMIDITY (%)													
Averages													
Monthly Mean	65.1	61.6	60.6	60.7	69.0	74.9	76.7	79.8	80.1	78.4	72.7	66.3	70.5
Hour 01:00-06:00	78.9	74.1	71.5	71.9	80.6	85.6	86.6	88.6	89.4	88.8	85.3	80.1	81.8
Hour 07:00-12:00	73.6	71.2	70.2	69.4	74.2	78.6	80.7	83.0	83.1	80.9	76.6	72.9	76.2
Hour 13:00-18:00	42.1	40.9	42.7	43.7	52.7	60.0	62.4	66.4	66.3	63.1	53.7	44.0	53.2
Hour 19:00-24:00	65.7	60.4	57.9	58.0	68.2	75.3	77.1	80.9	81.7	81.0	75.4	68.0	70.8
WIND													
Average Speed (m/s)	0.5	0.7	1.0	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.7
Prevailing wind	NW	S	S	S	S	S	S	S	S, SW	N	N	N, NW	S
Maximum Speed (m/s)	5.1	8.2	7.2	7.7	10.3	11.3	8.7	7.7	7.7	5.7	4.1	5.1	11.3
SKY COVER (0-10)													
Average Sky Condition	2.2	2.3	2.6	3.6	6.2	7.7	8.1	8.5	7.6	5.8	3.9	2.4	5.1
Percentage of Sky cover													
Clear sky (0-3)	75	73	69	57	21	8	5	4	7	27	53	72	39
Partly Cloudy sky (4-7)	18	19	20	27	37	30	24	21	33	35	27	19	26
Cloudy sky (8-10)	8	8	11	16	41	62	71	75	60	38	20	9	35
SUNSHINE DURATION* (hours)													
Average Monthly total	266.7	267.1	270.2	280.6	254.3	184.2	153.3	157.4	170.1	217.1	234.4	271.0	2,726.4
Percentage of Sunshine	71.7	76.8	72.6	77.9	68.4	51.2	41.2	42.3	47.3	58.4	65.1	72.8	62.0
SOLAR RADIATION* (W/m²)													
Average Hourly max	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Hourly mean	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Daily Total	-	-	-	-	-	-	-	-	-	-	-	-	-
RAINFALL (mm)													
Average Monthly total	3.3	14.7	25.5	58.3	195.7	163.7	181.9	285.8	215.4	163.6	48.9	9.5	1,366.3
Daily record high	9.5	62.3	71.3	76.2	132.6	81.2	115.4	130.4	95.9	251.1	73.3	86.8	251.1
Average Number of rainy days (0.1 mm. Or more)	1	2	3	5	14	17	17	21	17	13	4	1	115
EVAPORATION (mm)													
Average Monthly total	115.2	133.4	171.7	198.7	196.0	159.3	148.8	139.2	128.5	127.3	116.3	115.5	1,749.9

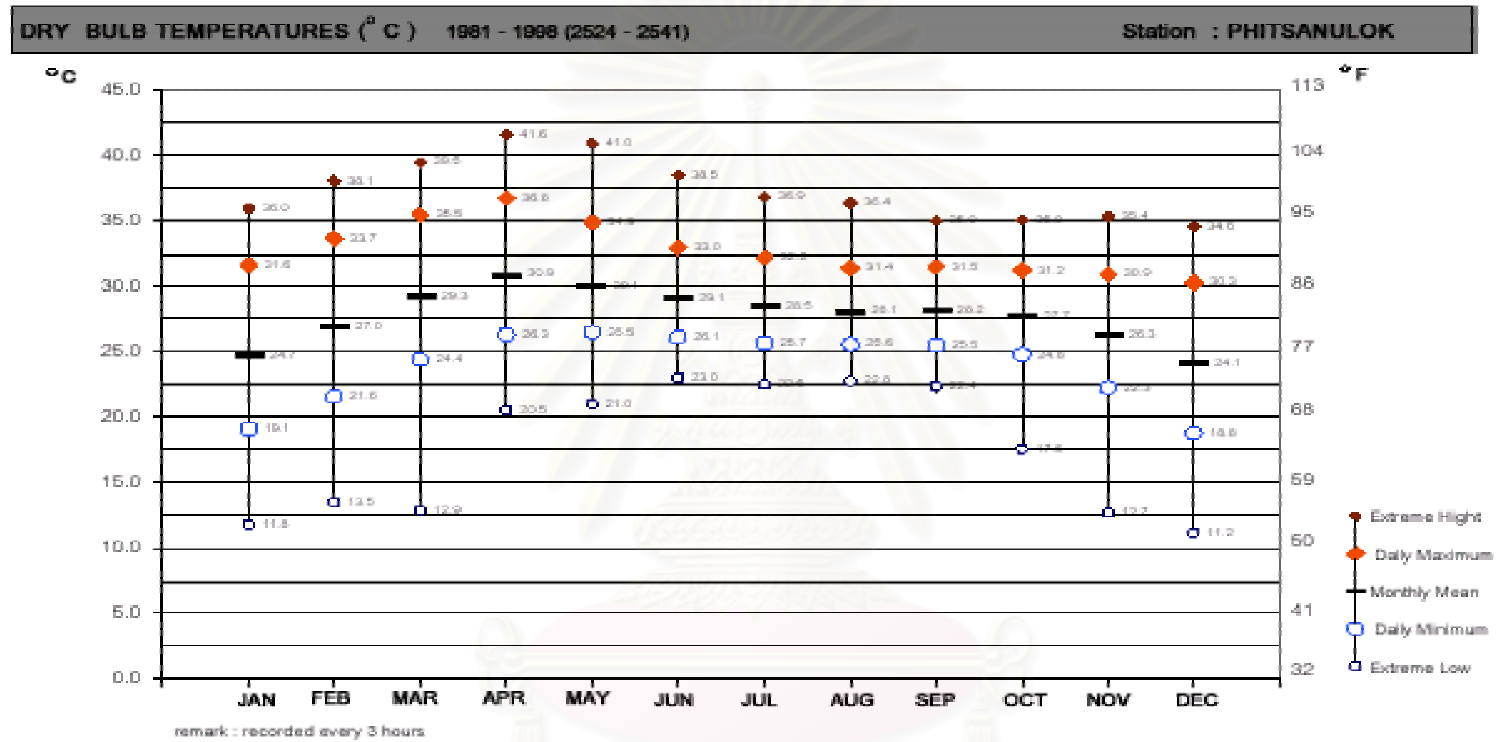
remark: 1 m/s = 3.597 km/h, = 2.237 mph, = 196.85 fpm, = 1.9456 knots

(*) data base on 1997 - 1998 recorded period

1 W/m2 = 0.317 Btu/h.ft2

(-) missing value or no data report

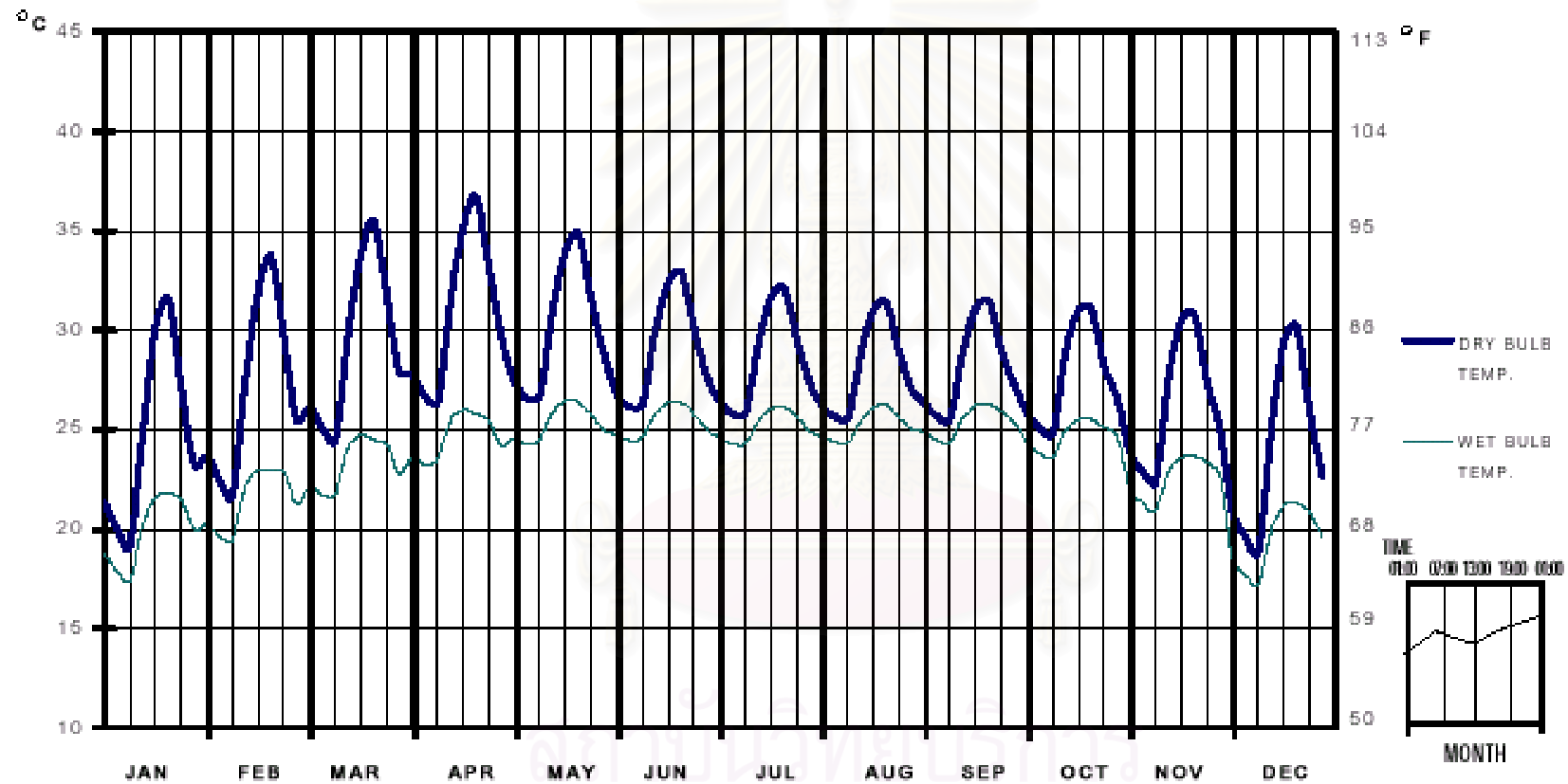
แผนภูมิอุณหภูมิกระเปาะแห้ง (dry bulb temperatures)



สถาบันวิทยบริการ
 จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิความแตกต่างระหว่างอุณหภูมิกระเปาะแห้งและอุณหภูมิกระเปาะเปียก (diurnal temperatures)

DIURNAL TEMPERATURES 1961-1998 (2524-2541) Station :PHITSANULOK

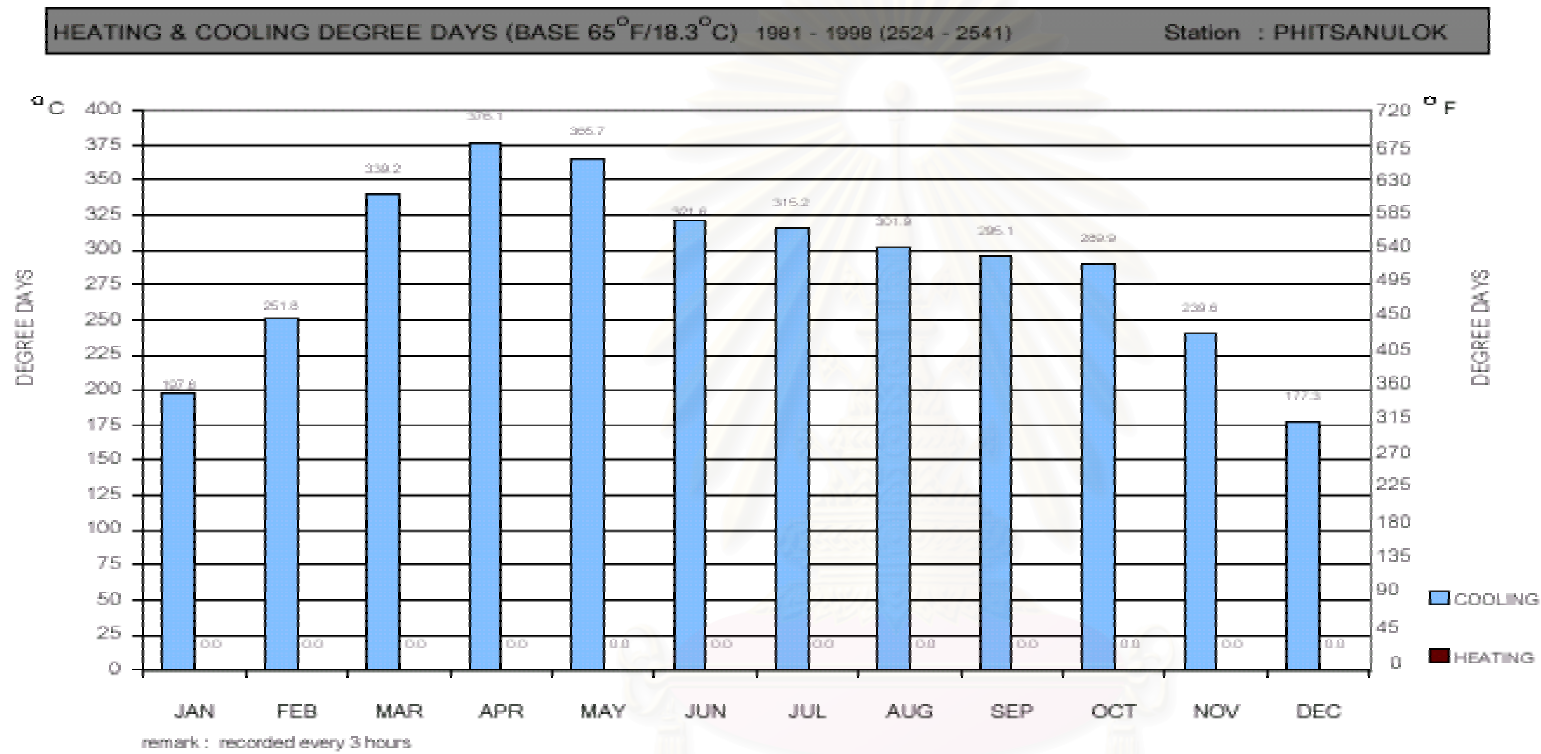


remark : recorded every 3 hours

จุฬาลงกรณ์มหาวิทยาลัย

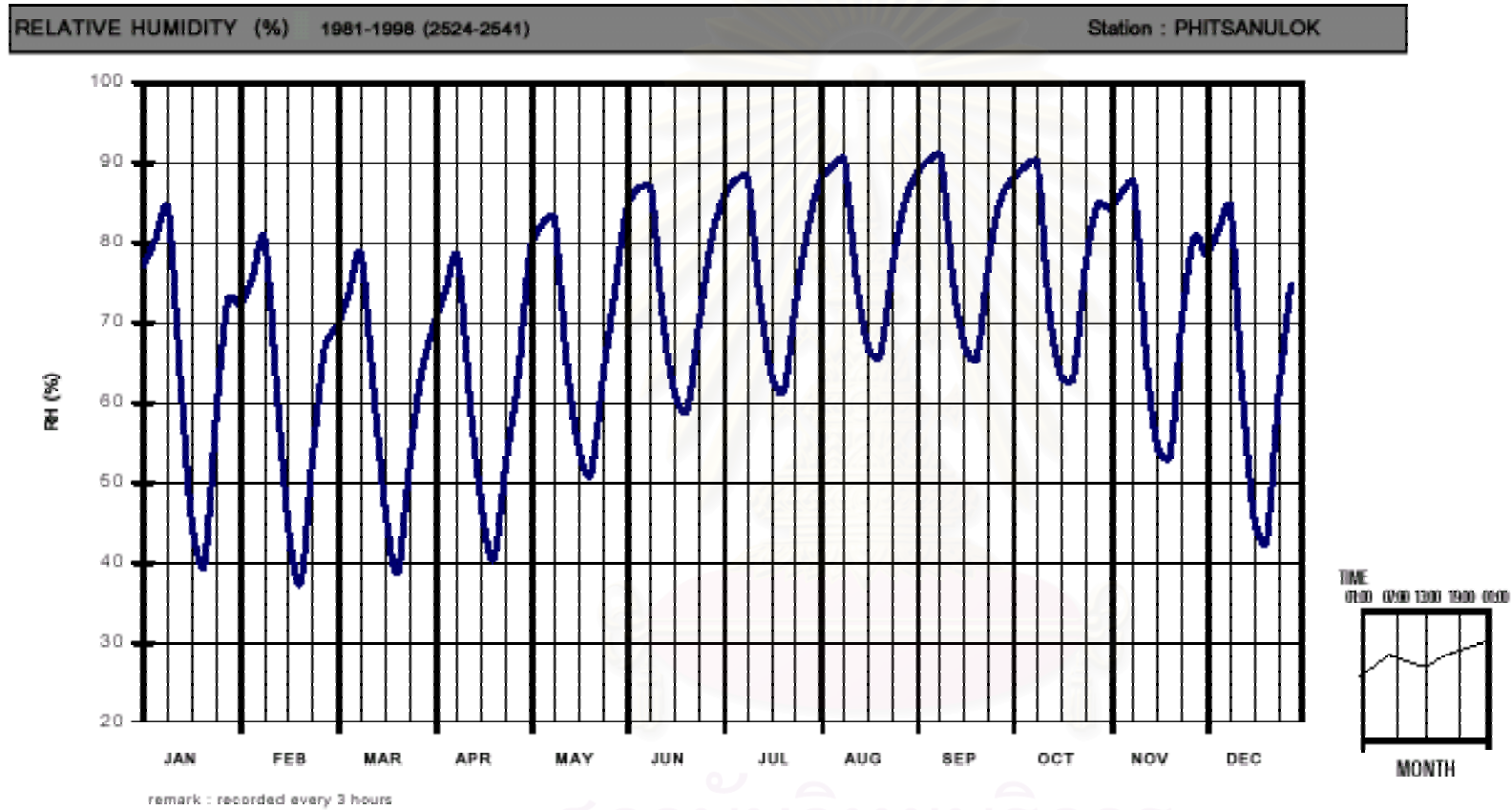
ตารางแสดง

แผนภูมิปริมาณองศาวัน การทำความร้อนและการทำความเย็น (heating and cooling degree days)



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิความชื้นสัมพัทธ์ (relative humidity)



สถาบันวิทยบริการ
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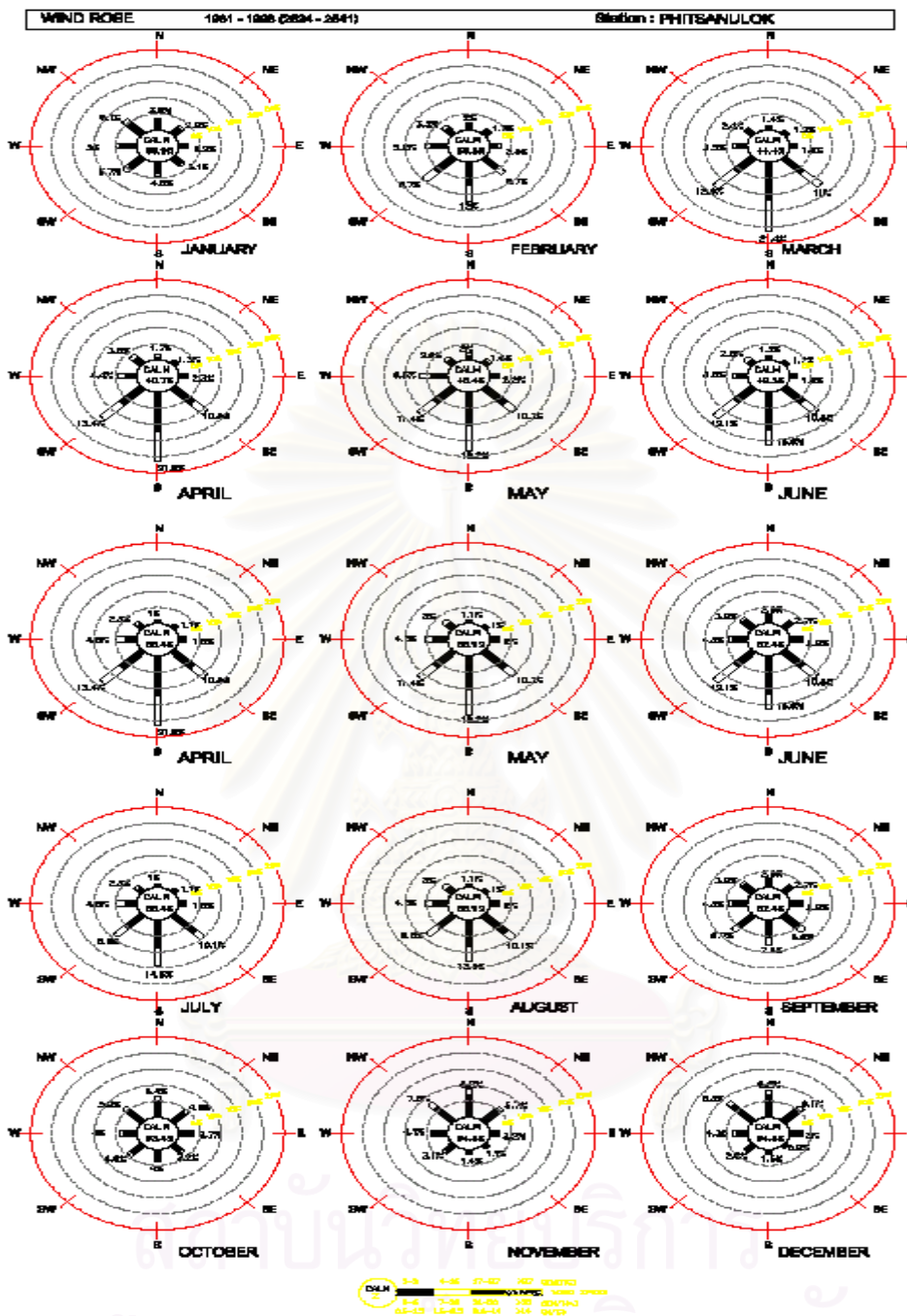
ตารางแสดงผลข้อมูลจำแนกความถี่ของลม ในแต่ละความเร็วและทิศทาง ที่เกิดลมรายเดือน (monthly frequency distribution of wind in each speed and direction)

MONTHLY FREQUENCY DISTRIBUTION OF WIND IN EACH SPEED AND DIRECTION 1981 - 1998 (2524 - 2541)															Station : PHITSANULOK																																																								
January			N	NE	E	SE	S	SW	W	NW	Calm	Total	February			N	NE	E	SE	S	SW	W	NW	Calm	Total	March			N	NE	E	SE	S	SW	W	NW	Calm	Total																																	
kts	kmh	m/s										66.9 66.9	kts	kmh	m/s										58.5 58.5	kts	kmh	m/s									44.4 44.4																																		
1-3	2-6	0.6-1.5	3.2	2.5	1.8	2.5	3.3	4.1	4	5	28.4	1-3	2-6	0.6-1.5	1.6	1.8	1.9	4.4	7.3	5.8	4.1	2.5	29.2	1-3	2-6	0.6-1.5	1.1	0.8	1.1	6.3	11.6	5.8	2.4	1.8	30.9	4-16	7-30	1.6-8.5	0.6	0.4	0.4	0.6	1.2	1.8	1	1.1	6.9	4-16	7-30	1.6-8.5	0.4	0.2	0.6	2.3	4.7	3.9	1.1	0.8	14	4-16	7-30	1.6-8.5	0.3	0.4	0.8	4.7	9.8	6.8	1.1	0.6	24.5
17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0
Total			3.8	2.9	2.2	3.1	4.5	5.7	5	6.1	66.9 100	Total			2	1.8	2.5	6.7	12	9.7	5.2	3.3	56.5 100	Total			1.4	1.2	1.9	11	21.4	12.6	3.5	2.4	44.4 100																																				
April			N	NE	E	SE	S	SW	W	NW	Calm	Total	May			N	NE	E	SE	S	SW	W	NW	Calm	Total	June			N	NE	E	SE	S	SW	W	NW	Calm	Total																																	
kts	kmh	m/s										40.7 40.7	kts	kmh	m/s										45.4 45.4	kts	kmh	m/s									49.3 49.3																																		
1-3	2-6	0.6-1.5	0.9	1	1.5	6.7	12.4	7	2.8	2.2	34.5	1-3	2-6	0.6-1.5	1.2	1.1	1.6	6.9	10.5	6.2	3.7	1.7	32.9	1-3	2-6	0.6-1.5	0.9	1.1	1.6	7.5	10.7	6.9	2	1.3	32	4-16	7-30	1.6-8.5	0.8	0.3	0.8	4.1	9.4	6.4	1.8	1.4	24.9	4-16	7-30	1.6-8.5	0.8	0.5	0.6	3.2	7.7	5.2	2.8	0.9	21.7	4-16	7-30	1.6-8.5	0.4	0.1	0.2	3.3	6.2	5.2	1.8	1.2	18.4
17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0
Total			1.7	1.3	2.3	10.8	21.8	13.4	4.4	3.6	40.7 100	Total			2	1.6	2.2	10.1	18.2	11.4	6.5	2.6	45.4 100	Total			1.3	1.2	1.8	10.8	16.9	12.1	3.8	2.5	49.3 100																																				
July			N	NE	E	SE	S	SW	W	NW	Calm	Total	August			N	NE	E	SE	S	SW	W	NW	Calm	Total	September			N	NE	E	SE	S	SW	W	NW	Calm	Total																																	
kts	kmh	m/s										55.4 55.4	kts	kmh	m/s										58.9 58.9	kts	kmh	m/s									62.4 62.4																																		
1-3	2-6	0.6-1.5	0.8	1	1.6	7.3	9	5.3	2.8	1.3	29.1	1-3	2-6	0.6-1.5	0.8	0.9	1.7	7.3	8.1	5.2	2.5	1.7	28.2	1-3	2-6	0.6-1.5	2.4	2.1	2.6	5	5.7	4.8	3.3	3	28.9	4-16	7-30	1.6-8.5	0.2	0.1	0.2	2.8	5.5	3.5	2	1	15.3	4-16	7-30	1.6-8.5	0.3	0.1	0.3	2.8	4.7	3.3	1.8	1.3	14.6	4-16	7-30	1.6-8.5	0.5	0.6	0.3	1.6	1.9	1.9	1	0.9	8.7
17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0
Total			1	1.1	1.8	10.1	14.5	8.8	4.8	2.3	55.4 100	Total			1.1	1	2	10.1	12.8	8.5	4.3	3	56.9 100	Total			2.9	2.7	2.9	6.6	7.6	6.7	4.3	3.9	62.4 100																																				
October			N	NE	E	SE	S	SW	W	NW	Calm	Total	November			N	NE	E	SE	S	SW	W	NW	Calm	Total	December			N	NE	E	SE	S	SW	W	NW	Calm	Total																																	
kts	kmh	m/s										63.4 63.4	kts	kmh	m/s										64.8 64.8	kts	kmh	m/s									64.8 64.8																																		
1-3	2-6	0.6-1.5	4.8	3.9	3.1	2.8	3.3	3.5	3	4.8	28.7	1-3	2-6	0.6-1.5	6.8	4.7	2.7	1	1.2	2.4	3.6	6.1	28.6	1-3	2-6	0.6-1.5	6.9	5.2	2.6	0.8	1.2	2.2	3.7	6.9	29.9	4-16	7-30	1.6-8.5	1.5	0.9	0.9	0.7	0.7	1.1	1	1.4	7.9	4-16	7-30	1.6-8.5	1.9	1	0.5	0.1	0.2	0.7	0.5	1.7	8.6	4-16	7-30	1.6-8.5	1.3	0.9	0.4	0.1	0.3	0.4	0.6	1.4	5.4
17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	17-27	31-50	8.6-14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0	>27	>50	>14	0	0	0	0	0	0	0	0	0
Total			6.4	4.8	3.7	3.2	4	4.6	4	5.9	63.4 100	Total			8.8	5.7	3.2	1.1	1.4	3.1	4.1	7.8	64.8 100	Total			8.2	6.1	3	0.9	1.5	2.6	4.3	8.3	64.8 100																																				

remark: kts = knots * this table shows the frequency of wind speed & direction in percent
 1kts = 1.853 kmh = 0.514 m/s

สถาบันวิทยบริการ
 จุฬาลงกรณ์มหาวิทยาลัย

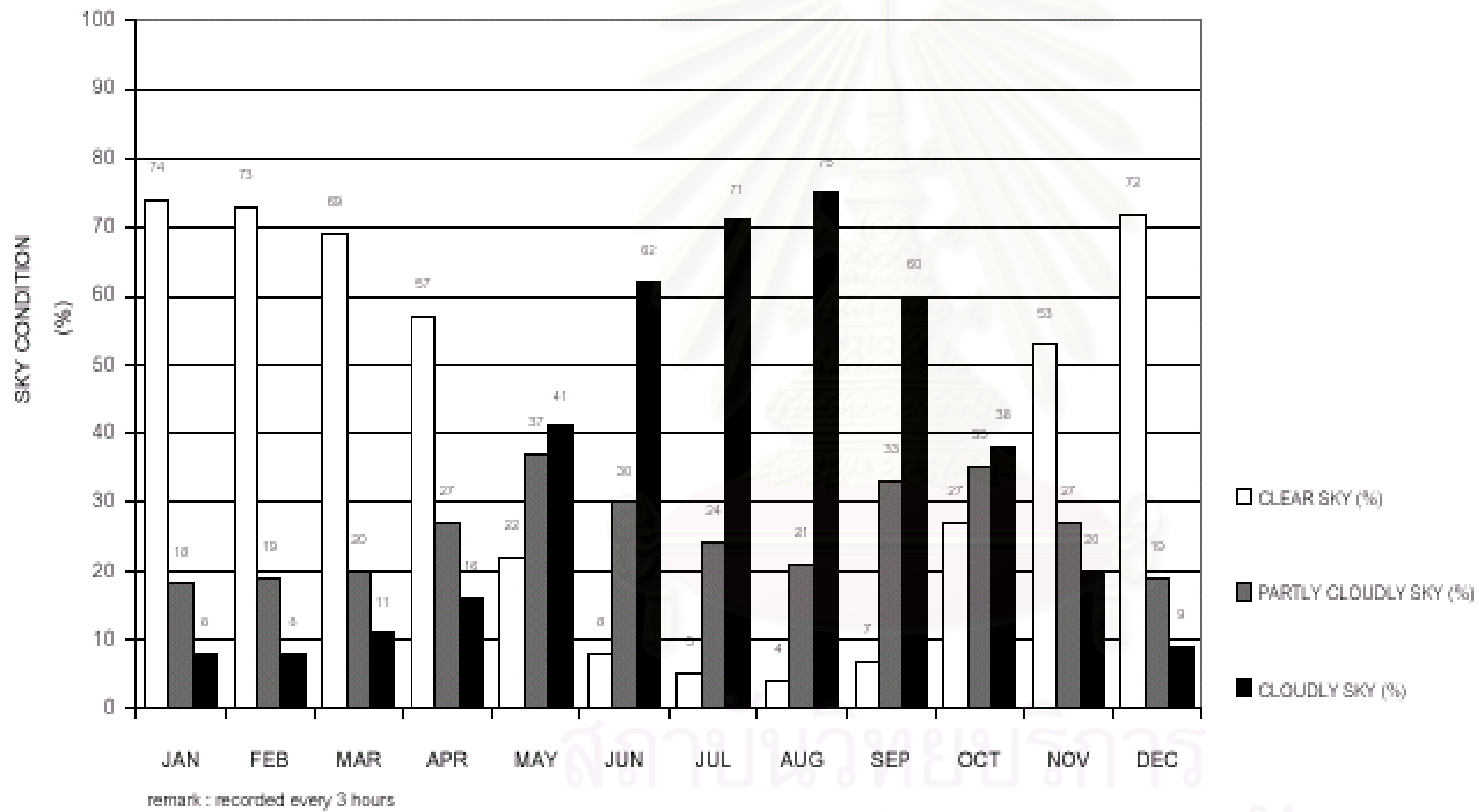
แผนภูมิจำแนกความถี่ของลม ในแต่ละความเร็วและทิศทาง ที่เกิดลมรายเดือน (wind rose)



จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิสภาพท้องฟ้าและสัดส่วนเปอร์เซ็นต์สภาพท้องฟ้า (sky cover and percentage of sky condition)

SKY CONDITION (%) 1981 - 1998 (2524-2541) Station : PHITSANULOK



สถาบันวิจัยจักร
จุฬาลงกรณ์มหาวิทยาลัย

ตารางแสดงผลข้อมูลระยะเวลาของแสงแดด (duration of sunshine)

DURATION OF SUNSHINE (hours) 1981 - 1998 (2524 - 2541)													Station : PHITSANULOK	
MONTH	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	
DAY	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	hours avg %	
1	8.4 69.7%	8.5 71.2%	9.2 76.4%	9.2 76.9%	8.6 72.0%	6.1 50.5%	3.6 29.6%	3.3 27.3%	4.9 40.8%	6.2 51.5%	8.4 69.7%	8.5 70.5%	7.1 58.8%	
2	8.5 70.8%	9.1 75.6%	7.7 64.2%	9.4 78.2%	9.5 78.8%	6.2 51.3%	4.8 39.7%	3.7 30.9%	5.3 44.2%	5.7 47.4%	7.6 63.3%	7.7 64.3%	7.1 59.1%	
3	8.8 73.4%	8.7 72.5%	8.3 68.8%	9.7 80.5%	9.6 79.8%	7.2 60.2%	5.4 44.8%	4.5 37.8%	6.0 49.7%	5.6 46.9%	7.6 63.2%	9.3 77.5%	7.6 62.9%	
4	8.9 73.9%	8.9 74.3%	8.8 73.6%	9.2 76.9%	9.6 80.2%	8.0 66.9%	3.8 31.3%	4.0 33.7%	6.4 53.6%	5.0 41.7%	5.8 48.5%	9.1 76.1%	7.3 60.9%	
5	9.1 75.4%	9.0 74.9%	8.1 67.5%	9.3 77.4%	8.1 67.8%	7.0 58.3%	3.3 27.4%	5.1 42.1%	5.6 46.4%	5.2 42.9%	7.2 59.9%	8.6 72.0%	7.1 59.3%	
6	8.6 71.3%	9.3 77.6%	8.3 69.0%	9.0 75.3%	7.9 65.6%	7.1 58.8%	5.2 43.6%	6.0 49.7%	5.7 47.1%	5.9 48.9%	8.2 67.9%	8.9 74.3%	7.5 62.4%	
7	8.8 72.9%	9.5 78.8%	7.6 63.6%	9.4 78.5%	8.7 72.8%	5.0 41.8%	5.2 43.4%	5.9 48.9%	5.2 43.1%	7.1 58.8%	8.6 71.5%	9.4 78.5%	7.5 62.7%	
8	8.9 73.8%	9.3 77.6%	8.2 68.6%	8.5 71.2%	9.4 78.0%	6.7 55.5%	5.5 46.0%	6.2 51.5%	5.4 45.3%	6.5 54.0%	8.0 66.3%	9.2 76.7%	7.6 63.7%	
9	8.6 71.7%	9.4 78.2%	8.3 69.0%	9.4 78.3%	8.5 71.2%	5.9 49.2%	6.7 55.8%	5.5 45.6%	5.0 41.7%	5.8 48.7%	7.2 59.7%	8.9 74.0%	7.4 61.9%	
10	9.5 78.8%	9.4 78.5%	8.9 74.1%	10.0 83.3%	8.7 72.6%	6.5 54.3%	6.0 49.7%	5.0 41.7%	4.9 40.6%	7.1 58.8%	7.5 62.6%	8.0 66.3%	7.6 63.4%	
11	9.1 75.6%	9.1 75.7%	9.4 78.1%	10.0 83.1%	8.3 69.4%	6.0 49.9%	4.2 35.1%	4.7 39.4%	6.3 52.6%	7.3 60.5%	8.8 73.6%	8.6 71.6%	7.6 63.7%	
12	8.7 72.3%	9.0 75.0%	8.6 71.9%	9.7 81.0%	9.5 78.8%	6.0 50.3%	6.0 50.2%	5.3 44.4%	6.6 55.0%	7.3 60.6%	8.6 71.5%	8.3 69.1%	7.8 65.0%	
13	8.9 73.9%	9.3 77.8%	8.9 73.8%	9.6 79.9%	8.9 73.8%	6.3 52.8%	4.6 38.1%	5.7 47.2%	5.9 49.2%	6.2 51.9%	7.8 65.3%	9.3 77.6%	7.6 63.4%	
14	9.0 74.6%	9.6 79.7%	8.3 69.0%	10.1 84.5%	7.5 62.6%	5.4 45.0%	5.1 42.1%	5.5 45.4%	6.2 51.6%	6.3 52.8%	7.8 64.7%	8.5 71.2%	7.4 61.9%	
15	8.9 74.5%	9.8 81.6%	9.2 76.5%	9.2 76.9%	8.8 73.3%	7.1 59.3%	5.6 46.3%	4.2 35.2%	4.6 38.3%	7.2 59.8%	7.3 60.4%	7.3 60.8%	7.4 61.9%	
16	9.2 76.5%	9.1 76.1%	9.7 80.8%	10.0 82.9%	8.1 67.2%	6.7 55.6%	5.2 43.7%	4.4 36.9%	5.1 42.3%	7.5 62.8%	8.5 71.0%	8.3 69.3%	7.7 63.8%	
17	8.5 70.8%	9.1 75.6%	9.3 77.4%	9.6 80.1%	8.6 71.7%	5.4 45.0%	6.2 51.3%	4.5 37.7%	6.2 51.5%	6.5 54.5%	7.6 63.5%	8.7 72.5%	7.5 62.6%	
18	9.2 76.4%	9.0 75.1%	9.1 75.8%	9.3 77.3%	7.1 59.0%	6.1 51.0%	6.4 53.7%	4.9 40.9%	5.1 42.6%	6.1 51.1%	7.4 61.3%	8.2 68.1%	7.3 61.0%	
19	8.7 72.6%	9.1 75.4%	9.3 77.7%	8.8 73.7%	6.9 57.4%	7.1 58.9%	6.7 55.4%	5.3 44.2%	4.9 40.7%	6.1 50.8%	8.1 67.8%	9.0 75.3%	7.5 62.5%	
20	9.1 75.5%	9.1 75.7%	9.4 78.2%	8.6 71.5%	7.0 58.6%	6.0 50.3%	6.8 56.4%	5.5 46.2%	5.3 43.8%	6.7 56.1%	9.0 75.3%	8.7 72.4%	7.6 63.3%	
21	7.9 66.1%	9.1 75.4%	9.2 76.5%	8.7 72.8%	8.6 71.5%	7.5 62.5%	4.9 40.7%	5.3 44.4%	5.6 46.5%	8.3 69.3%	7.9 65.8%	9.1 75.8%	7.7 63.9%	
22	8.5 70.5%	9.6 79.8%	8.8 73.5%	9.0 74.9%	9.1 75.9%	7.3 60.9%	4.2 35.2%	7.0 58.3%	6.6 55.3%	8.3 69.2%	7.4 61.4%	9.3 77.7%	7.9 66.1%	
23	9.1 76.0%	9.6 79.7%	8.7 72.8%	10.5 87.4%	9.3 77.2%	6.6 54.6%	5.1 42.2%	4.6 38.5%	4.3 35.5%	7.9 65.9%	8.0 66.9%	9.5 79.3%	7.8 64.7%	
24	8.4 69.9%	9.1 76.0%	8.5 70.8%	9.7 80.5%	8.1 67.5%	5.2 43.3%	3.5 29.5%	3.8 30.3%	6.6 54.6%	8.0 67.0%	8.1 67.4%	8.6 71.9%	7.3 60.7%	
25	7.2 59.8%	8.9 74.4%	8.8 73.5%	8.1 67.4%	8.0 66.8%	4.9 41.0%	5.0 41.4%	4.6 38.3%	5.9 48.8%	7.5 62.2%	8.0 66.8%	8.6 72.0%	7.1 59.4%	
26	7.9 65.9%	8.5 70.6%	8.0 66.9%	10.0 83.3%	7.1 58.8%	5.8 48.3%	5.3 43.8%	6.4 53.3%	5.3 44.1%	8.0 66.3%	7.7 63.8%	9.4 78.4%	7.4 62.0%	
27	7.9 66.0%	9.7 80.8%	8.2 68.7%	8.8 73.6%	6.9 57.1%	4.7 39.2%	5.2 43.2%	6.9 57.3%	6.0 50.3%	8.7 72.4%	6.9 57.8%	8.8 73.5%	7.4 61.6%	
28	7.6 63.0%	9.3 77.6%	8.3 69.2%	8.9 73.8%	6.1 51.0%	4.3 35.6%	5.4 45.0%	6.5 53.6%	7.1 59.1%	9.3 77.6%	7.4 62.0%	9.0 74.7%	7.4 61.9%	
29	8.2 68.3%	10.2 84.7%	8.9 74.2%	9.1 76.0%	7.6 63.1%	5.7 47.1%	3.6 30.1%	5.5 45.5%	6.5 54.1%	8.1 67.1%	7.4 61.4%	8.5 70.9%	7.4 61.9%	
30	8.8 73.2%		8.9 73.8%	9.7 81.0%	7.1 58.8%	4.5 37.6%	3.1 25.8%	2.5 21.0%	6.0 49.8%	8.2 67.9%	8.8 73.5%	8.9 73.9%	6.9 57.8%	
31	8.4 69.6%		9.3 77.6%		7.4 61.3%		2.0 16.9%	5.3 44.0%		7.6 63.6%		8.6 71.9%	6.9 57.8%	
Average	8.6 71.7%	9.2 76.8%	8.7 72.6%	9.4 77.9%	8.2 68.4%	6.1 51.2%	4.9 41.2%	5.1 42.3%	5.7 47.3%	7.0 58.4%	7.8 65.1%	8.7 72.8%	7.4 62.8%	
Total	266.7	267.1	270.2	280.6	254.3	184.2	153.3	157.4	170.1	217.1	234.4	271.0	2,726.4	

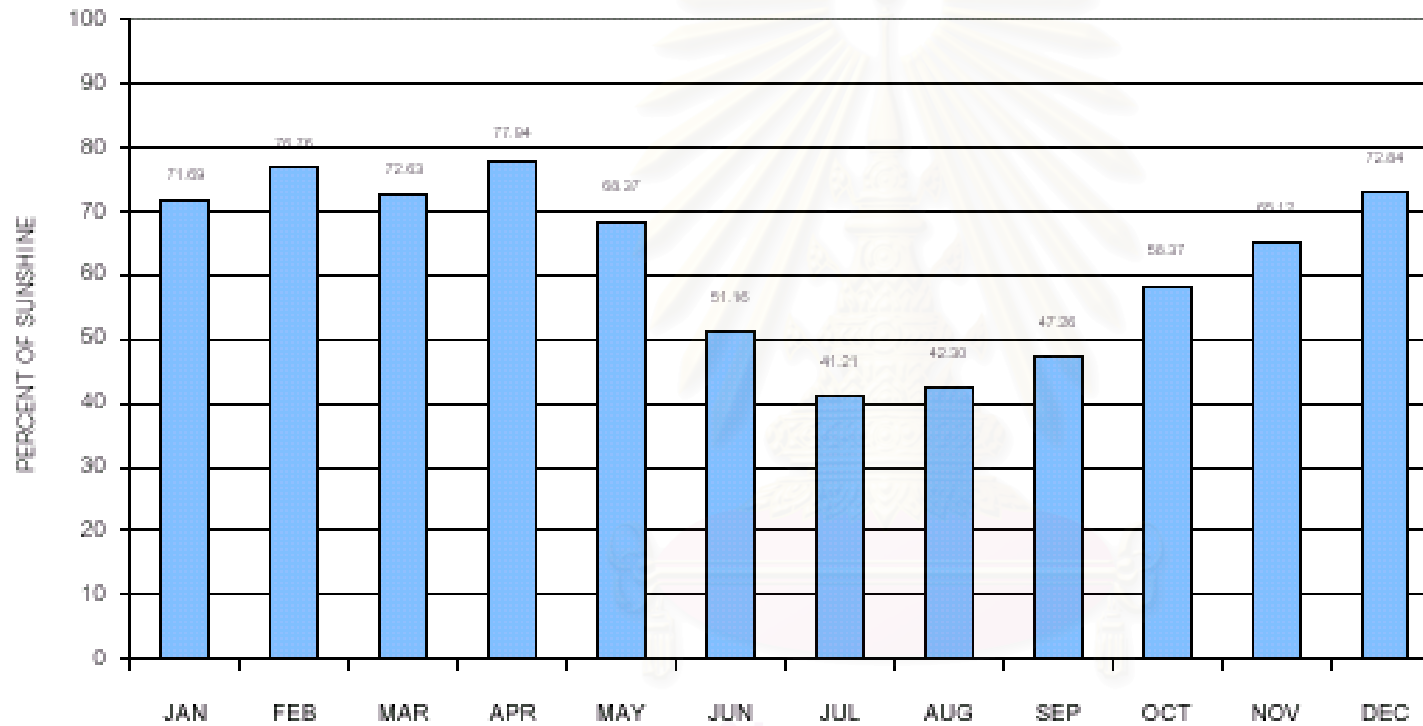
remark : observation hour = 12 hours (from 06:00 - 07:00 to 17:00 - 18:00)

จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิระยะเวลาของแสงแดด (average percent of sunshine per month)

AVERAGE PERCENT OF SUNSHINE PER MONTH 1987 - 1998 (2530 - 2541)

Station : PHITSANULOK



remark : observation hour = 12 hours (from 06:00 - 18:00)

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

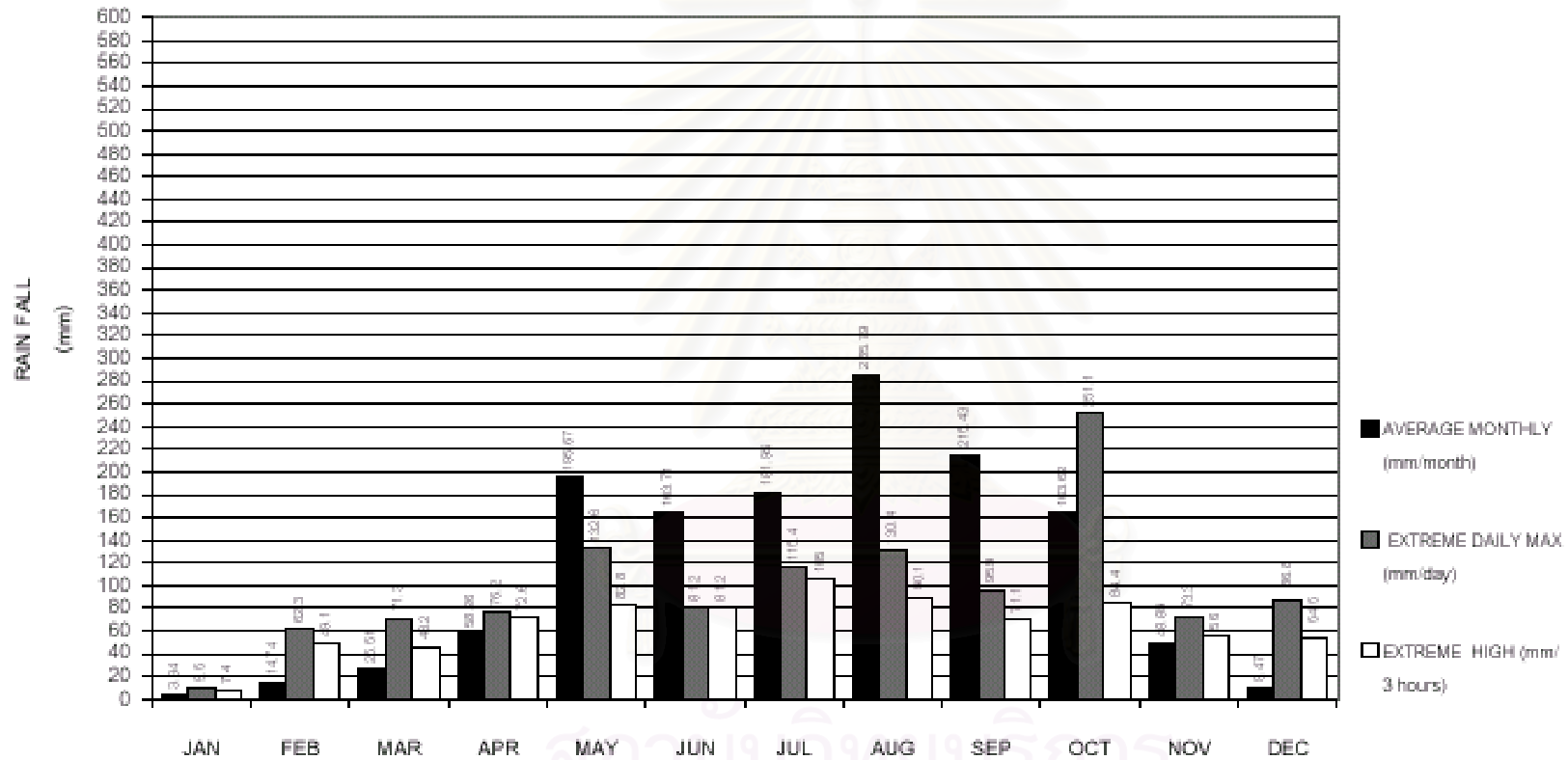
ตารางแสดงผลข้อมูลปริมาณน้ำฝน (rain fall)

RAIN FALL (mm) 1981 - 1998 (2524 - 2541)													Station : PHITSANULOK	
MONTH	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	
DAY	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	
1	0.0	0.7	0.3	0.2	1.3	4.6	3.5	8.2	13.1	3.9	1.2	0.0	37.2	
2	0.0	0.0	0.2	0.1	1.8	3.0	6.7	6.2	7.1	4.4	0.1	0.0	29.6	
3	0.2	0.0	0.1	0.0	5.0	5.5	9.0	3.0	12.2	4.5	0.2	5.5	45.2	
4	0.4	0.0	0.0	3.5	1.4	4.7	4.2	4.7	3.9	12.6	4.6	0.1	40.1	
5	0.0	0.0	0.0	0.3	10.1	6.3	10.8	13.3	4.5	11.9	0.4	0.2	57.8	
6	0.6	0.8	0.4	2.2	2.7	11.3	7.0	10.7	2.2	3.8	3.8	0.0	45.6	
7	0.0	0.0	0.3	1.0	4.6	11.5	7.0	10.5	5.9	5.0	4.7	0.0	50.4	
8	0.0	0.5	2.0	0.7	4.6	5.9	11.1	8.2	8.5	4.1	4.1	0.0	49.6	
9	0.0	1.0	3.5	2.4	4.6	8.3	1.8	5.0	5.4	13.5	0.6	0.0	46.2	
10	0.0	0.4	0.0	0.2	10.6	9.5	2.5	12.7	6.7	3.4	0.3	0.0	46.4	
11	0.0	0.0	0.0	0.0	3.9	2.1	6.3	9.9	4.4	5.1	1.8	0.0	33.4	
12	0.0	0.0	1.6	2.9	1.6	5.0	3.6	7.4	4.3	7.5	4.2	0.0	38.1	
13	0.0	0.0	0.0	2.8	5.0	8.0	3.9	9.5	8.8	3.1	4.3	0.0	45.4	
14	0.0	0.0	1.6	0.8	5.2	9.8	1.9	6.9	8.7	7.9	8.7	0.0	51.4	
15	0.0	0.0	0.0	3.1	2.5	2.0	2.7	6.5	14.4	7.6	1.1	0.0	39.9	
16	0.0	0.1	0.0	0.0	8.6	5.3	7.1	4.6	4.9	7.1	0.3	0.0	37.9	
17	0.4	0.0	0.0	4.4	4.5	2.4	5.4	5.0	8.1	19.9	3.3	0.0	53.3	
18	0.0	0.0	0.7	2.2	7.1	6.5	14.0	14.4	7.5	2.6	1.4	0.0	56.6	
19	0.0	4.2	0.2	2.3	9.2	2.8	1.0	10.2	10.1	3.2	0.3	0.0	43.6	
20	0.0	1.5	0.0	0.3	4.8	6.8	3.4	11.5	11.0	4.0	0.2	0.0	43.5	
21	0.0	0.0	0.1	2.2	7.4	0.2	2.6	18.5	5.4	4.7	1.9	0.0	43.0	
22	0.0	0.0	0.4	2.3	10.0	0.9	3.1	9.0	5.1	2.5	0.6	0.0	33.9	
23	0.0	0.0	4.0	0.6	6.9	8.8	8.2	14.4	7.4	2.2	0.0	0.0	52.4	
24	0.0	2.3	0.4	0.3	9.4	5.6	8.1	8.7	6.7	2.8	0.0	2.2	46.3	
25	0.5	1.2	0.0	1.3	3.2	3.6	5.6	8.3	9.4	3.0	0.0	0.5	36.6	
26	0.4	0.1	0.0	8.0	9.9	1.7	5.4	7.8	8.3	6.2	0.0	0.0	47.8	
27	0.0	2.0	2.4	7.0	15.0	4.2	3.2	10.2	0.6	0.4	0.1	0.0	45.1	
28	0.6	0.0	2.1	1.2	9.7	5.3	3.0	7.1	6.9	3.6	0.5	0.0	39.8	
29	0.0	0.0	3.9	5.2	6.8	7.6	12.7	13.1	9.5	0.8	0.4	0.6	60.6	
30	0.0	0.0	0.3	0.7	6.9	4.4	7.0	9.6	4.4	1.6	0.0	0.1	35.0	
31	0.0	0.0	1.1	0.0	11.7	0.0	10.2	10.8	0.0	0.9	0.0	0.0	34.7	
Monthly	3.3	14.7	25.5	58.3	195.7	163.7	181.9	285.8	215.4	163.6	48.9	9.5	1,366.4	
Daily record high	9.5	62.3	71.3	76.2	132.6	81.2	115.4	130.4	95.9	251.1	73.3	86.8	251.1	
3 hr. Extremes	7.4	49.1	46.2	72.6	82.8	81.2	105.0	90.1	71.1	84.4	56.0	54.5	105.0	
No. of rainy days	1	2	2	5	15	16	17	20	22	17	6	1	125	

จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิปริมาณน้ำฝน (rain fall)

RAIN FALL (mm) 1981 - 1998 (2524 - 2541) Station : PHISANULOK



remark : recorded every 3 hours

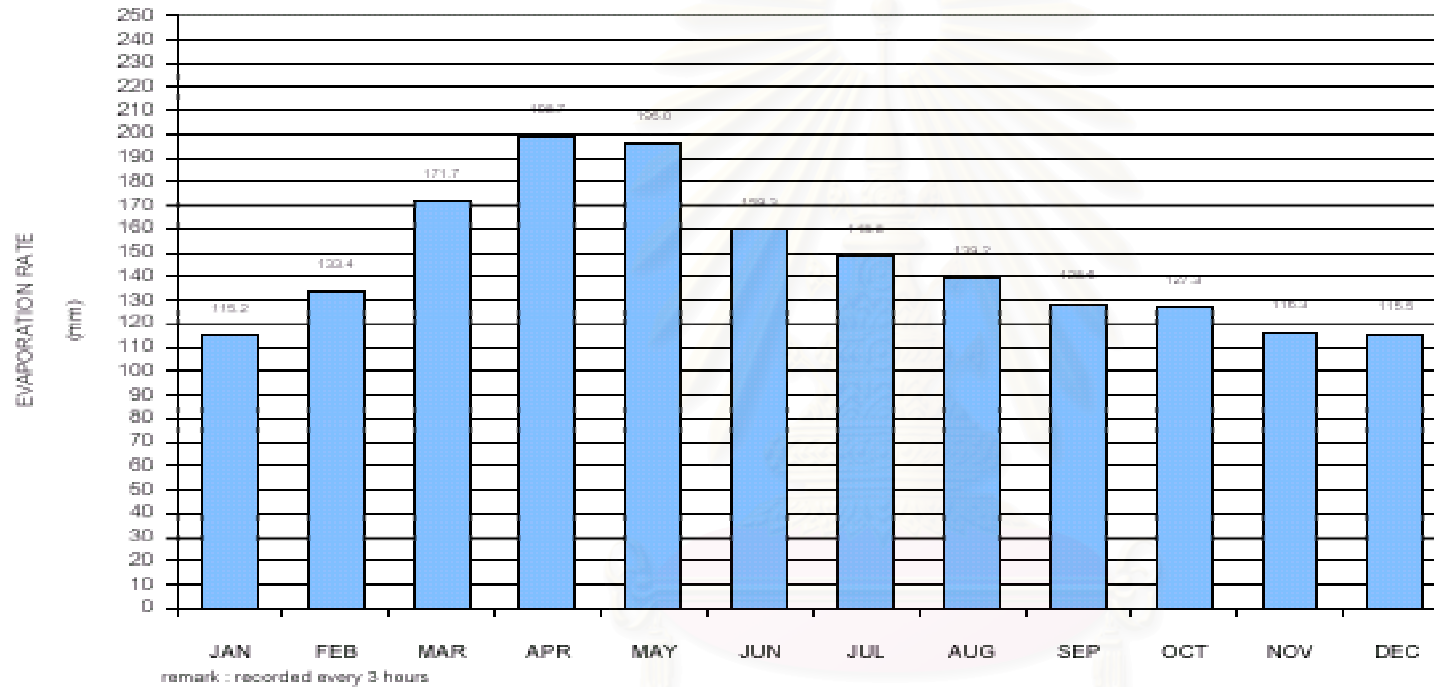
ตารางแสดงผลข้อมูลค่าเฉลี่ยอัตราการระเหยของน้ำรายวัน (evaporation)

EVAPORATION (mm) 1981 - 1998 (2524 - 2541)													Station : PHITSANULOK
MONTH	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL
DAY	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
1	3.5	3.7	5.2	5.9	7.0	5.8	4.3	4.4	4.5	4.4	3.8	3.7	56.1
2	3.5	4.3	4.5	6.5	6.5	5.0	4.6	4.0	4.2	3.6	3.7	3.9	54.2
3	3.6	4.3	4.2	6.3	7.2	5.7	5.7	4.7	4.8	4.4	3.6	4.0	58.4
4	3.3	4.1	4.9	6.4	7.3	5.9	4.7	4.5	4.0	4.3	4.0	4.0	57.3
5	4.0	4.4	5.5	6.6	6.6	5.7	4.6	4.4	4.5	4.4	3.6	3.9	58.2
6	3.6	4.3	4.8	6.4	6.8	5.4	4.8	4.7	4.2	4.0	4.0	3.6	56.6
7	4.0	4.1	5.2	6.3	6.2	4.4	4.4	4.9	4.3	4.6	4.0	4.0	56.4
8	3.7	4.4	5.4	6.4	7.0	5.1	4.6	4.8	4.4	4.5	4.2	3.9	58.4
9	3.4	4.4	5.0	6.3	7.5	5.2	4.9	4.3	3.9	4.0	3.6	3.6	56.1
10	3.6	4.4	5.1	6.2	6.3	5.1	4.8	4.2	4.1	4.2	3.9	3.5	55.4
11	3.9	4.1	5.6	6.5	6.3	5.0	4.6	5.1	4.3	4.6	3.9	3.5	57.3
12	3.3	4.4	5.4	7.5	6.9	5.4	5.3	4.7	4.1	4.2	4.1	3.9	59.2
13	3.8	4.2	5.6	6.7	6.5	5.3	4.4	4.7	4.4	4.0	4.0	3.6	57.2
14	3.6	4.9	5.1	7.3	6.5	5.3	4.4	4.4	3.7	4.1	4.5	3.9	57.9
15	3.6	5.0	5.4	6.5	5.8	5.6	4.8	4.2	3.9	4.4	3.7	3.6	56.6
16	4.0	4.5	5.9	6.9	6.6	5.7	5.3	4.7	3.8	4.1	3.9	3.9	59.2
17	3.7	5.0	5.3	6.7	6.1	5.6	4.6	4.5	4.2	3.8	3.7	3.9	56.9
18	3.3	5.1	5.5	6.7	6.2	5.5	6.2	4.5	4.6	3.4	3.4	3.8	58.1
19	3.7	4.6	5.6	6.4	5.8	5.1	5.4	4.0	4.1	3.8	4.1	3.6	56.0
20	3.7	4.7	6.2	6.2	6.0	6.5	5.3	4.6	4.6	4.6	4.0	3.7	60.0
21	3.8	4.8	6.1	7.0	6.2	5.3	4.6	4.1	4.7	3.8	3.6	3.8	57.7
22	3.5	4.8	5.6	6.5	6.6	5.4	4.8	5.0	4.6	4.3	4.2	3.8	59.1
23	4.0	5.0	5.5	6.4	6.0	5.7	4.7	4.8	4.1	3.7	4.1	3.9	57.9
24	4.0	5.0	6.5	7.1	6.5	5.0	5.1	3.9	4.1	3.6	4.2	3.9	58.9
25	3.8	5.2	5.9	6.7	5.5	5.2	4.6	4.0	4.8	4.0	4.0	3.4	57.0
26	3.7	5.1	5.9	6.8	5.6	4.8	4.3	4.1	3.9	4.0	3.4	4.0	55.8
27	3.7	4.6	6.1	7.1	5.4	4.8	4.7	4.5	3.8	4.1	4.0	3.6	56.3
28	4.1	5.0	6.6	6.5	5.9	4.6	4.7	5.0	5.1	4.3	3.7	3.4	58.6
29	3.9	5.2	6.0	6.9	5.7	5.4	5.3	5.3	4.5	4.1	3.8	3.5	59.4
30	3.8		6.1	6.9	5.7	4.9	4.6	3.9	4.4	4.1	3.6	3.6	51.7
31	4.4		6.1		5.9		3.9	4.4		4.1		3.0	31.8
AVG. Monthly	115.2	133.4	171.7	198.7	196.0	159.3	148.8	139.2	128.5	127.3	116.3	115.5	1,750.1
Daily Mean	3.7	4.6	5.5	6.6	6.3	5.3	4.8	4.5	4.3	4.1	3.9	3.7	4.8
Extremes	6.8	8.8	9.8	13.1	14.2	12.8	16.1	12.2	9.3	9.9	7.3	6.9	16.1

แผนภูมิค่าเฉลี่ยอัตราการระเหยของน้ำรายเดือน (average monthly evaporation from U.S. class "A" pan)

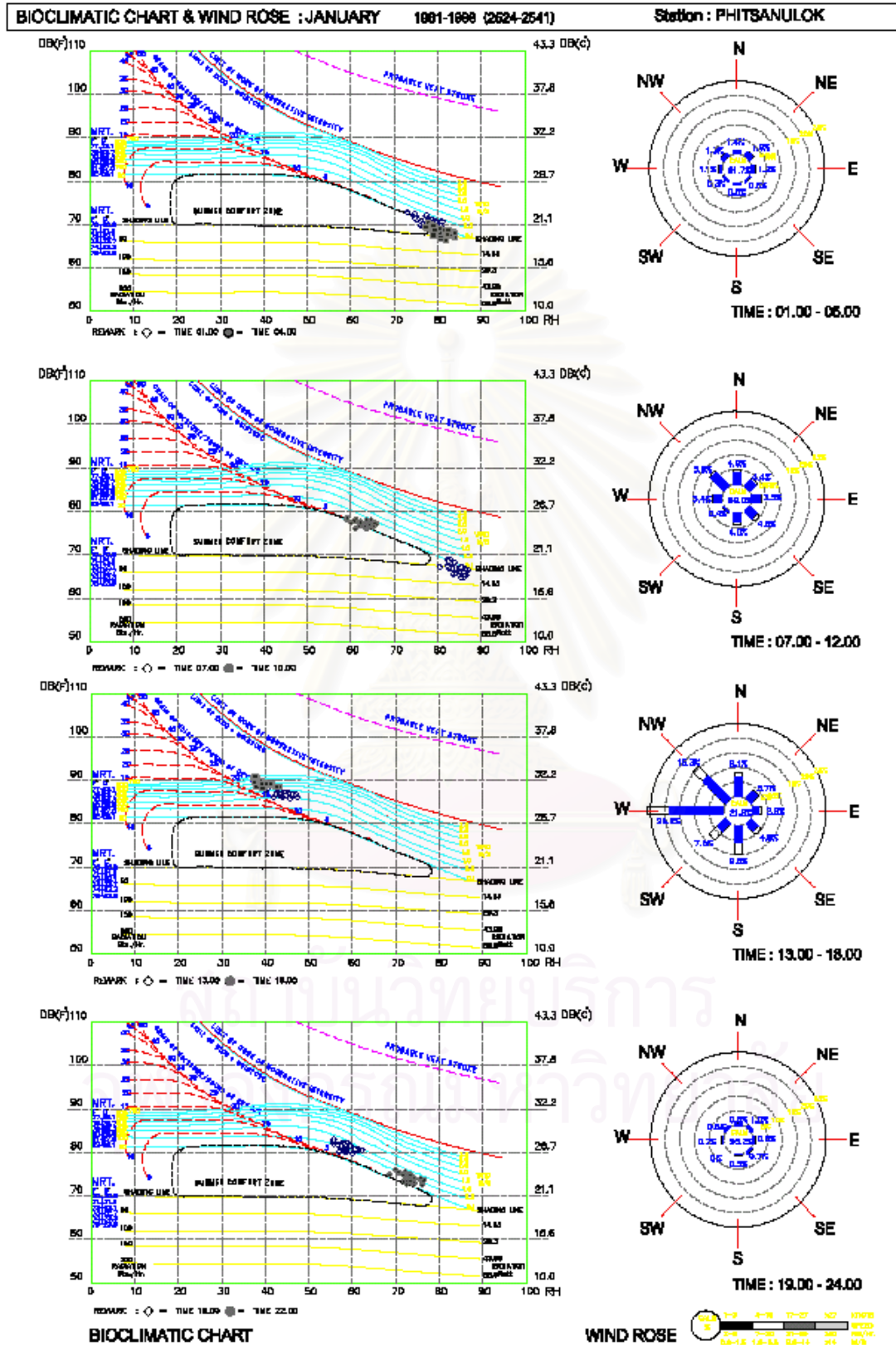
AVERAGE MONTHLY EVAPORATION (mm) from U.S. class "A" pan 1981 - 1998 (2524 - 2541)

Station : PHISANULOK

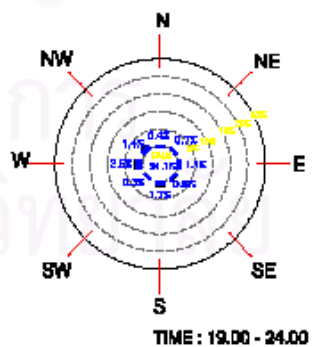
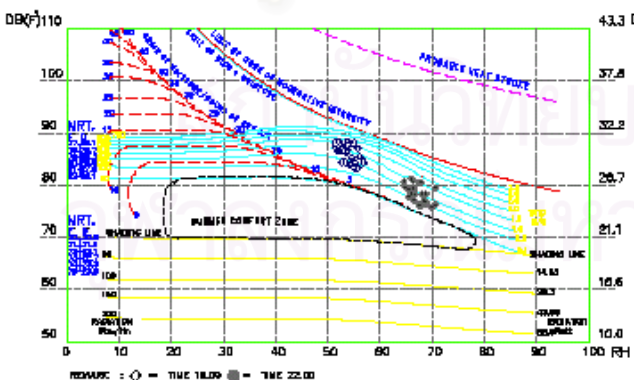
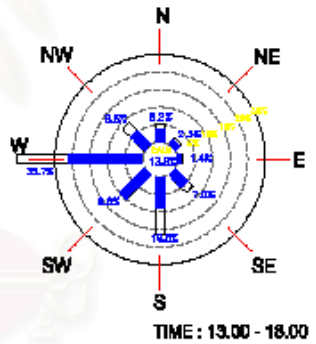
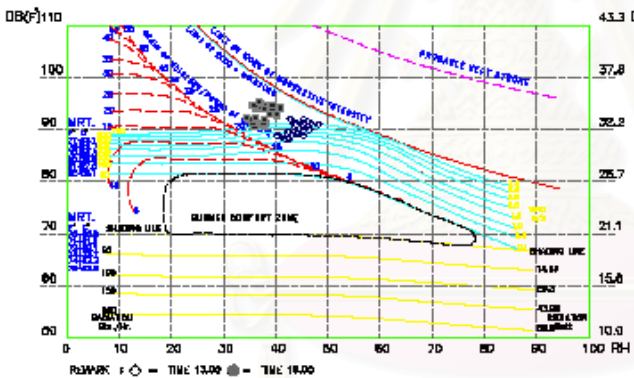
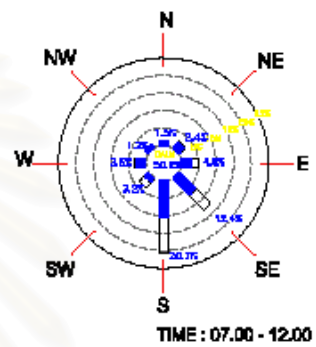
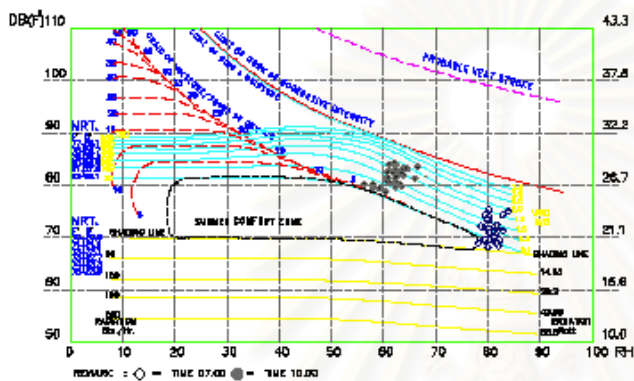
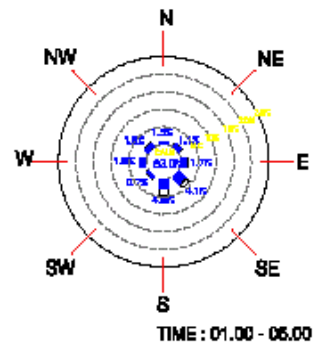
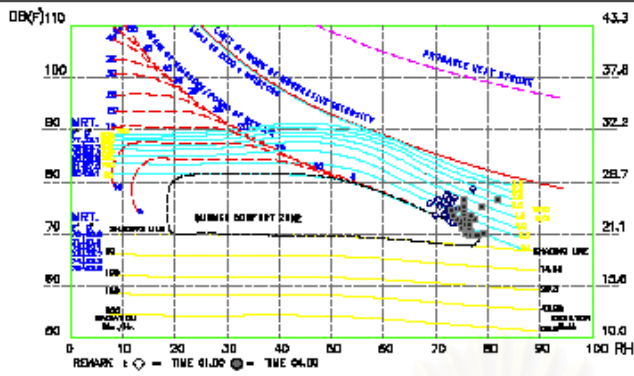


สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

แผนภูมิความสัมพันธ์ระหว่างข้อมูลสภาพอากาศในแผนภูมิไบโอไคลเมตริก (bioclimatic chart) กับแผนภูมิแสดงความเร็วและทิศทางที่เกิดลมรายเดือน (wind rose) แยกตามช่วงเวลา



BIOCLIMATIC CHART & WIND ROSE : FEBRUARY 1901-1999 (2524-2541) Station : PHITSANULOK

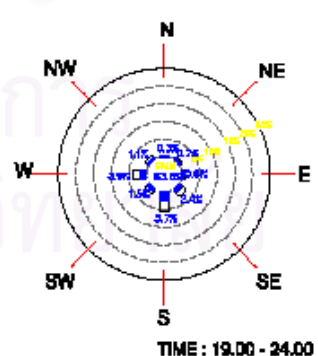
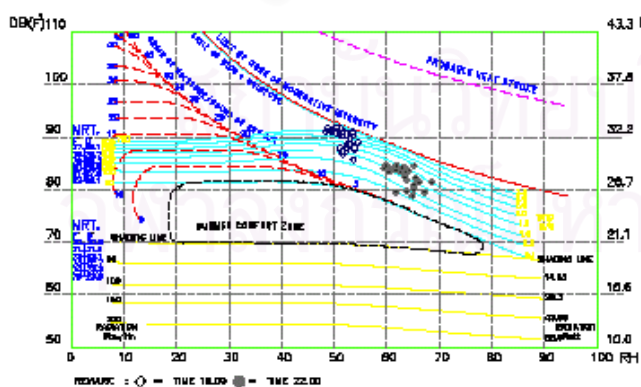
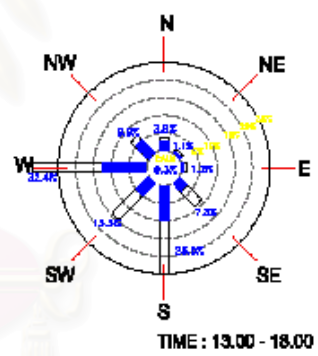
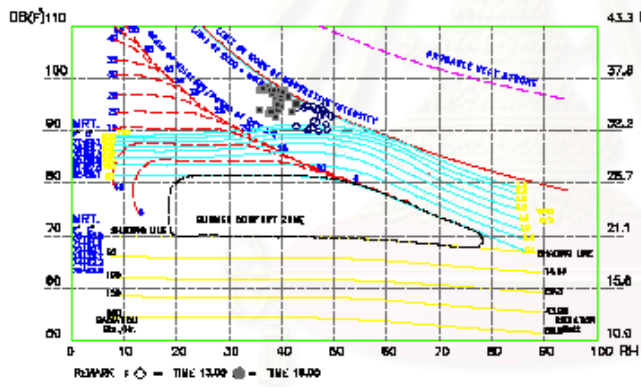
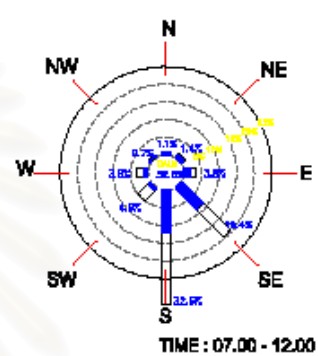
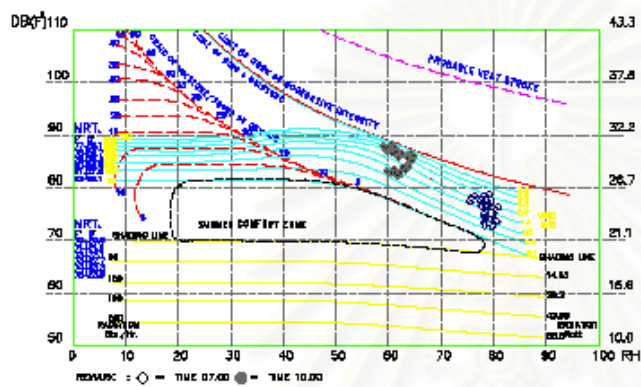
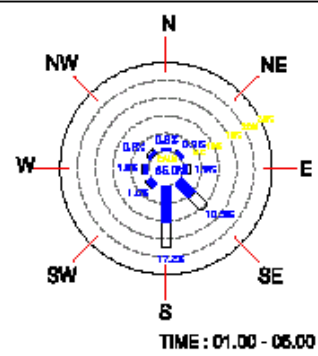
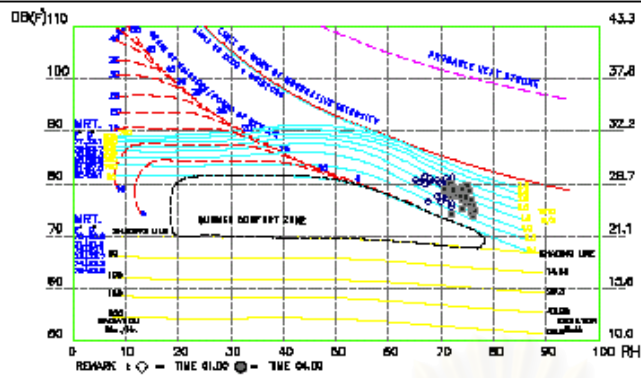


BIOCLIMATIC CHART

WIND ROSE



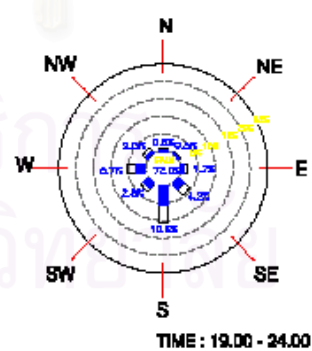
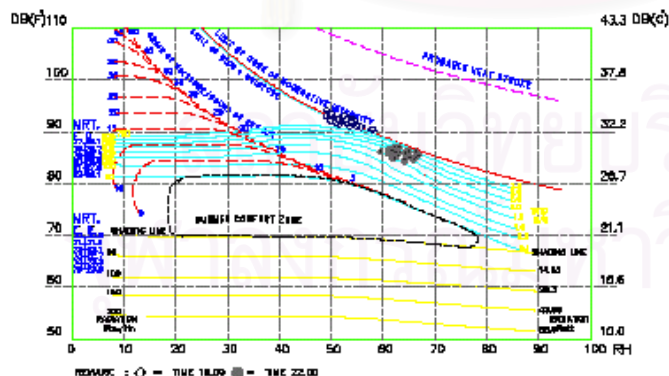
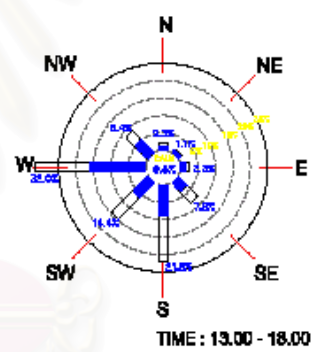
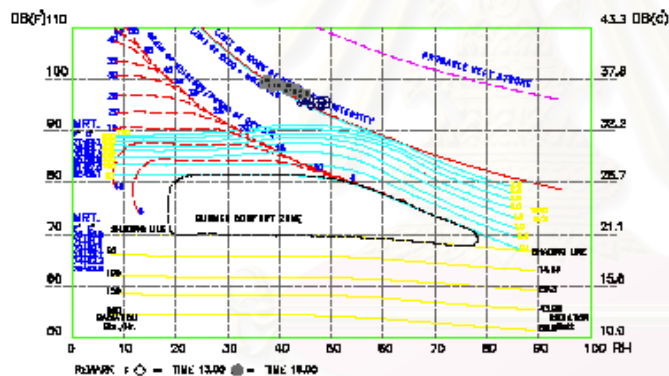
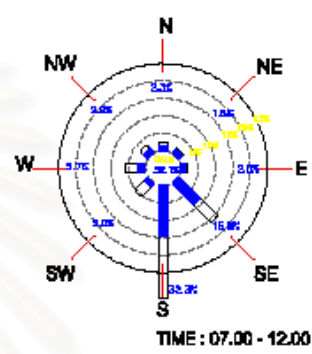
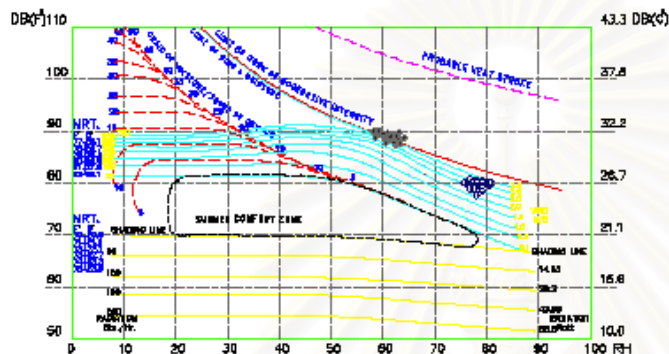
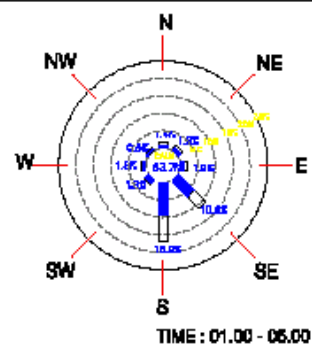
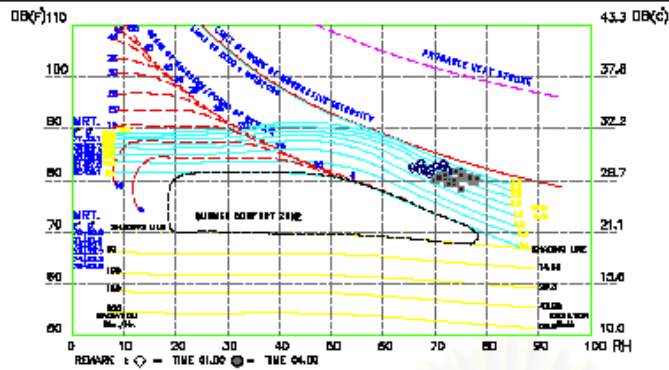
BIOCLIMATIC CHART & WIND ROSE : MARCH 1881-1888 (2524-2541) Station : PHITSANULOK



BIOCLIMATIC CHART



BIOCLIMATIC CHART & WIND ROSE : APRIL 1981-1998 (2524-2541) Station : PHITSANULOK

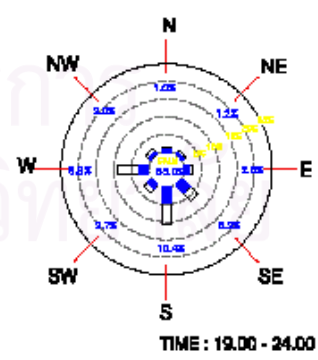
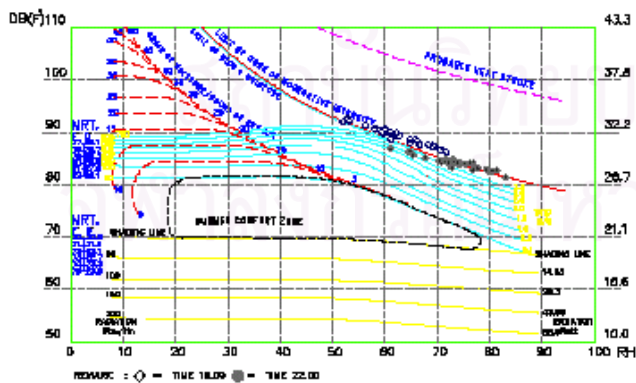
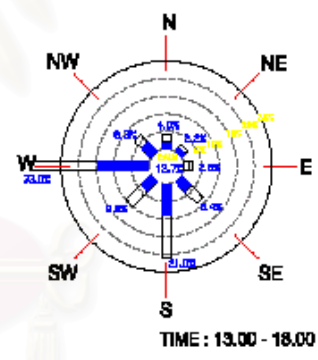
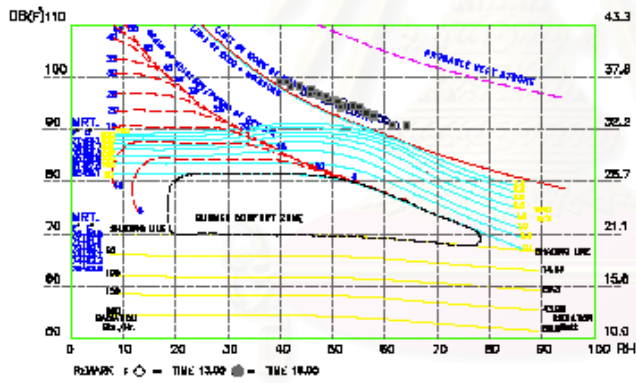
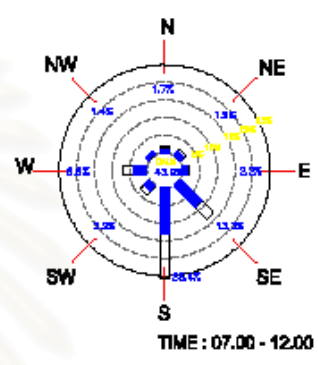
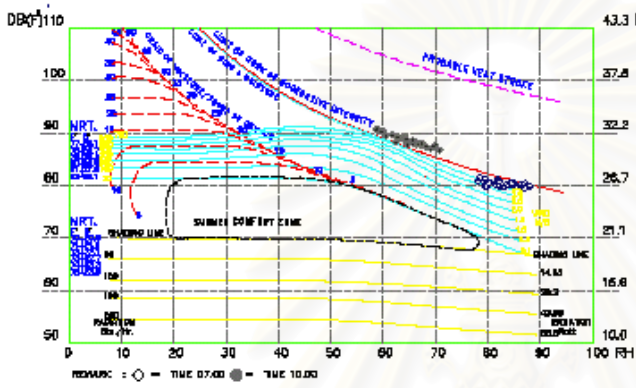
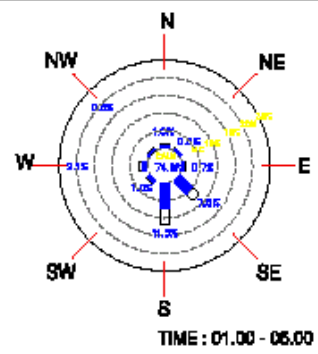
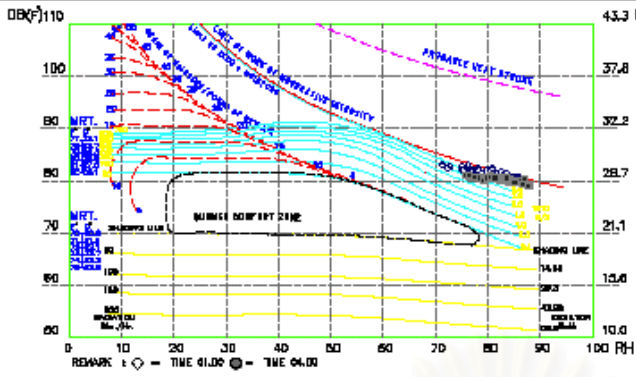


BIOCLIMATIC CHART

WIND ROSE



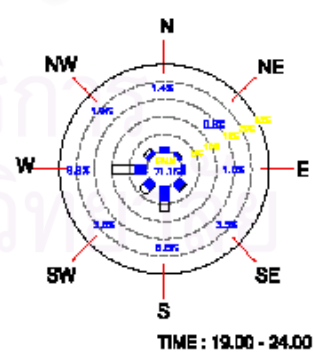
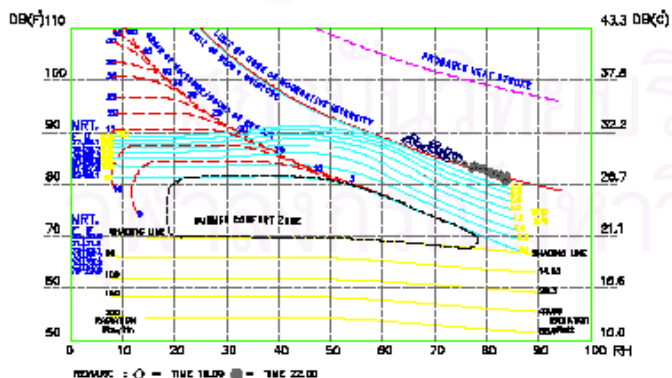
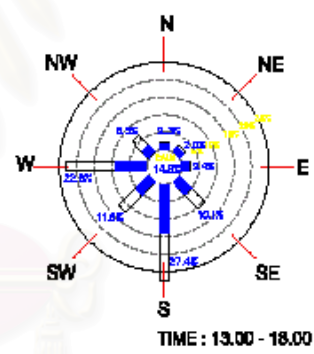
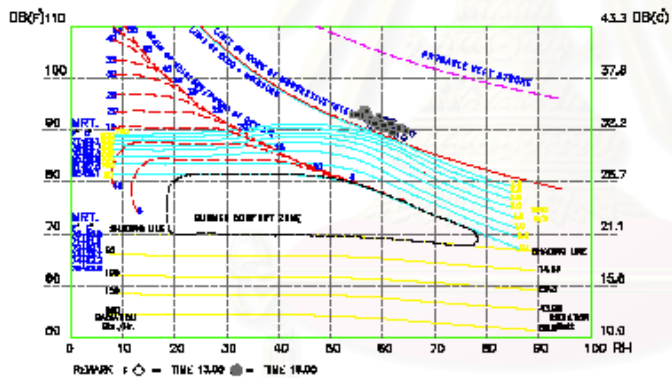
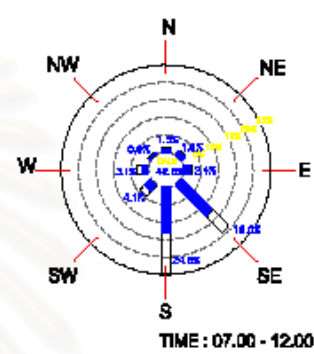
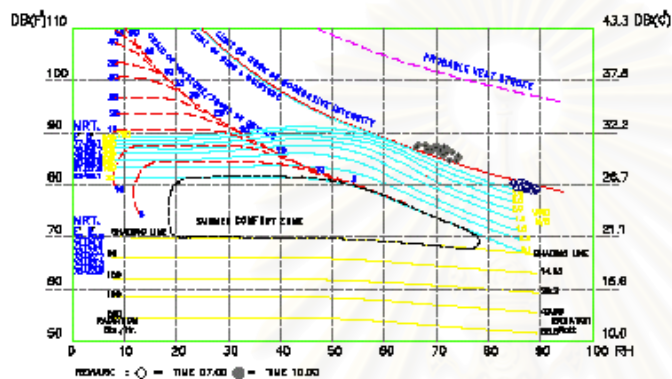
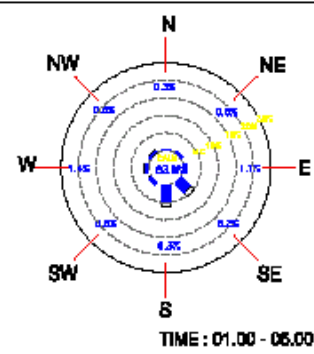
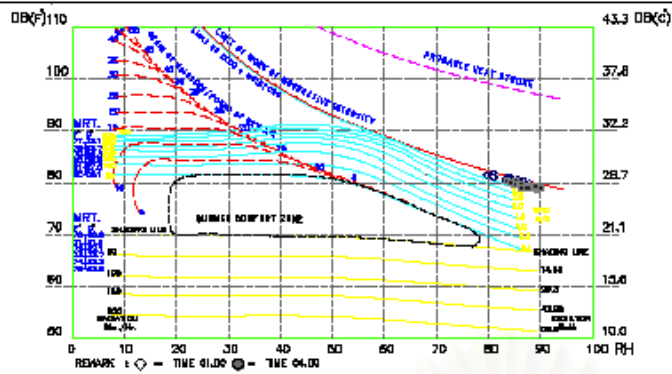
BIOCLIMATIC CHART & WIND ROSE : MAY 1901-1999 (2524-2541) Station : PHITSANULOK



BIOCLIMATIC CHART



BIOCLIMATIC CHART & WIND ROSE : JUNE 1991-1998 (2624-2541) Station : PHITSANULOK

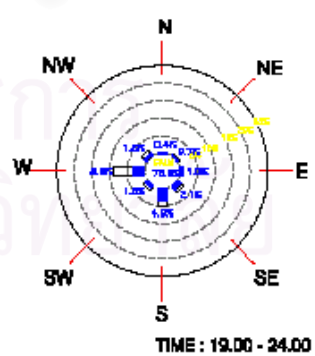
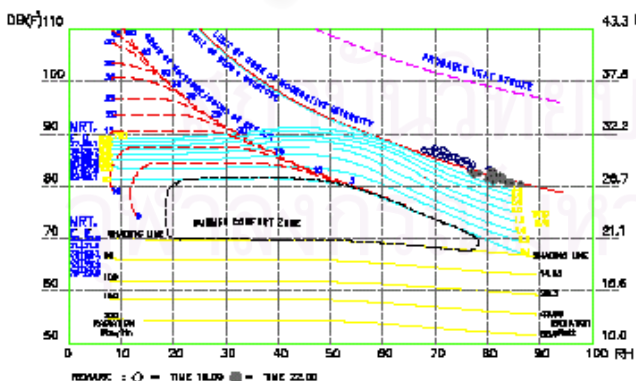
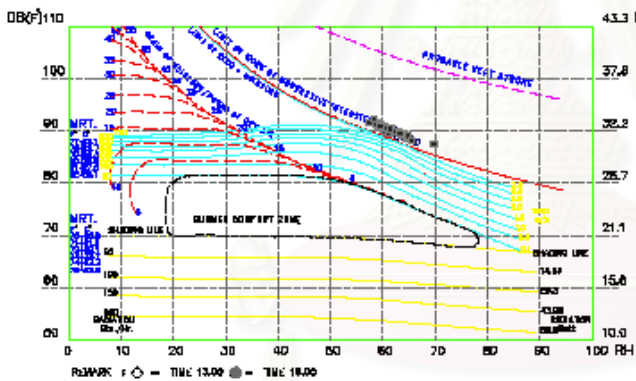
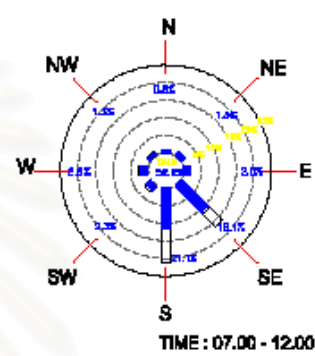
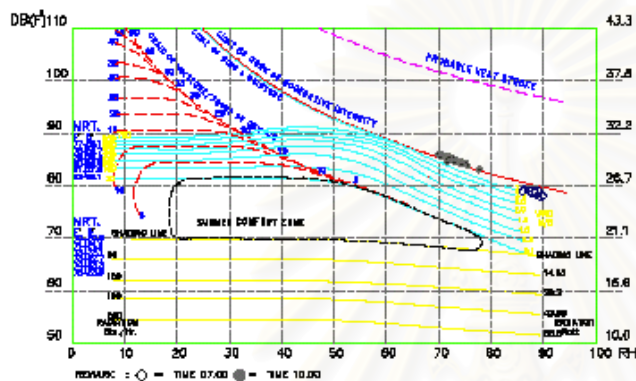
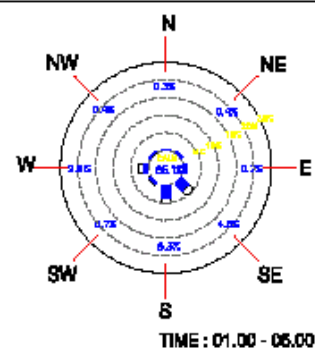
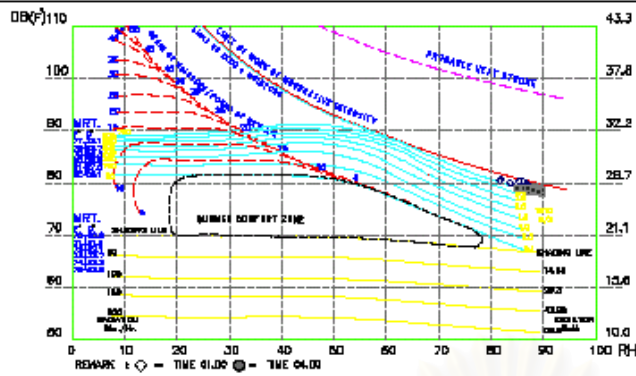


BIOCLIMATIC CHART

WIND ROSE



BIOCLIMATIC CHART & WIND ROSE : JULY 1001-1000 (2624-2541) Station : PHITSANULOK

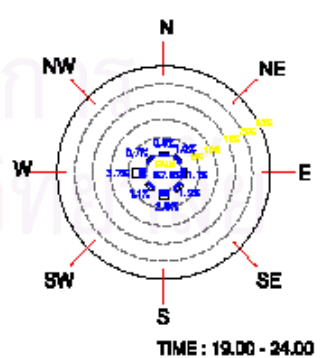
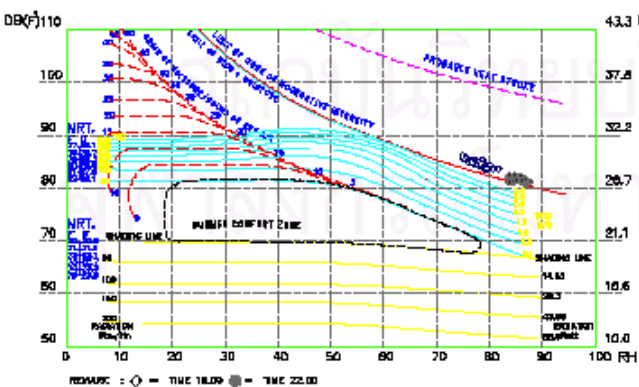
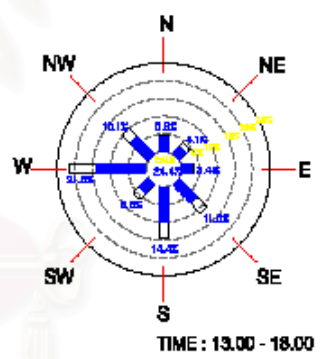
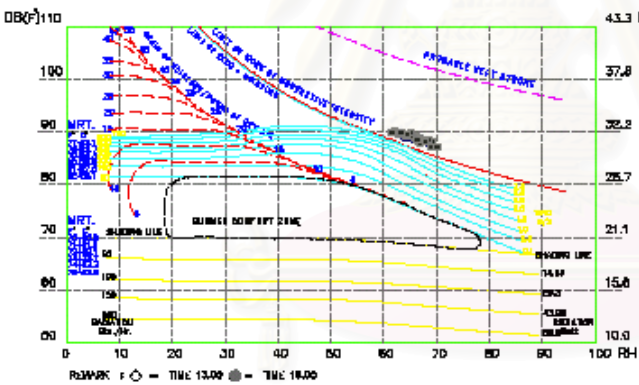
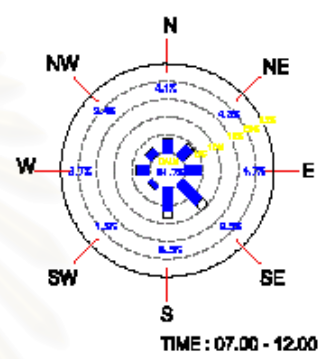
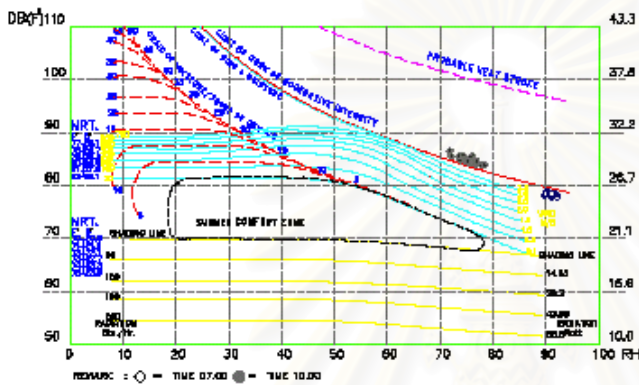
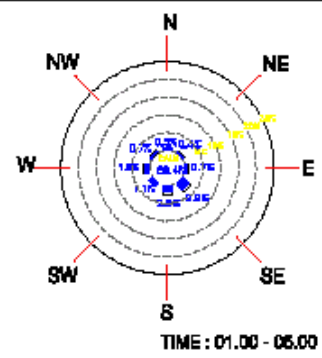
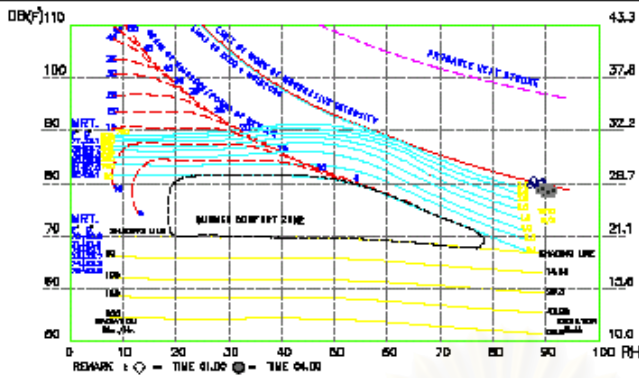


BIOCLIMATIC CHART

WIND ROSE



BIOCLIMATIC CHART & WIND ROSE : SEPTEMBER 1991-1999 (2524-2541) Station : PHITSANULOK

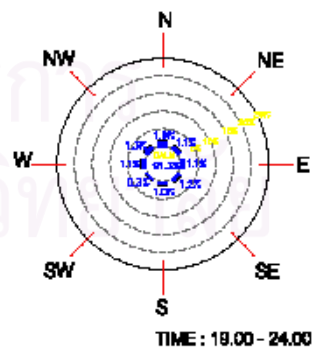
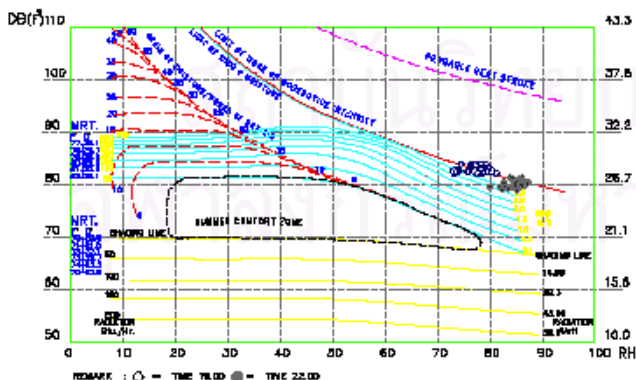
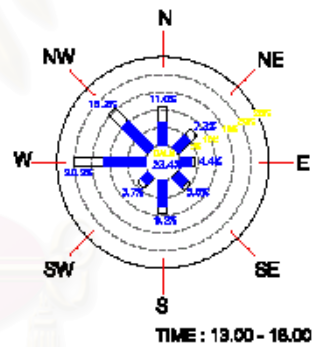
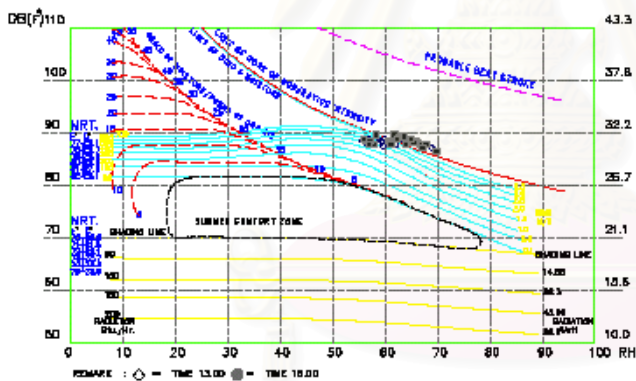
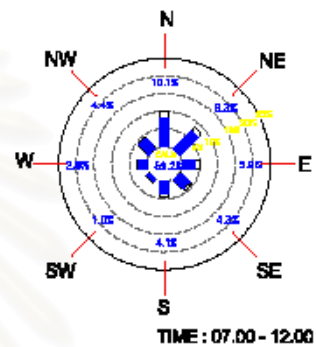
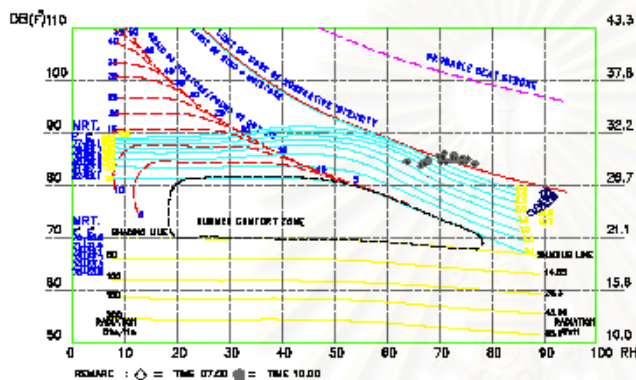
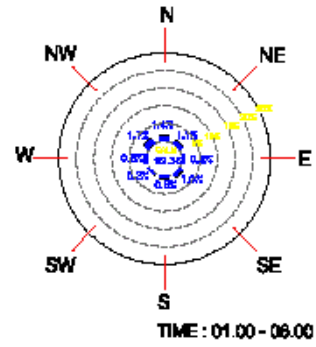
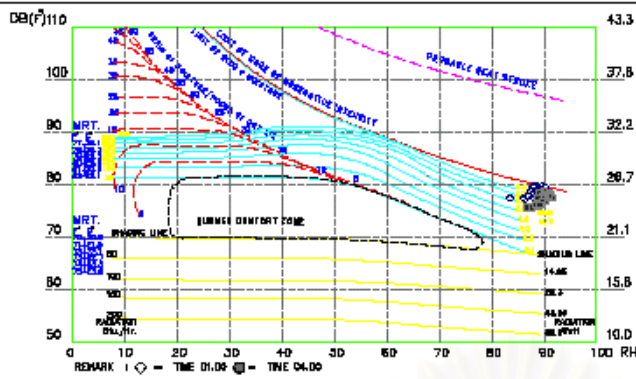


BIOCLIMATIC CHART

WIND ROSE



BIOCLIMATIC CHART & WIND ROSE : OCTOBER 1981-1998 (2524-2541) Station : PHITSANULOK

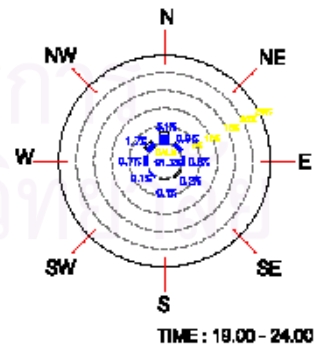
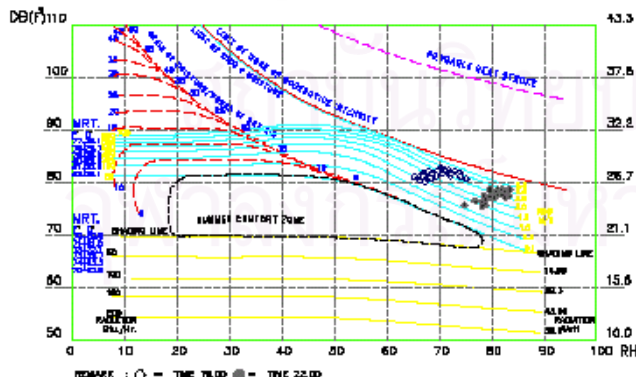
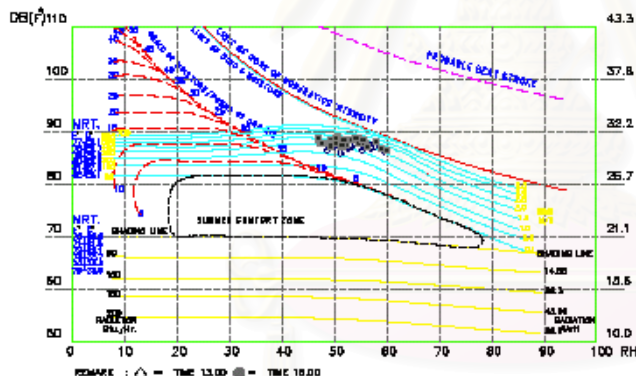
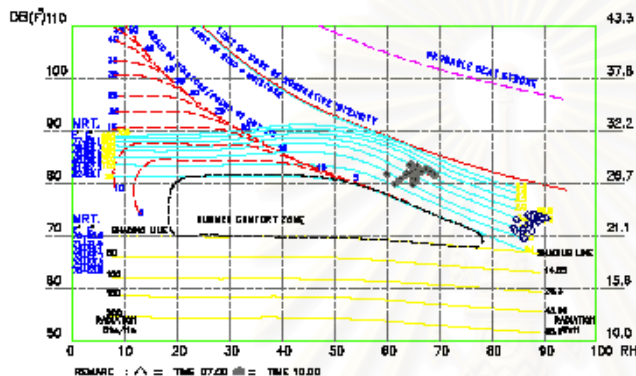
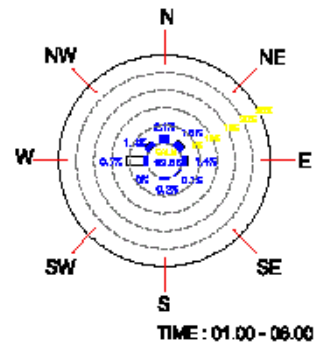
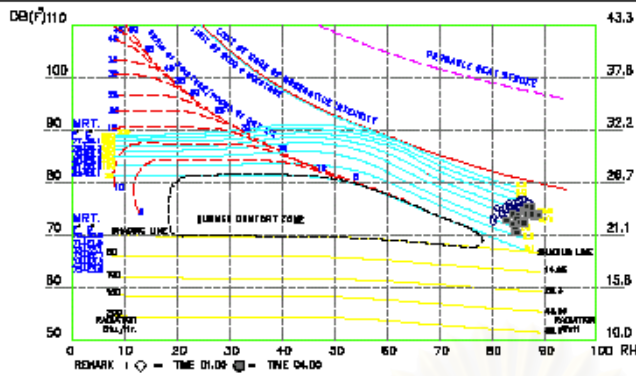


BIOCLIMATIC CHART

WIND ROSE



BIOCLIMATIC CHART & WIND ROSE : NOVEMBER 1981-1996 (2524-2541) Station : PHITSANULOK

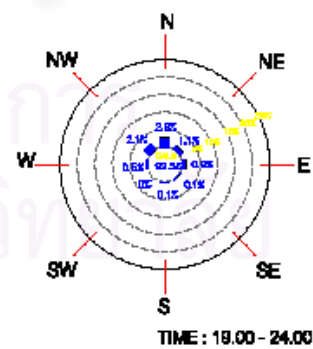
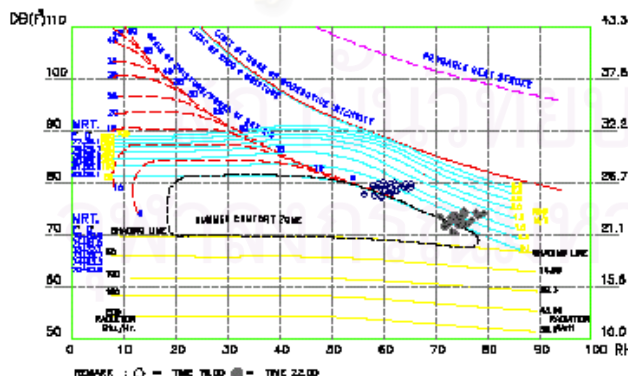
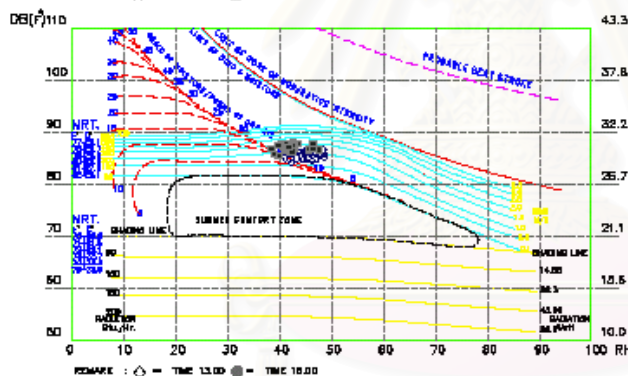
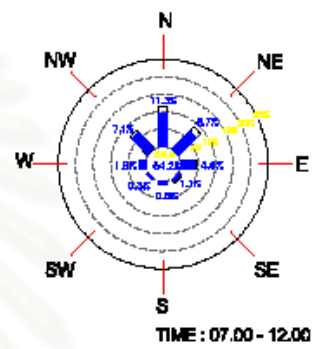
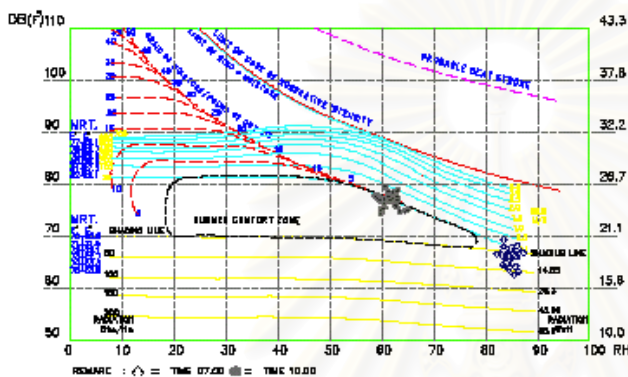
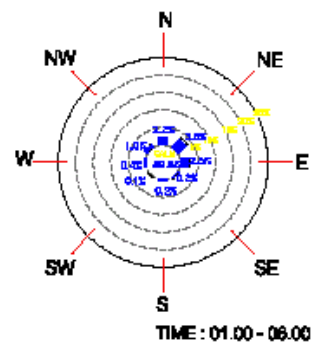
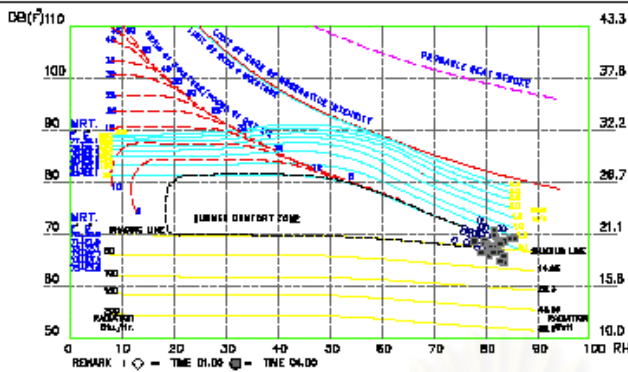


BIOCLIMATIC CHART

WIND ROSE



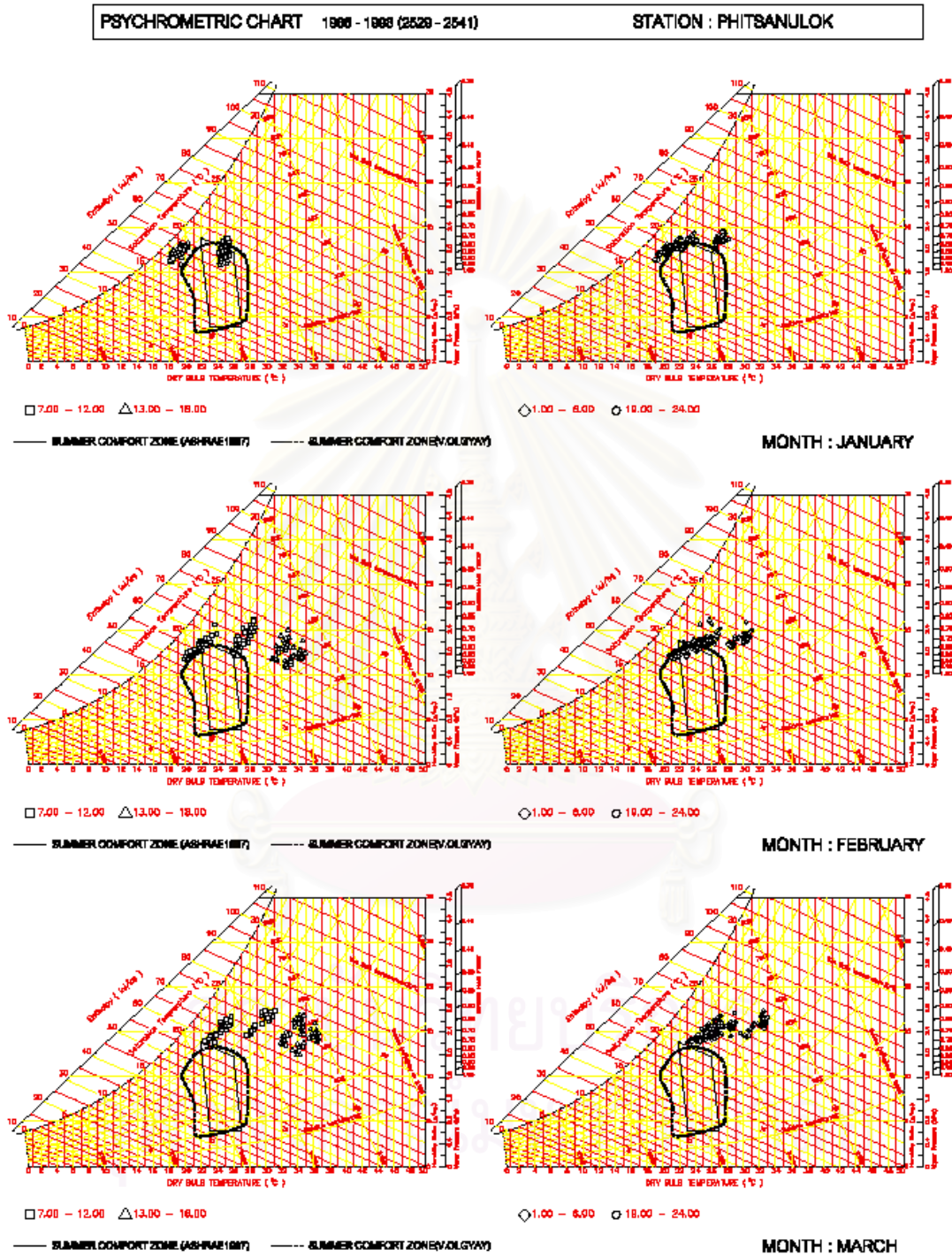
BIOCLIMATIC CHART & WIND ROSE : DECEMBER 1981-1998 (2524-2541) Station : PHITSANULOK



BIOCLIMATIC CHART

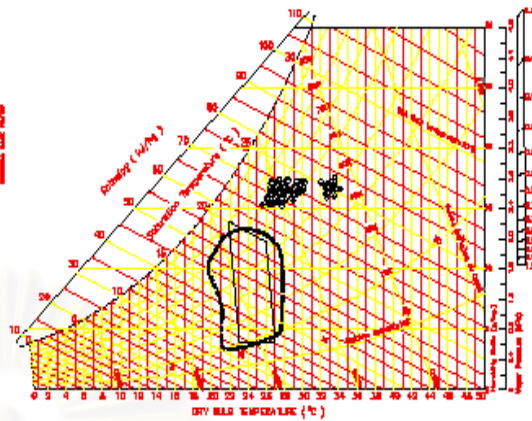
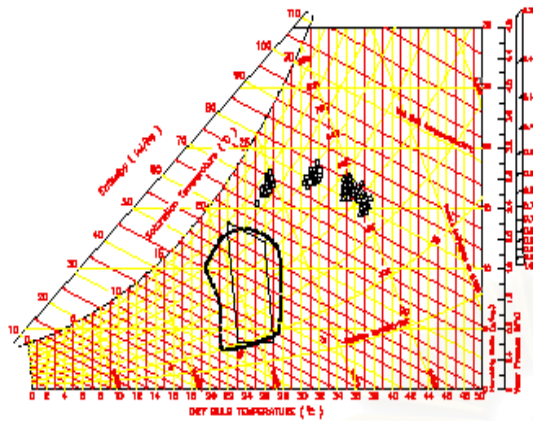


แผนภูมิความสัมพันธ์ระหว่างข้อมูลสภาพอากาศ ในแผนภูมิไซโครเมตริก (psychrometric chart) แยกตามช่วงเวลา



PSYCHROMETRIC CHART 1966 - 1998 (2529 - 2541)

STATION : PHITSANULOK

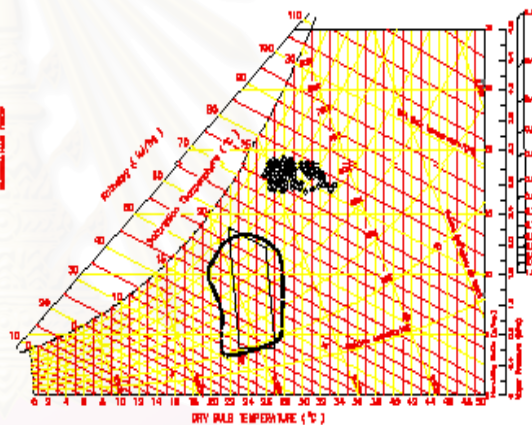
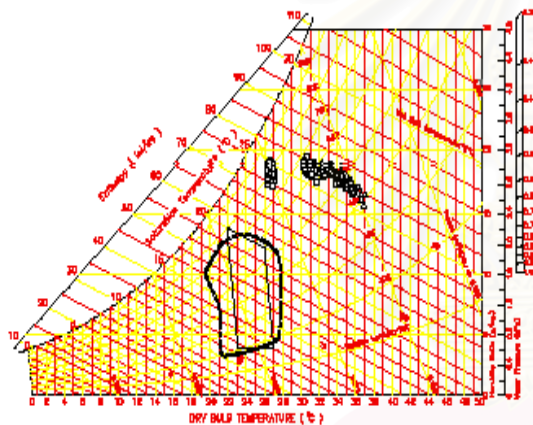


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 10.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.O.L.G.W.V)

MONTH : APRIL

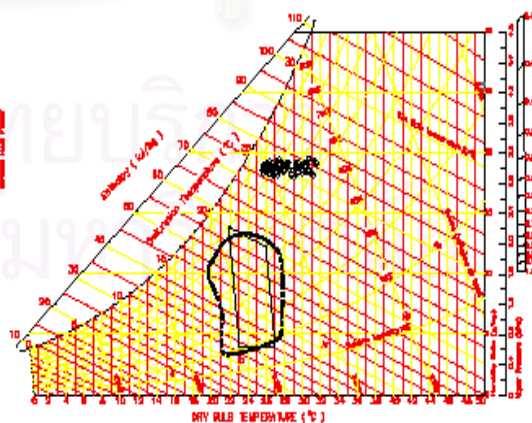
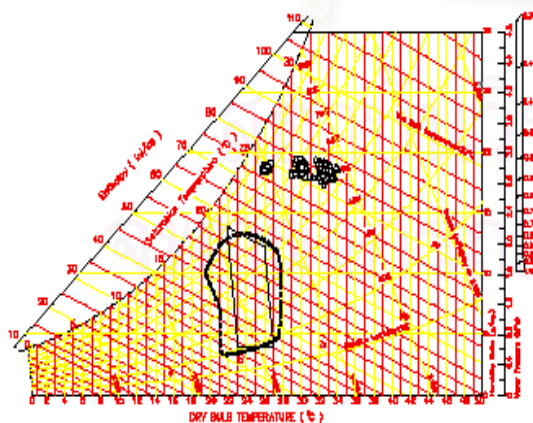


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 10.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.O.L.G.W.V)

MONTH : MAY



□ 7.00 - 12.00 △ 13.00 - 18.00

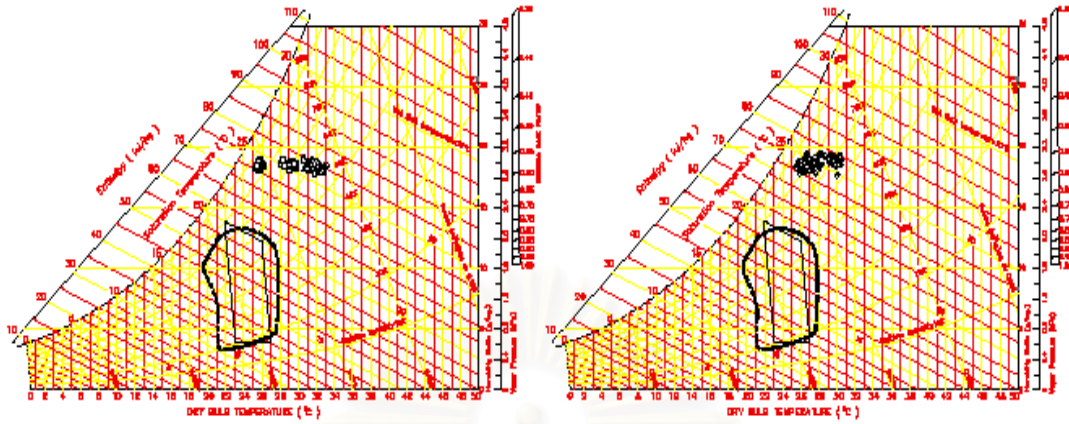
◇ 1.00 - 6.00 ○ 18.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.O.L.G.W.V)

MONTH : JUNE

PSYCHROMETRIC CHART 1988 - 1988 (2528 - 2541)

STATION : PHITSANULOK

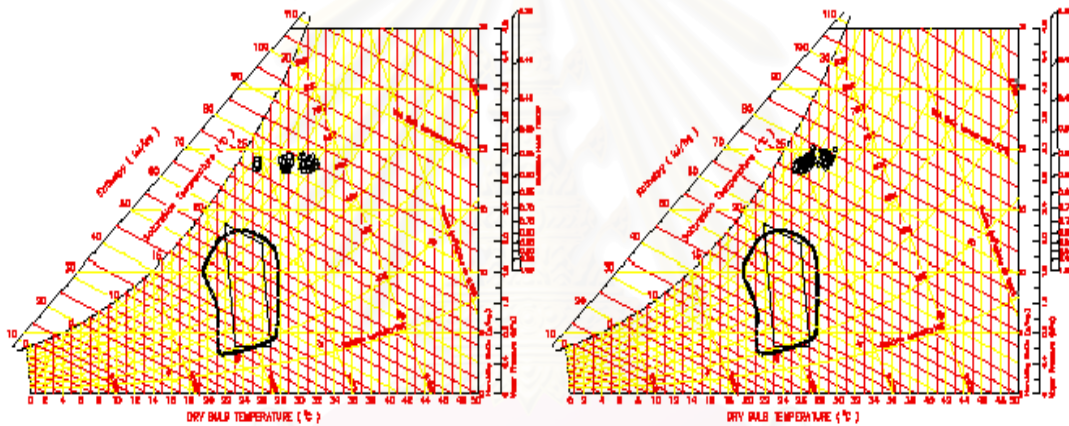


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 18.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (EV/DU/GYAN)

MONTH : JULY

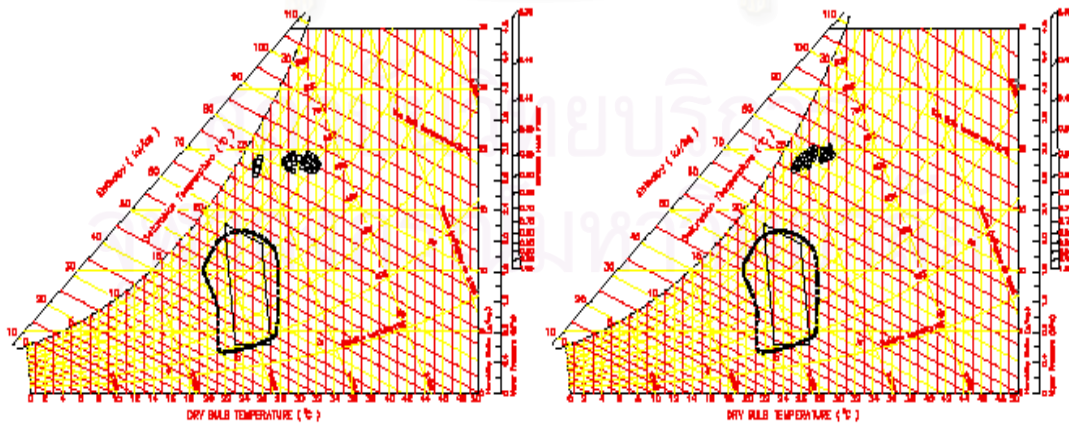


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 18.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (EV/DU/GYAN)

MONTH : AUGUST



□ 7.00 - 12.00 △ 13.00 - 18.00

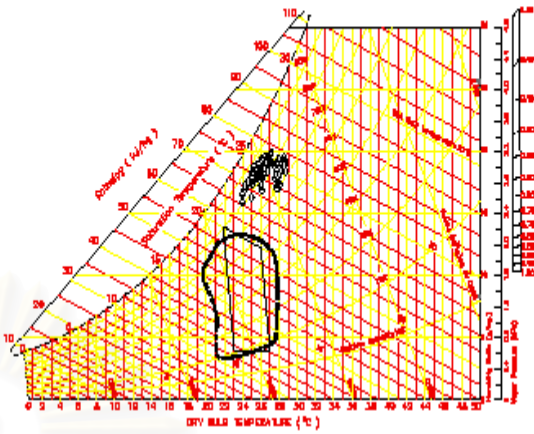
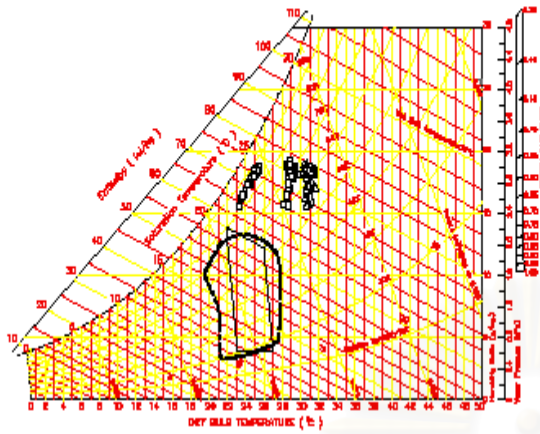
◇ 1.00 - 6.00 ○ 18.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (EV/DU/GYAN)

MONTH : SEPTEMBER

PSYCHROMETRIC CHART 1966 - 1988 (2529 - 2541)

STATION : PHISANULOK

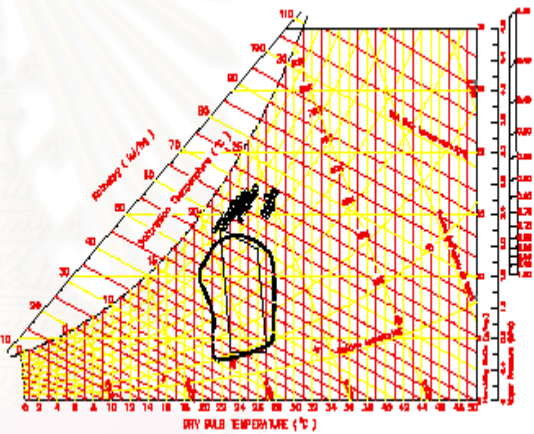
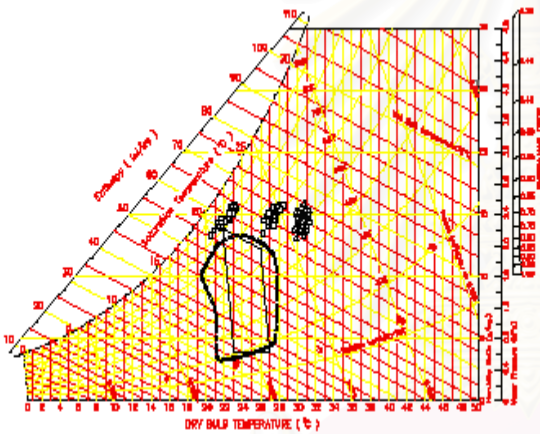


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 19.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.D.G.WAY)

MONTH : OCTOBER

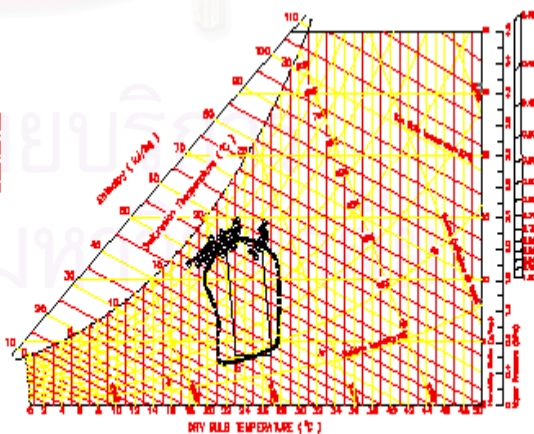
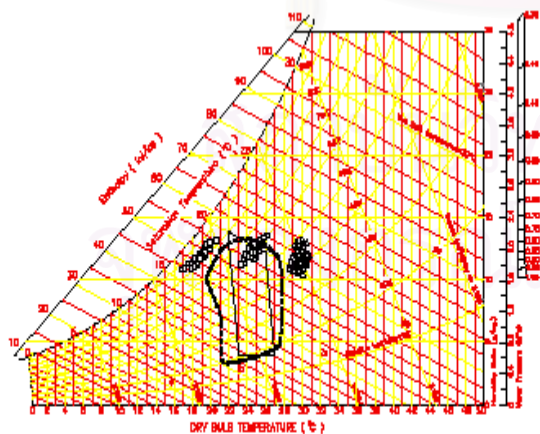


□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 19.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.D.G.WAY)

MONTH : NOVEMBER



□ 7.00 - 12.00 △ 13.00 - 18.00

◇ 1.00 - 6.00 ○ 19.00 - 24.00

— SUMMER COMFORT ZONE (ASHRAE 1987) - - - SUMMER COMFORT ZONE (V.D.G.WAY)

MONTH : DECEMBER

ตารางแสดงผลข้อมูลจำนวนรายชั่วโมงอุณหภูมิกระเปาะแห้ง และค่าเฉลี่ยอุณหภูมิกระเปาะเปียกที่เกิดขึ้น จำแนกตามช่วงอุณหภูมิกระเปาะแห้ง (bin data) ในแต่ละช่วงเวลา

ANNUAL BIN-HOUR WEATHER DATA							STATION : PHITSANULOK		
Hours of occurrence of DB in each bin with MCWB in parentheses							year : 1996		
Temperature range	Observation hour group						Total Observation	MCWB	Temperature range
	01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			
$^{\circ}\text{C}$	Annual							$^{\circ}\text{F}$	
	DB MCWB	DB MCWB	DB MCWB	DB MCWB	DB MCWB	DB MCWB	Total MCWB		
40.6 / 42.6								105 / 109	
37.8 / 40.0				4 (27.0)			4 (27.0)	100 / 104	
35.0 / 37.2			1 (26.0)	128 (26.3)	33 (26.7)		162 (26.4)	95 / 99	
32.2 / 34.4			121 (26.1)	570 (25.7)	260 (26.0)	1 (26.5)	952 (26.1)	90 / 94	
29.4 / 31.7	3 (26.7)	4 (26.7)	525 (25.3)	553 (24.7)	531 (25.2)	128 (26.0)	1,744 (25.6)	85 / 89	
26.7 / 28.9	414 (25.1)	361 (24.8)	534 (24.0)	184 (23.8)	455 (24.0)	656 (24.7)	2,603 (24.4)	80 / 84	
23.9 / 26.1	669 (23.3)	689 (23.6)	199 (22.6)	21 (22.3)	161 (23.1)	480 (23.3)	2,239 (23.1)	75 / 79	
21.1 / 23.3	181 (20.7)	180 (20.9)	65 (18.3)		16 (18.4)	141 (20.2)	585 (19.7)	70 / 74	
18.3 / 20.6	128 (17.3)	152 (17.4)	21 (16.7)	4 (16.5)	6 (17.1)	49 (17.5)	358 (17.4)	65 / 69	
15.6 / 17.8	29 (15.3)	57 (15.3)	3 (13.7)			10 (14.9)	109 (14.8)	60 / 64	
12.8 / 15.0	11 (12.8)	19 (13.1)					30 (13.0)	55 / 59	
10.0 / 12.2		2 (11.1)					2 (11.1)	50 / 54	
7.2 / 9.4								45 / 49	
4.4 / 6.7								40 / 44	
1.7 / 3.9								35 / 39	

NOTE : MCWB = Mean coincident wet-bulb temperature (number in parentheses) $^{\circ}\text{C}$
 Temperature (Celsius deg.) C = (deg.F-32) * 5 / 9

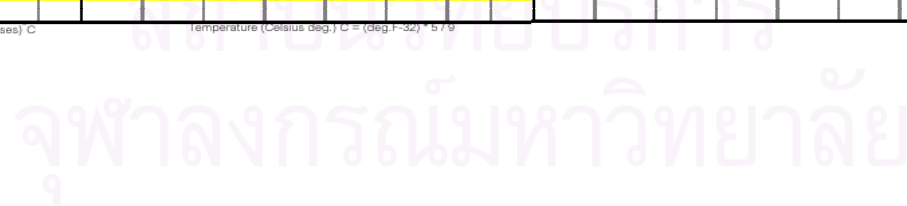
ANNUAL BIN-HOUR WEATHER DATA								STATION : PHITSANULOK	
Hours of occurrence of DB in each bin with MCWB in parentheses								year : 1996	
Temperature range	Observation hour group						Total Observation	MCWB	Temperature range
	01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			
$^{\circ}\text{C}$	Annual								$^{\circ}\text{F}$
	DB MCWB	DB MCWB	DB MCWB	DB MCWB	DB MCWB	DB MCWB	Total MCWB		
40.6 / 42.8									105 / 109
37.8 / 40.0				4 (27.0)			4 (27.0)		100 / 104
35.0 / 37.2			1 (26.0)	128 (26.3)	33 (26.7)		162 (26.4)		95 / 99
32.2 / 34.4			121 (26.1)	570 (25.7)	260 (26.0)	1 (26.5)	952 (26.1)		90 / 94
29.4 / 31.7	3 (26.7)	4 (26.7)	525 (25.3)	553 (24.7)	531 (25.2)	128 (26.0)	1,744 (25.6)		85 / 89
26.7 / 28.9	414 (25.1)	361 (24.8)	534 (24.0)	164 (23.8)	455 (24.0)	655 (24.7)	2,603 (24.4)		80 / 84
23.9 / 26.1	689 (23.3)	689 (23.6)	198 (22.8)	21 (22.3)	161 (23.1)	480 (23.3)	2,233 (23.1)		75 / 79
21.1 / 23.3	181 (20.7)	180 (20.9)	65 (18.3)		18 (18.4)	141 (20.2)	585 (19.7)		70 / 74
18.3 / 20.6	126 (17.3)	152 (17.4)	21 (16.7)	4 (16.5)	6 (17.1)	49 (17.5)	358 (17.4)		65 / 69
15.6 / 17.8	39 (15.3)	57 (15.3)	3 (13.7)			10 (14.9)	109 (14.8)		60 / 64
12.8 / 15.0	11 (12.8)	19 (13.1)					30 (13.0)		55 / 59
10.0 / 12.2		2 (11.1)					2 (11.1)		50 / 54
7.2 / 9.4									45 / 49
4.4 / 6.7									40 / 44
1.7 / 3.9									35 / 39

ตารางแสดงผลข้อมูลปริมาณองศาชั่วโมง การทำความร้อนและการทำความเย็น (degree hours and hours of occurrence)

BIN-HOUR WEATHER DATA Hours of occurrence of DB in each bin with MCWB in parentheses														STATION : PHITSANULOK											
Temperature range	Observation hour group						Total Observation	MCWB	Observation hour group						Total Observation	MCWB	Temperature range								
	01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00											
	01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00											
°C	January							February							March							°F			
40.6 / 42.8																									106 / 109
37.8 / 40.0																									100 / 104
35.0 / 37.2																									95 / 99
32.2 / 34.4							40 (23.1)																		90 / 94
29.4 / 31.7							110 (22.7)																		85 / 89
26.7 / 28.9							112 (21.4)																		80 / 84
23.9 / 26.1							121 (19.8)																		75 / 79
21.1 / 23.3							160 (19.0)																		70 / 74
18.3 / 20.6							123 (10.8)																		65 / 69
15.6 / 17.8							49 (14.7)																		60 / 64
12.8 / 15.0							26 (12.6)																		55 / 59
10.0 / 12.2							2 (11.1)																		50 / 54
7.2 / 9.4																									45 / 49
4.4 / 6.7																									40 / 44
1.7 / 3.9																									35 / 39
°C	April							May							June							°F			
40.6 / 42.8							4 (27.0)																		105 / 109
37.8 / 40.0							76 (26.5)																		100 / 104
35.0 / 37.2																									95 / 99
32.2 / 34.4							124 (26.5)																		90 / 94
29.4 / 31.7							138 (25.6)																		85 / 89
26.7 / 28.9							231 (24.4)																		80 / 84
23.9 / 26.1							231 (24.4)																		75 / 79
21.1 / 23.3							15 (21.7)																		70 / 74
18.3 / 20.6																									65 / 69
15.6 / 17.8																									60 / 64
12.8 / 15.0																									55 / 59
10.0 / 12.2																									50 / 54
7.2 / 9.4																									45 / 49
4.4 / 6.7																									40 / 44
1.7 / 3.9																									35 / 39

NOTE : MCWB = Mean coincident wet-bulb temperature (number in parentheses) °C

Temperature (Celsius deg.) °C = (deg.F - 32) * 5 / 9



BIN-HOUR WEATHER DATA Hours of occurrence of DB in each bin with MCWB in parentheses																							STATION : PHITSANULOK					
Temperature range	Observation hour group						Total Observation	MCWB	Observation hour group						Total Observation	MCWB	Observation hour group						Total Observation	MCWB	Temperature range			
	01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00			01:00 to 04:00	05:00 to 08:00	09:00 to 12:00	13:00 to 16:00	17:00 to 20:00	21:00 to 24:00						
°C	July								August								September								°F			
40.0 / 42.0																												105 / 109
37.8 / 40.0																												100 / 104
35.0 / 37.2				1 (27.3)			1 (27.3)																					95 / 99
32.2 / 34.4			14 (26.9)	50 (26.9)	20 (27.1)		102 (27.0)			4 (26.7)	52 (26.7)	16 (27.0)					72 (26.8)			5 (26.3)	40 (26.7)	7 (26.6)			52 (26.6)		90 / 94	
29.4 / 31.7		1 (25.6)	59 (26.3)	48 (26.0)	49 (26.3)	22 (26.4)	170 (26.1)			65 (26.2)	63 (26.1)	63 (26.2)	6 (26.0)				187 (26.4)			45 (26.4)	58 (26.4)	52 (26.4)	4 (26.6)	150 (26.4)	160 (26.4)		85 / 89	
26.7 / 28.9	04 (25.5)	58 (25.3)	48 (25.1)	15 (25.3)	38 (25.1)	72 (25.6)	293 (25.3)			59 (25.3)	37 (25.4)	58 (25.3)	9 (25.7)	39 (25.4)	89 (25.4)	288 (25.4)			44 (25.7)	35 (25.4)	61 (25.4)	22 (25.9)	47 (25.6)	70 (25.8)	280 (25.6)	80 / 84		
23.9 / 26.1	60 (24.2)	67 (24.1)	3 (24.7)	1 (24.1)	8 (24.5)	30 (24.5)	169 (24.3)			64 (24.4)	83 (24.4)	7 (24.4)		5 (24.4)	28 (24.4)	188 (24.4)			76 (24.4)	83 (24.4)	9 (24.6)		14 (24.5)	46 (24.5)	228 (24.5)	75 / 79		
21.1 / 23.3										4 (22.3)	4 (22.5)				1 (22.2)	6 (22.3)				1 (22.5)					1 (22.5)	70 / 74		
18.3 / 20.6																										65 / 69		
15.6 / 17.8																										60 / 64		
12.8 / 15.0																										55 / 59		
10.0 / 12.2																										50 / 54		
7.2 / 9.4																										45 / 49		
4.4 / 6.7																										40 / 44		
1.7 / 3.9																										35 / 39		
°C	October								November								December								°F			
40.6 / 42.8																											105 / 109	
37.8 / 40.0																											100 / 104	
35.0 / 37.2																											95 / 99	
32.2 / 34.4				5 (25.9)	86 (25.7)	5 (25.6)	96 (25.6)					23 (25.0)	1 (26.4)			24 (25.7)					8 (25.3)	1 (25.5)			9 (25.5)		90 / 94	
29.4 / 31.7				59 (25.2)	48 (25.3)	59 (25.6)	166 (25.3)				35 (24.6)	78 (24.5)	48 (24.8)			161 (24.7)					8 (24.2)	57 (21.9)	9 (24.1)		74 (23.4)		85 / 89	
26.7 / 28.9	37 (25.0)	21 (24.3)	51 (24.7)	17 (25.4)	48 (25.1)	95 (25.1)	269 (24.9)			4 (25.3)	5 (24.9)	60 (24.0)	16 (24.3)	62 (24.1)	45 (24.7)	192 (24.5)					40 (21.5)	59 (20.0)	64 (21.5)	7 (24.0)	170 (21.8)	80 / 84		
23.9 / 26.1	87 (24.1)	66 (24.0)	6 (24.1)	3 (23.8)	12 (24.6)	20 (24.1)	290 (24.1)			93 (23.4)	72 (23.4)	25 (22.6)	3 (24.0)	0 (23.4)	76 (23.4)	277 (23.4)				24 (22.3)	10 (22.3)	47 (16.7)		43 (20.1)	43 (21.5)	167 (21.2)	76 / 79	
21.1 / 23.3		4 (20.6)					4 (20.6)			23 (21.2)	43 (21.1)					66 (21.1)					38 (17.4)	44 (17.7)	7 (16.4)		23 (17.1)	112 (17.2)	70 / 74	
18.3 / 20.6																											65 / 69	
15.6 / 17.8																											60 / 64	
12.8 / 15.0																											55 / 59	
10.0 / 12.2																											50 / 54	
7.2 / 9.4																											45 / 49	
4.4 / 6.7																											40 / 44	
1.7 / 3.9																											35 / 39	

NOTE : MCWB = Mean coincident wet-bulb temperature (number in parentheses) °C

Temperature (Celsius deg.) C = (Deg.F-32) * 5 / 9

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

DEGREE HOURS & HOURS OF OCCURRENCE								Station : PHITSANULOK	
								YEARS : 1981 - 1998 (2524-2541)	
TEMPERATURE		MEAN TEMP.DEGREE (°F)	NO. OF HOURS BELOW TEMPERATURE	NO. OF DEGREE HOURS OF HEATING BELOW TEMPERATURE		NO. OF HOURS ABOVE TEMPERATURE	NO. OF DEGREE HOURS OF COOLING ABOVE TEMPERATURE		
Degree		HOURS OF OCCURRENCE							
°F	°C			°F	°C		°F	°C	
35	1.7	(37.5)	-	-	-	8,757.00	415,468.50	230,585.02	
36	2.2		-	-	-	8,757.00	406,711.50	225,724.88	
37	2.8	0	-	-	-	8,757.00	397,964.50	220,884.75	
38	3.3		-	-	-	8,757.00	389,197.50	216,004.61	
39	3.9		-	-	-	8,757.00	380,440.50	211,144.48	
40	4.4	(42.5)	-	-	-	8,757.00	371,683.50	206,284.34	
41	5.0		-	-	-	8,757.00	362,926.50	201,424.21	
42	5.6	0	-	-	-	8,757.00	354,169.50	196,564.07	
43	6.1		-	-	-	8,757.00	345,412.50	191,703.94	
44	6.7		-	-	-	8,757.00	336,655.50	186,843.80	
45	7.2	(47.5)	-	-	-	8,757.00	327,898.50	181,983.67	
46	7.8		-	-	-	8,757.00	319,141.50	177,123.53	
47	8.3	0	-	-	-	8,757.00	310,384.50	172,263.40	
48	8.9		-	-	-	8,757.00	301,627.50	167,403.26	
49	9.4		-	-	-	8,757.00	292,870.50	162,543.13	
50	10.0	52.5	-	-	-	8,757.00	284,113.50	157,682.99	
51	10.6		-	-	-	8,757.00	275,356.50	152,822.86	
52	11.1	0	-	-	-	8,757.00	266,599.50	147,962.72	
53	11.7		-	-	-	8,757.00	257,842.50	143,102.59	
54	12.2		-	-	-	8,757.00	249,085.50	138,242.45	
55	12.8	(57.5)	-	-	-	8,757.00	240,328.50	133,382.32	
56	13.3		-	-	-	8,757.00	231,571.50	128,522.18	
57	13.9	0	-	-	-	8,757.00	222,814.50	123,662.05	
58	14.4		-	-	-	8,757.00	214,057.50	118,801.91	
59	15.0		-	-	-	8,757.00	205,300.50	113,941.78	
60	15.6	(62.5)	4.20	-	-	8,757.00	196,543.50	109,081.64	
61	16.1		8.40	10.50	5.83	8,752.80	187,786.50	104,221.50	
62	16.7	21	12.60	21.00	11.66	8,748.60	179,029.50	99,361.36	
63	17.2		16.80	31.50	17.48	8,744.40	170,272.50	94,501.22	
64	17.8		21.00	42.00	23.31	8,740.20	161,515.50	89,641.08	
65	18.3	(67.5)	106.80	62.50	29.14	8,736.00	152,758.50	84,780.94	
66	18.9		192.60	288.00	159.84	8,650.20	144,001.50	79,920.80	
67	19.4	429	278.40	523.50	290.54	8,564.40	135,244.50	75,060.66	
68	20.0		364.20	759.00	421.25	8,478.60	126,487.50	70,200.52	
69	20.6		450.00	994.50	551.95	8,392.80	117,730.50	65,340.38	

หมายเหตุ : วิธีการหาค่า degree hours ได้จากการคำนวณจากจำนวนชั่วโมง hours of occurrence ที่เกิดขึ้นในแต่ละช่วงอุณหภูมิจุดสมดุลง่ายที่พิจารณา โดยอาศัยข้อมูลสภาพอากาศราย 3 ชั่วโมง

DEGREE HOURS & HOURS OF OCCURRENCE						Station : PHITSANULOK		
						YEARS : 1981 - 1998 (2524-2541)		
TEMPERATURE		MEAN TEMP.DEGREE (°F)	NO. OF HOURS BELOW TEMPERATURE	NO. OF DEGREE HOURS OF HEATING BELOW TEMPERATURE		NO. OF HOURS ABOVE TEMPERATURE	NO. OF DEGREE HOURS OF COOLING ABOVE TEMPERATURE	
Degree		HOURS OF OCCURRENCE						
°F	°C			°F	°C		°F	°C
70	21.1	(72.5)	591.60	1,230.00	882.65	8,307.00	110,203.50	61,162.94
71	21.7		733.20	2,034.00	1,128.87	8,165.40	102,250.50	56,749.03
72	22.2	708	874.80	2,838.00	1,575.09	8,023.80	94,297.50	52,335.11
73	22.8		1,016.40	3,642.00	2,021.31	7,882.20	86,344.50	47,921.20
74	23.3		1,158.00	4,446.00	2,467.53	7,740.60	78,391.50	43,507.28
75	23.9	(77.5)	1,572.60	6,250.00	2,913.75	7,599.00	70,438.50	39,093.37
76	24.4		1,987.20	7,444.50	4,131.70	7,184.40	63,876.00	35,451.18
77	25.0	2073	2,401.80	9,639.00	5,349.65	6,769.80	57,313.50	31,808.99
78	25.6		2,816.40	11,833.50	6,567.59	6,355.20	50,751.00	28,168.81
79	26.1		3,231.00	14,028.00	7,785.54	5,940.60	44,188.50	24,524.62
80	26.7	(82.5)	3,687.60	16,222.50	9,003.49	5,526.00	37,626.00	20,882.43
81	27.2		4,144.20	20,595.00	11,430.23	5,069.40	33,241.50	18,449.03
82	27.8	2283	4,600.80	24,967.50	13,856.96	4,612.80	28,857.00	16,015.64
83	28.3		5,057.40	29,340.00	16,283.70	4,156.20	24,472.50	13,582.24
84	28.9		5,514.00	33,712.50	18,710.44	3,699.60	20,088.00	11,148.84
85	29.4	(87.5)	5,926.80	38,085.00	21,137.18	3,243.00	15,703.50	8,715.44
86	30.0		6,339.60	44,831.00	24,770.21	2,830.20	13,492.50	7,488.34
87	30.6	2064	6,752.40	51,177.00	28,403.24	2,417.40	11,281.50	6,261.23
88	31.1		7,165.20	57,723.00	32,036.27	2,004.60	9,070.50	5,034.13
89	31.7		7,578.00	64,269.00	35,869.30	1,591.80	6,859.50	3,807.02
90	32.2	(92.5)	7,750.80	70,815.00	39,302.33	1,179.00	4,648.50	2,579.92
91	32.8		7,923.60	78,825.00	43,747.88	1,006.20	3,901.50	2,165.33
92	33.3	864	8,096.40	86,835.00	48,193.43	833.40	3,154.50	1,750.75
93	33.9		8,269.20	94,845.00	52,638.98	660.60	2,407.50	1,338.16
94	34.4		8,442.00	102,855.00	57,084.53	487.80	1,860.50	921.58
95	35.0	(97.5)	8,505.00	110,865.00	61,530.08	315.00	913.50	506.99
96	35.6		8,568.00	119,464.50	66,302.80	252.00	693.00	384.62
97	36.1	315	8,631.00	128,064.00	71,075.52	189.00	472.50	262.24
98	36.7		8,694.00	136,663.50	75,848.24	126.00	252.00	139.86
99	37.2		8,757.00	145,263.00	80,620.97	63.00	31.50	17.48

หมายเหตุ : วิธีการหาค่า degree hours ได้จากการคำนวณจากจำนวนชั่วโมง hours of occurrence ที่เกิดขึ้นในแต่ละช่วงอุณหภูมิจุดสมมูลย์ที่พิจารณา โดยอาศัยข้อมูลสภาพอากาศราย 3 ชั่วโมง

DEGREE HOURS & HOURS OF OCCURRENCE						Station : PHITSANULOK		
						YEARS : 1981 - 1998 (2524-2541)		
TEMPERATURE		MEAN TEMP.DEGREE (°F)	NO. OF HOURS	NO. OF DEGREE HOURS OF HEATING BELOW		NO. OF HOURS	NO. OF DEGREE HOURS OF COOLING ABOVE	
Degree		HOURS OF OCCURRENCE	BELOW TEMPERATURE	TEMPERATURE		ABOVE TEMPERATURE	TEMPERATURE	
°F	°C			°F	°C		°F	°C
70	21.1	(72.5)	591.60	1,230.00	882.65	8,307.00	110,203.50	61,162.94
71	21.7		733.20	2,034.00	1,128.87	8,165.40	102,250.50	56,749.03
72	22.2	708	874.80	2,838.00	1,575.09	8,023.80	94,297.50	52,335.11
73	22.8		1,016.40	3,642.00	2,021.31	7,882.20	86,344.50	47,921.20
74	23.3		1,158.00	4,446.00	2,467.53	7,740.60	78,391.50	43,507.28
75	23.9	(77.5)	1,572.60	6,250.00	2,913.75	7,599.00	70,438.50	39,093.37
76	24.4		1,987.20	7,444.50	4,131.70	7,184.40	63,876.00	35,451.18
77	25.0	2073	2,401.80	9,639.00	5,349.65	6,769.80	57,313.50	31,808.99
78	25.6		2,816.40	11,833.50	6,567.59	6,355.20	50,751.00	28,168.81
79	26.1		3,231.00	14,028.00	7,785.54	5,940.60	44,188.50	24,524.62
80	26.7	(82.5)	3,687.60	16,222.50	9,003.49	5,526.00	37,626.00	20,882.43
81	27.2		4,144.20	20,595.00	11,430.23	5,069.40	33,241.50	18,449.03
82	27.8	2283	4,600.80	24,967.50	13,856.96	4,612.80	28,857.00	16,015.64
83	28.3		5,057.40	29,340.00	16,283.70	4,156.20	24,472.50	13,582.24
84	28.9		5,514.00	33,712.50	18,710.44	3,699.60	20,088.00	11,148.84
85	29.4	(87.5)	5,926.80	38,085.00	21,137.18	3,243.00	15,703.50	8,715.44
86	30.0		6,339.60	44,831.00	24,770.21	2,830.20	13,492.50	7,488.34
87	30.6	2064	6,752.40	51,177.00	28,403.24	2,417.40	11,281.50	6,261.23
88	31.1		7,165.20	57,723.00	32,036.27	2,004.60	9,070.50	5,034.13
89	31.7		7,578.00	64,269.00	35,869.30	1,591.80	6,859.50	3,807.02
90	32.2	(92.5)	7,750.80	70,815.00	39,302.33	1,179.00	4,648.50	2,579.92
91	32.8		7,923.60	78,825.00	43,747.88	1,006.20	3,901.50	2,165.33
92	33.3	864	8,096.40	86,835.00	48,193.43	833.40	3,154.50	1,750.75
93	33.9		8,269.20	94,845.00	52,638.98	660.60	2,407.50	1,338.16
94	34.4		8,442.00	102,855.00	57,084.53	487.80	1,860.50	921.58
95	35.0	(97.5)	8,505.00	110,865.00	61,530.08	315.00	913.50	506.99
96	35.6		8,568.00	119,464.50	66,302.80	252.00	693.00	384.62
97	36.1	315	8,631.00	128,064.00	71,075.52	189.00	472.50	262.24
98	36.7		8,694.00	136,663.50	75,848.24	126.00	262.00	139.86
99	37.2		8,757.00	145,263.00	80,620.97	63.00	31.50	17.48

หมายเหตุ : วิธีการหาค่า degree hours ได้จากการคำนวณจากจำนวนชั่วโมง hours of occurrence ที่เกิดขึ้นในแต่ละช่วงอุณหภูมิจุดสมมูลย์ที่พิจารณา โดยอาศัยข้อมูลสภาพอากาศราย 3 ชั่วโมง