

CHIANG MAI TH

Latitude = 18.78 N

Longitude = 98.98 E

Period of Record = 1973 to 1996

WMO No. 483270

Elevation = 1030 feet

Average Pressure = 28.69 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	102	74	85	6.5	S
0.4% Occurrence	100	74	90	5.8	S
1.0% Occurrence	98	74	92	5.5	S
2.0% Occurrence	96	74	95	5.3	S
Mean Daily Range	20	-	-	-	-
97.5% Occurrence	59	56	66	0.7	N
99.0% Occurrence	55	53	58	0.4	N
99.6% Occurrence	53	51	55	0.4	N
Median of Extreme Lows	48	46	45	0.3	N
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	83	90	164	4.1	S
0.4% Occurrence	82	89	159	3.8	S
1.0% Occurrence	80	88	146	3.8	S
2.0% Occurrence	79	87	140	3.9	S
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	174	91	1.10	4.6	SSE
0.4% Occurrence	167	86	1.06	3.1	S
1.0% Occurrence	157	85	0.99	3.2	S
2.0% Occurrence	148	83	0.94	3.0	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		419	3743	3865	6154

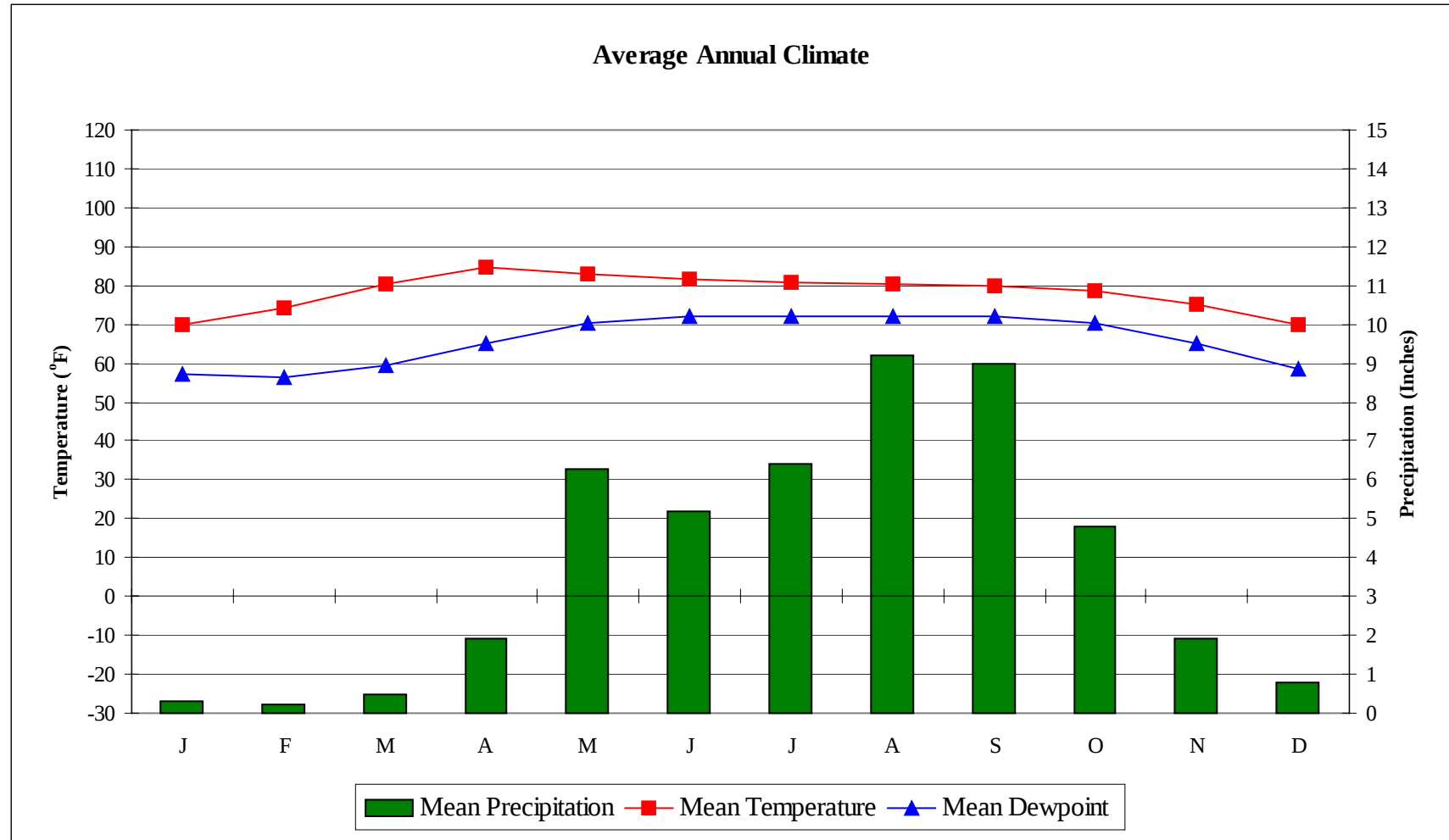
Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	10.5 + 4.1
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
80.7	N/A	N/A	0

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

CHIANG MAI TH

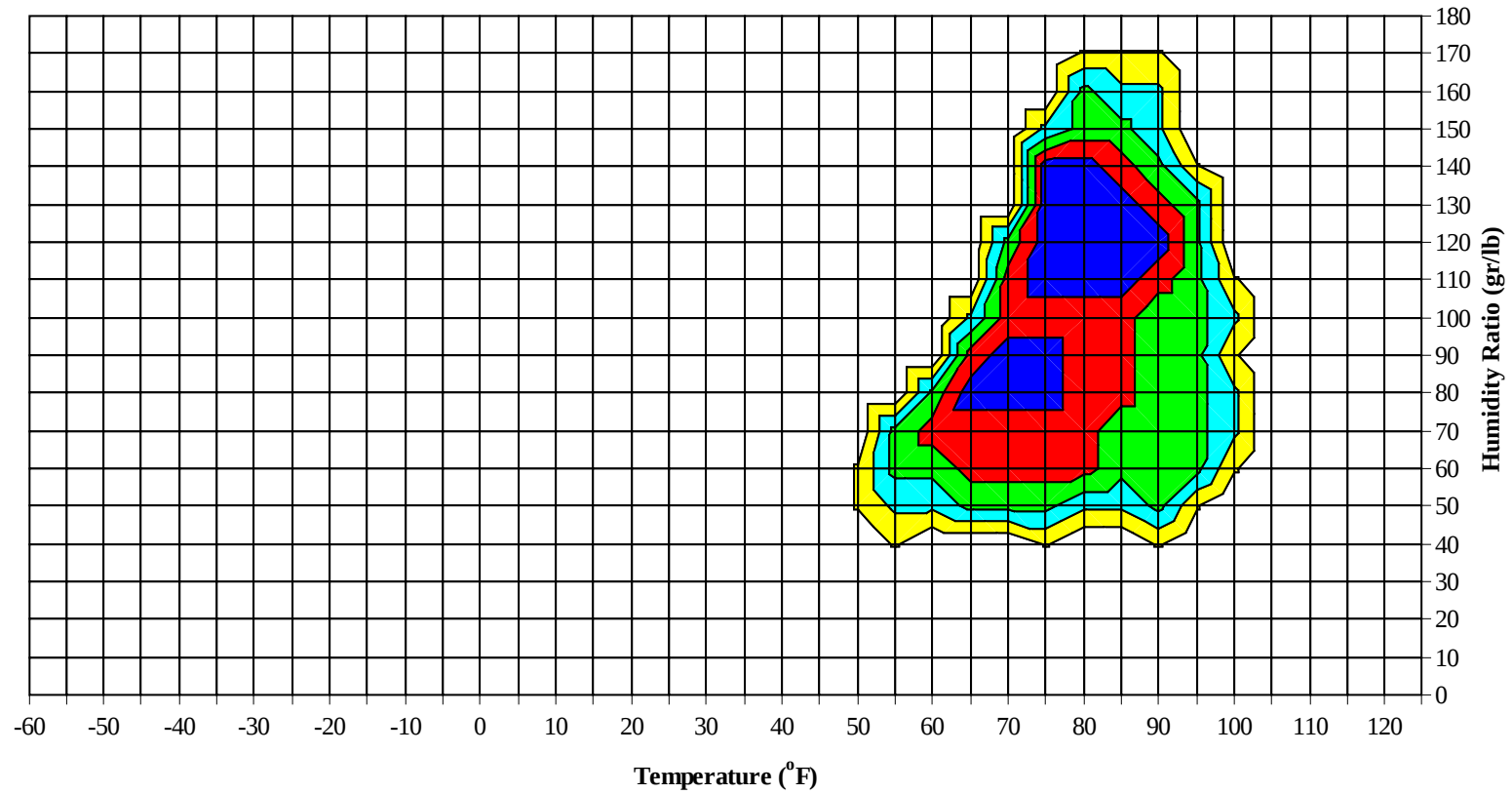
WMO No. 483270



CHIANG MAI TH

WMO No. 483270

Long Term Psychrometric Summary

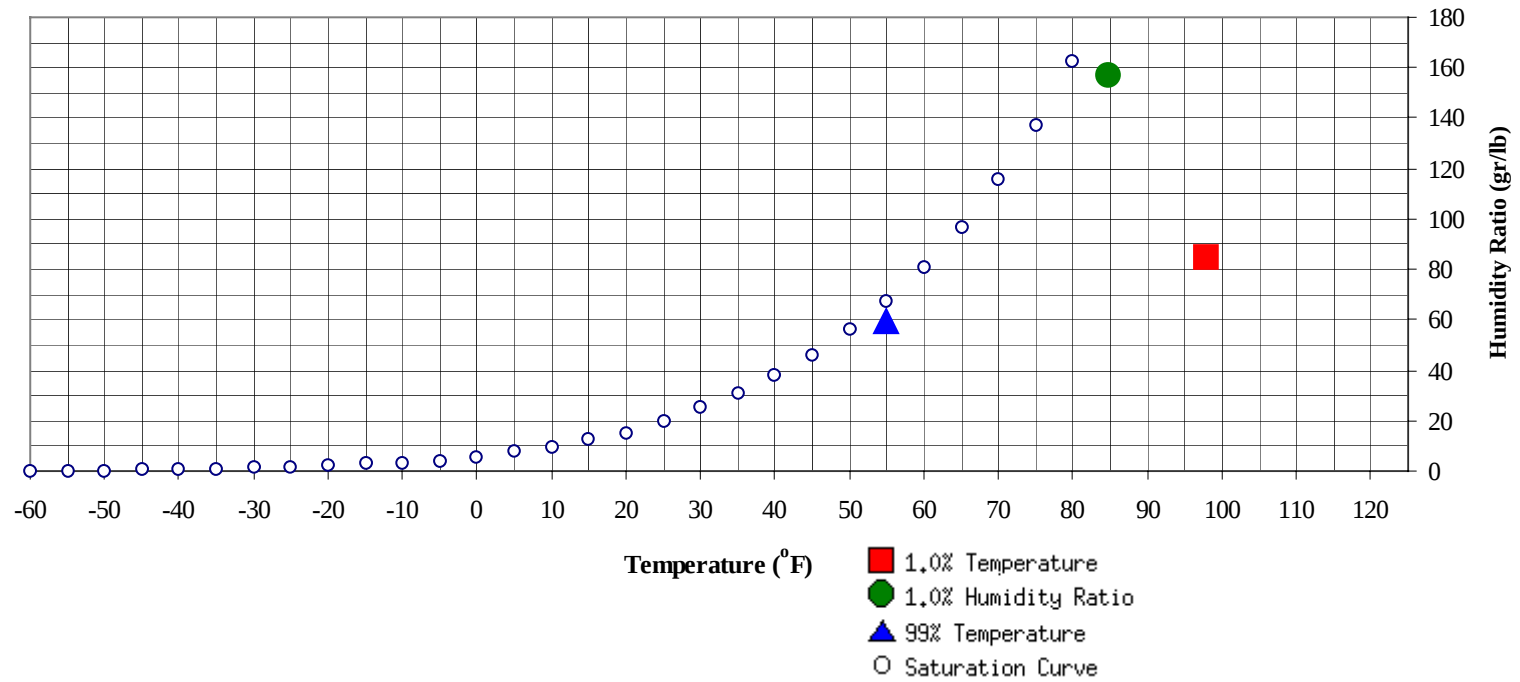


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

CHIANG MAI TH

WMO No. 483270

Psychrometric Summary of Peak Design Values



99% Dry Bulb	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
	55	59.1	22.4		156.8	84.8	80.3	78.8	45.0

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	98	84.7	72.6	36.9

CHIANG MAI TH

WMO No. 483270

Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104												4	0	4	70.1
95 / 99							4	1	5	69.4		52	15	67	70.7
90 / 94		3	1	4	69.7		44	15	59	67.6		76	38	114	70.2
85 / 89		35	7	42	67.2		49	21	70	67.1	0	39	39	78	69.4
80 / 84	0	79	27	106	66.6	0	49	39	88	66.3	7	43	64	114	68.2
75 / 79	0	54	43	97	65.2	4	35	52	90	64.9	47	24	56	128	66.6
70 / 74	9	37	67	114	63.9	33	28	55	116	63.3	96	8	29	133	64.4
65 / 69	36	25	48	110	62.0	53	11	28	91	61.1	57	2	5	64	61.5
60 / 64	100	13	42	155	59.0	84	4	14	101	58.2	35	1	1	37	58.4
55 / 59	76	1	11	88	55.0	45	0	1	46	54.9	5	0	0	5	54.5
50 / 54	23	1	1	25	50.9	5	0	0	5	51.6	0			0	47.5
45 / 49	3		0	3	46.1	0			0	46.0					
40 / 44	1		0	1	41.4										
35 / 39			0	0											

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

CHIANG MAI TH

WMO No. 483270

Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109		0		0	74.6										
100 / 104	0	23	5	28	73.9		6	2	8	75.7		0	0	0	72.0
95 / 99	0	70	28	98	74.3	0	36	10	46	75.9	0	6	1	7	79.3
90 / 94	0	66	45	112	73.4	1	80	31	112	76.1	0	59	14	73	77.7
85 / 89	5	43	48	96	72.3	7	60	40	108	75.3	1	86	32	119	76.1
80 / 84	46	27	66	139	71.1	51	49	81	180	74.2	42	75	97	214	75.3
75 / 79	106	8	38	152	69.7	153	17	75	245	73.0	180	15	94	288	73.2
70 / 74	74	2	9	85	67.2	36	1	9	46	70.0	17	0	2	19	70.6
65 / 69	8	0	0	8	64.2	0			0	67.3	0			0	62.0
60 / 64	1			1	62.3										
55 / 59															
50 / 54															
45 / 49															
40 / 44															
35 / 39															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

CHIANG MAI TH

WMO No. 483270

Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104															
95 / 99		3	1	4	78.3	0	1	0	1	78.4	0	0		0	77.2
90 / 94	0	46	12	58	77.1	0	32	6	38	77.1	0	34	4	38	77.1
85 / 89	1	82	30	113	76.1	0	77	25	103	76.2	0	84	21	105	76.5
80 / 84	30	86	91	208	75.0	17	98	93	208	75.2	12	88	85	185	75.4
75 / 79	186	30	106	323	73.5	194	37	116	348	73.6	169	30	121	320	73.7
70 / 74	30	1	7	38	70.2	36	2	7	45	71.8	58	3	9	70	70.8
65 / 69							0	0	0	67.0	1		0	1	67.0
60 / 64											0			0	64.0
55 / 59															
50 / 54															
45 / 49															
40 / 44															
35 / 39															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

CHIANG MAI TH

WMO No. 483270

Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104															
95 / 99							0		0	79.5					
90 / 94	0	30	2	32	76.4	0	8	0	8	74.7		2	0	2	72.6
85 / 89	0	87	12	99	75.1	0	60	4	64	72.5		16	1	17	70.4
80 / 84	5	88	69	162	74.2	1	88	33	122	71.2	0	83	16	99	67.7
75 / 79	112	36	131	278	72.8	20	58	89	168	70.2	1	72	45	118	65.8
70 / 74	117	6	29	152	69.8	110	22	84	216	67.9	24	43	76	142	65.1
65 / 69	9	1	4	14	64.6	65	4	19	88	64.5	52	18	52	123	62.7
60 / 64	4	0	1	5	60.5	33	1	8	42	60.4	83	12	43	138	59.3
55 / 59	1			1	57.1	8	0	2	10	55.4	64	2	13	79	55.0
50 / 54						2		0	2	49.8	20	0	2	22	50.4
45 / 49						0			0	42.8	4	0	0	4	45.7
40 / 44											0			0	43.0
35 / 39															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

CHIANG MAI TH

WMO No. 483270

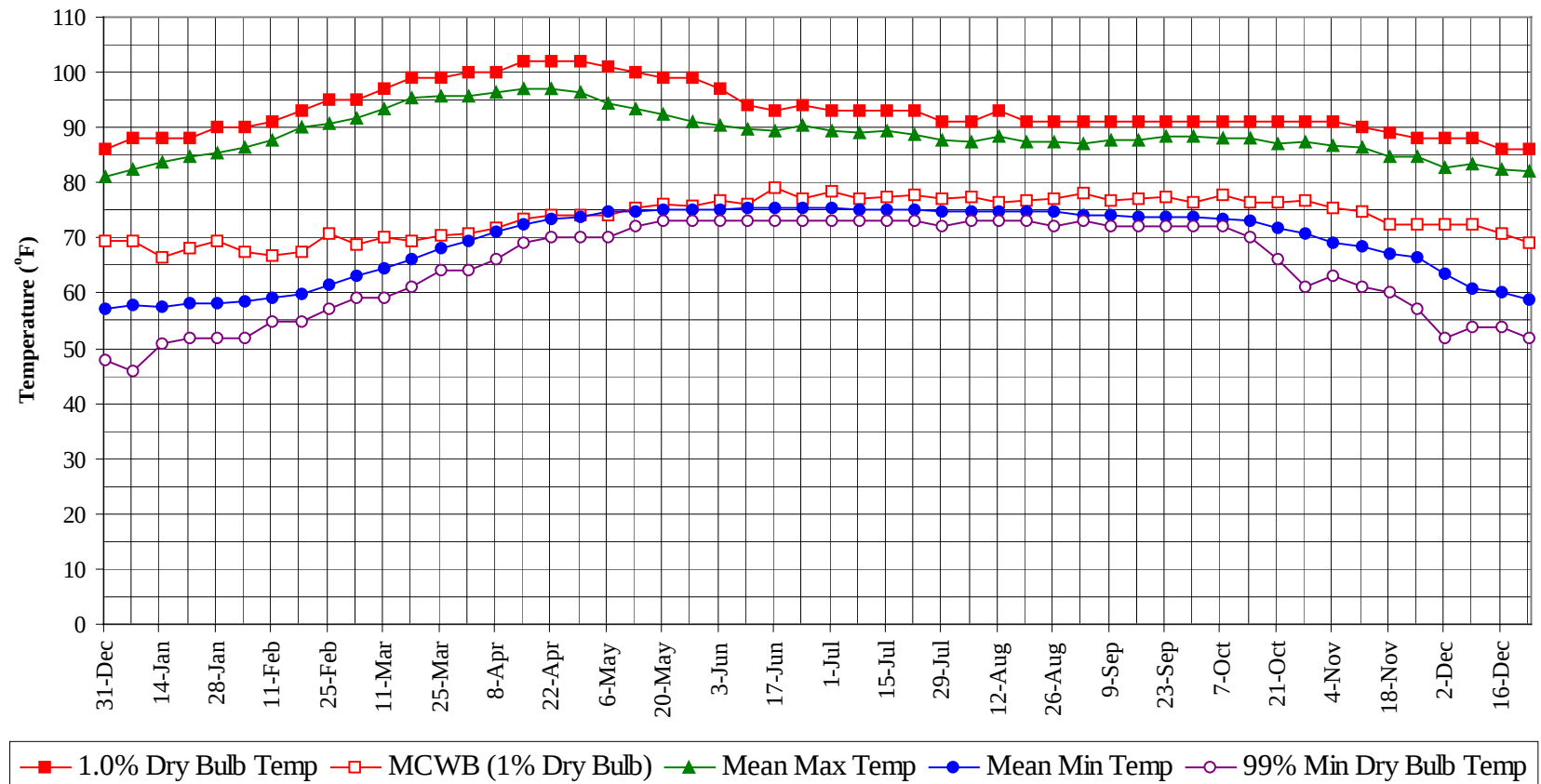
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

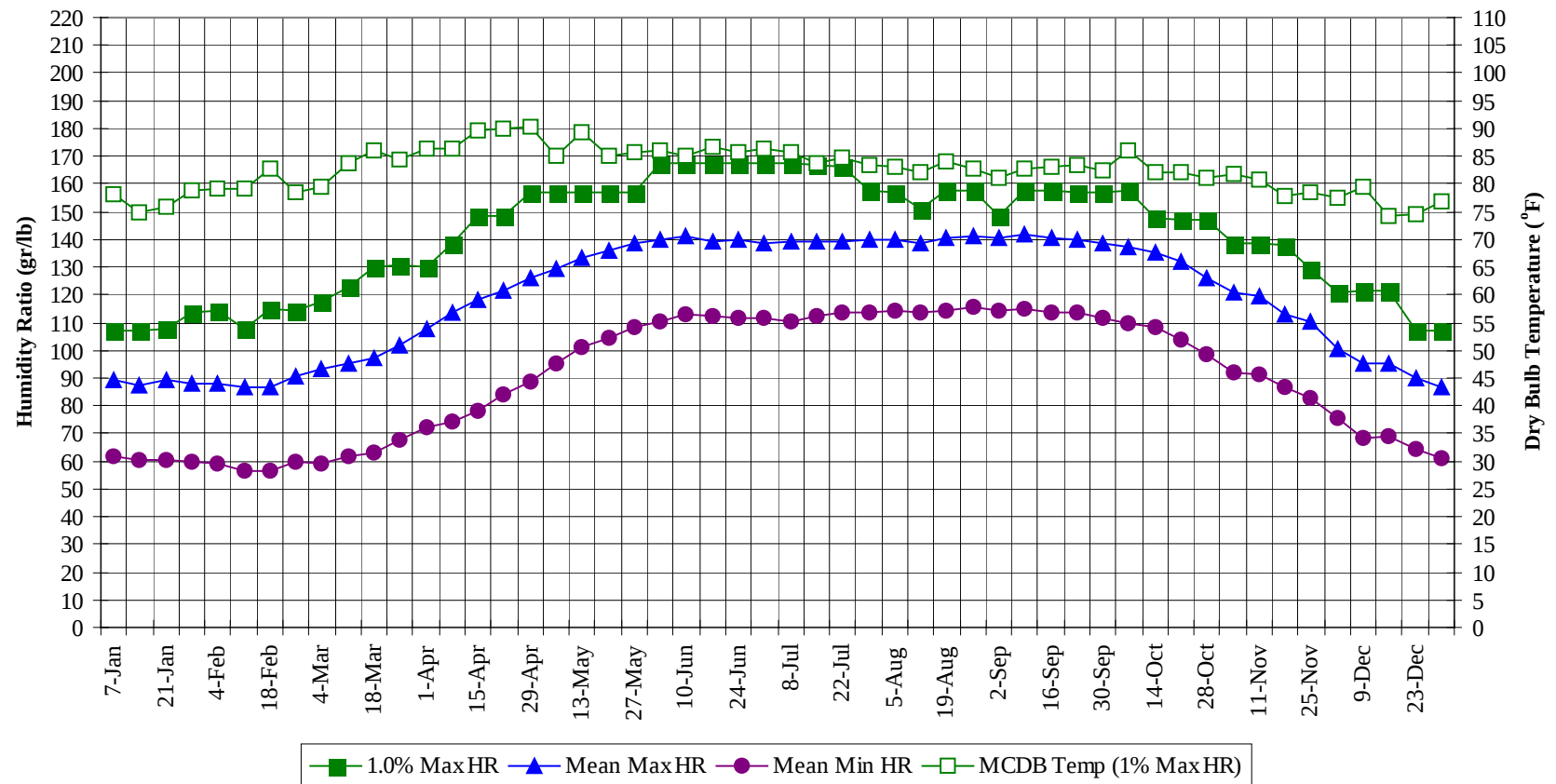
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
105 / 109		0		0	74.6
100 / 104	0	33	7	40	73.8
95 / 99	0	171	56	227	73.7
90 / 94	1	478	170	649	74.1
85 / 89	15	714	279	1009	73.7
80 / 84	210	853	754	1817	72.6
75 / 79	1164	418	961	2543	71.6
70 / 74	643	155	389	1187	67.0
65 / 69	286	62	160	508	62.5
60 / 64	341	30	111	483	59.0
55 / 59	200	4	28	232	55.0
50 / 54	50	1	4	55	50.7
45 / 49	8	0	0	8	45.7
40 / 44	1		0	1	41.8
35 / 39			0	0	

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

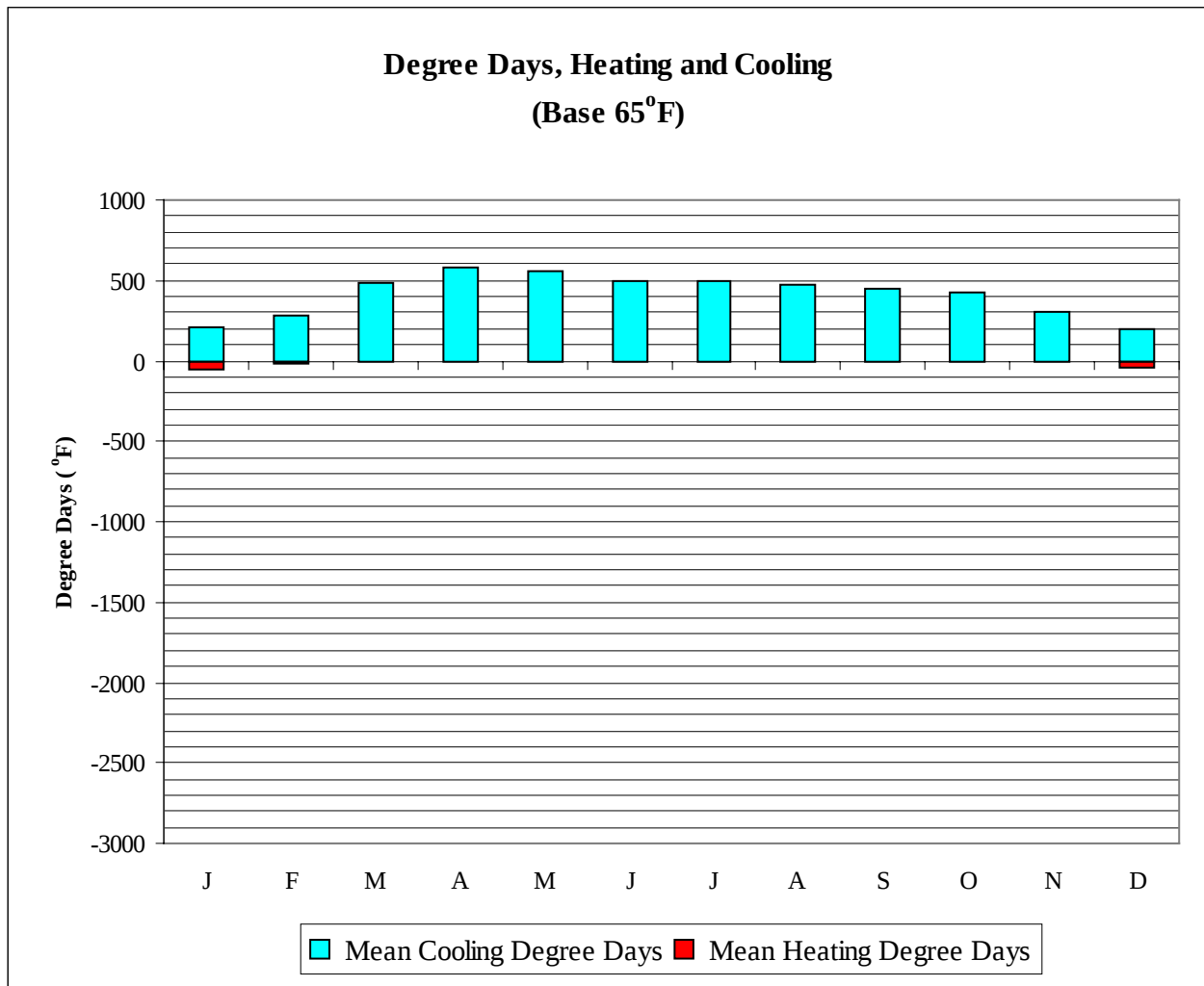


CHIANG MAI TH

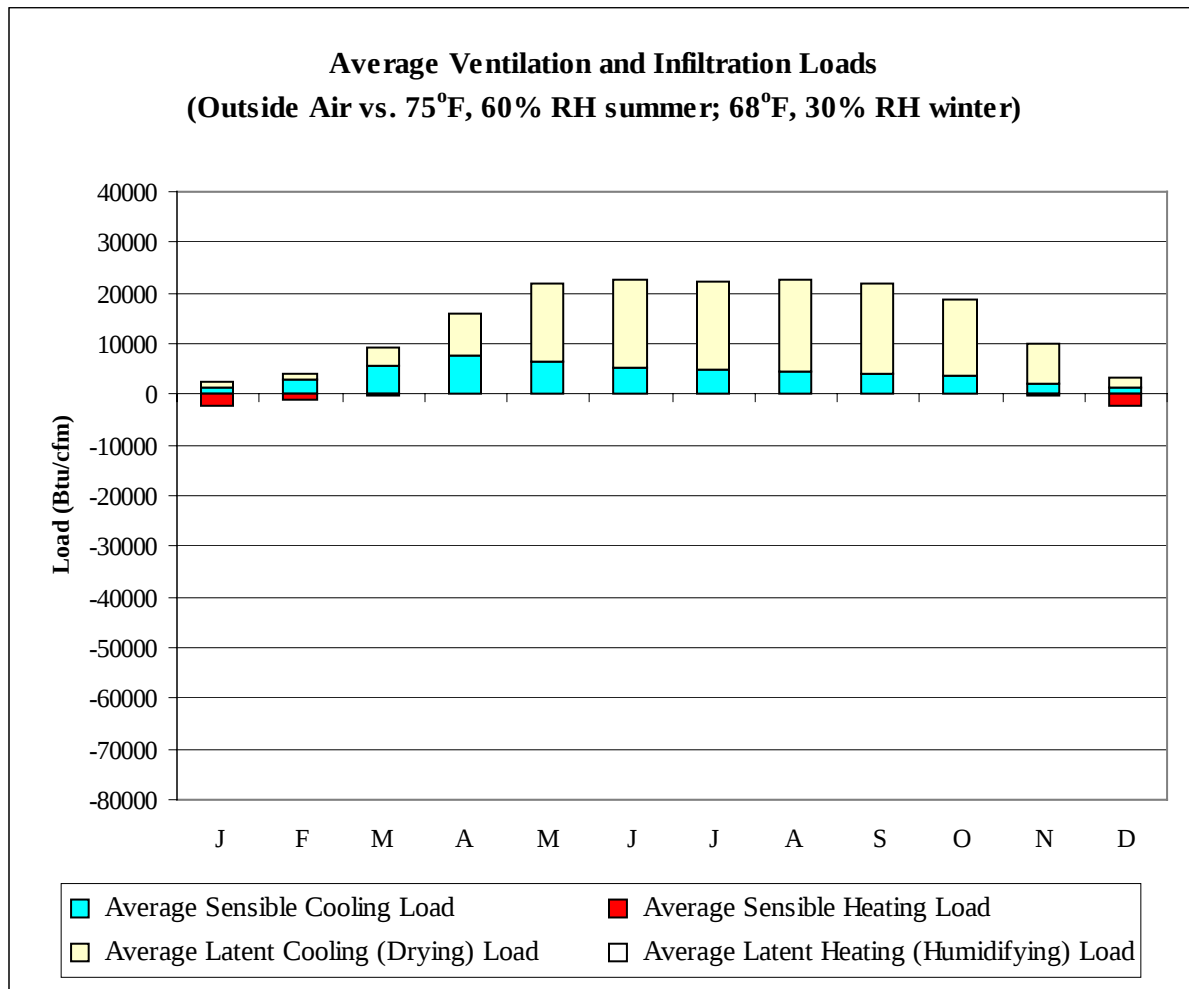
WMO No. 483270

Long Term Dry Bulb Temperature and Humidity Summary

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	88.0	69.3	82.3	57.7	46.0	107.1	78.0	89.4	61.7
14-Jan	88.0	66.6	83.7	57.4	51.0	107.1	75.0	87.4	60.2
21-Jan	88.0	68.2	84.7	58.1	52.0	107.8	75.8	89.3	60.7
28-Jan	90.0	69.4	85.4	58.1	52.0	113.4	78.9	87.8	60.0
4-Feb	90.0	67.5	86.5	58.6	52.0	114.1	79.1	88.0	59.4
11-Feb	91.0	66.9	87.6	59.2	55.0	107.8	79.3	86.4	56.4
18-Feb	93.0	67.5	89.9	60.0	55.0	114.8	82.9	86.6	56.2
25-Feb	95.0	70.7	90.6	61.6	57.0	114.1	78.6	90.5	59.8
4-Mar	95.0	68.9	91.7	63.2	59.0	117.6	79.3	93.5	59.4
11-Mar	97.0	70.3	93.3	64.6	59.0	122.5	83.9	95.2	61.5
18-Mar	99.0	69.5	95.5	66.2	61.0	130.2	86.0	97.4	63.0
25-Mar	99.0	70.6	95.8	68.0	64.0	130.9	84.4	101.9	67.6
1-Apr	100.0	70.7	95.7	69.4	64.0	130.2	86.3	107.9	72.0
8-Apr	100.0	71.9	96.5	71.2	66.0	138.6	86.3	113.4	74.2
15-Apr	102.0	73.5	97.1	72.6	69.0	148.4	89.6	118.2	78.2
22-Apr	102.0	74.1	97.0	73.4	70.0	148.4	90.0	121.7	83.8
29-Apr	102.0	74.1	96.5	73.9	70.0	156.8	90.2	126.2	88.7
6-May	101.0	74.0	94.5	74.8	70.0	156.8	85.2	129.6	95.0
13-May	100.0	75.5	93.4	74.8	72.0	156.8	89.3	133.0	101.2
20-May	99.0	76.2	92.6	75.1	73.0	156.8	85.1	136.0	104.4
27-May	99.0	75.7	91.2	75.0	73.0	156.8	85.8	138.9	108.5
3-Jun	97.0	76.9	90.5	75.2	73.0	167.3	86.1	140.1	110.5
10-Jun	94.0	76.0	89.8	75.3	73.0	167.3	85.1	141.3	112.8
17-Jun	93.0	79.1	89.5	75.5	73.0	167.3	86.8	139.3	112.5
24-Jun	94.0	77.2	90.2	75.6	73.0	167.3	85.6	139.8	111.7
1-Jul	93.0	78.4	89.6	75.5	73.0	167.3	86.3	138.9	111.7
8-Jul	93.0	77.0	89.0	75.2	73.0	167.3	85.8	139.5	110.1
15-Jul	93.0	77.5	89.2	75.3	73.0	166.6	83.6	139.2	112.6
22-Jul	93.0	77.9	88.8	75.1	73.0	165.9	84.7	139.3	113.8
29-Jul	91.0	77.1	87.7	74.8	72.0	157.5	83.5	140.1	113.6
5-Aug	91.0	77.5	87.4	74.8	73.0	156.8	83.1	139.6	114.3
12-Aug	93.0	76.3	88.4	74.9	73.0	151.2	82.0	138.4	113.5
19-Aug	91.0	76.9	87.5	74.8	73.0	157.5	84.2	140.5	114.4
26-Aug	91.0	77.1	87.3	74.7	72.0	157.5	82.8	141.5	115.4
2-Sep	91.0	78.0	87.2	74.2	73.0	148.4	81.1	140.3	114.1
9-Sep	91.0	76.9	87.8	74.3	72.0	157.5	82.8	142.0	114.9
16-Sep	91.0	76.9	87.8	73.9	72.0	157.5	83.0	140.2	113.6
23-Sep	91.0	77.3	88.3	73.9	72.0	156.8	83.2	140.1	113.6
30-Sep	91.0	76.5	88.5	73.7	72.0	156.8	82.5	138.3	111.6
7-Oct	91.0	77.9	88.1	73.5	72.0	157.5	86.1	137.2	110.0
14-Oct	91.0	76.4	88.0	73.0	70.0	147.7	82.1	135.1	108.5
21-Oct	91.0	76.4	87.0	71.9	66.0	147.0	82.0	132.0	103.7
28-Oct	91.0	76.9	87.5	70.8	61.0	147.0	81.3	126.3	98.5
4-Nov	91.0	75.3	86.7	69.3	63.0	138.6	81.7	120.7	92.2
11-Nov	90.0	74.8	86.3	68.3	61.0	138.6	80.9	119.3	91.3
18-Nov	89.0	72.4	84.8	67.3	60.0	137.9	77.9	112.8	86.6
25-Nov	88.0	72.4	84.8	66.3	57.0	129.5	78.4	110.4	82.9
2-Dec	88.0	72.4	82.9	63.3	52.0	121.1	77.5	100.8	75.3
9-Dec	88.0	72.6	83.3	60.8	54.0	121.8	79.6	95.0	68.6
16-Dec	86.0	70.8	82.6	60.0	54.0	121.8	74.4	95.1	68.9
23-Dec	86.0	69.3	82.2	58.9	52.0	107.1	74.5	90.0	64.0
31-Dec	86.0	69.6	81.2	57.1	48.0	107.1	76.8	86.6	61.0



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	208	51
FEB	287	23
MAR	480	4
APR	582	0
MAY	555	0
JUN	501	0
JUL	495	0
AUG	472	0
SEP	451	0
OCT	429	1
NOV	311	7
DEC	200	47
ANN	4971	133



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	1480	-2209	1205	0
FEB	2728	-1104	1156	-1
MAR	5715	-267	3347	-1
APR	7635	-7	8158	0
MAY	6514	0	15511	0
JUN	5284	0	17520	0
JUL	4925	0	17393	0
AUG	4333	0	18491	0
SEP	4101	-1	17601	0
OCT	3665	-45	14985	0
NOV	2188	-416	7911	0
DEC	1170	-2062	2177	0
ANN	49738	-6111	125455	-2

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

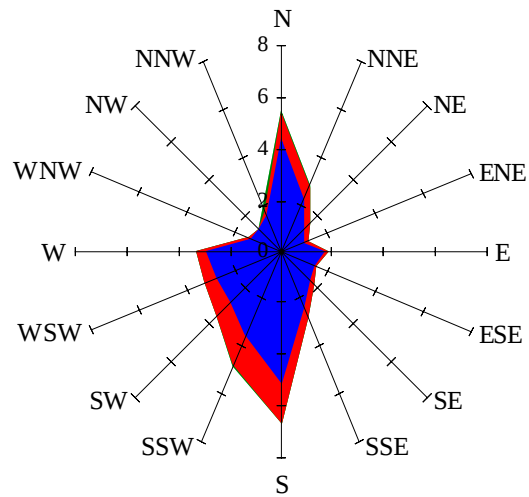


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

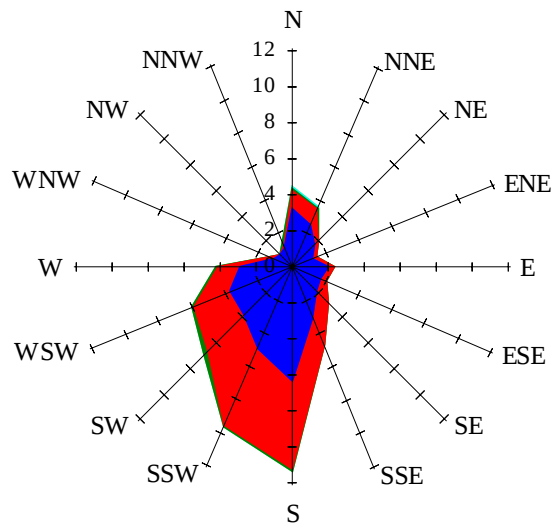
Labels of Percent Frequency on North Axis



Percent Calm = 55.85

Wind Summary - March, April, and May

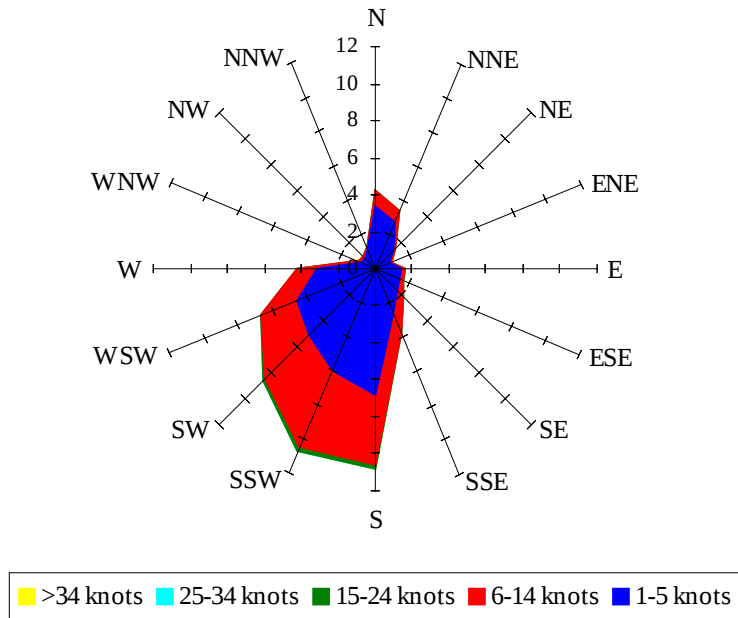
Labels of Percent Frequency on North Axis



Percent Calm = 35.31

Wind Summary - June, July, and August

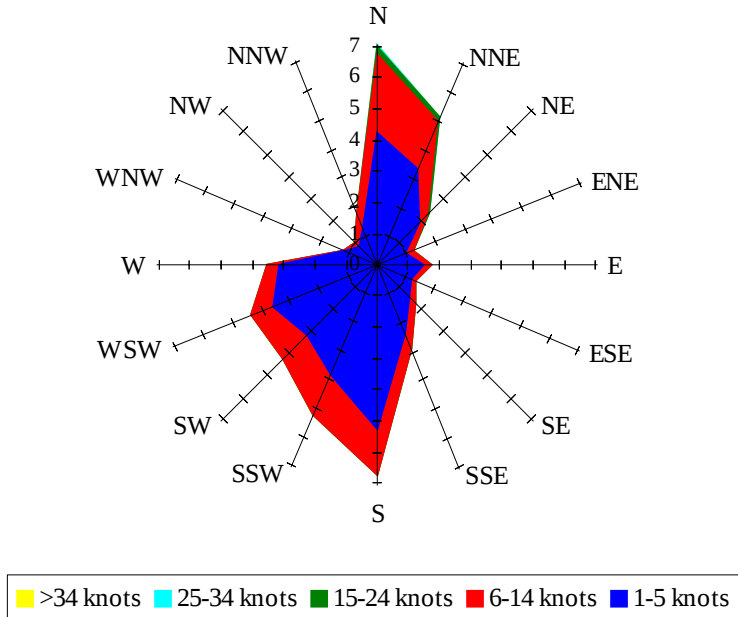
Labels of Percent Frequency on North Axis



Percent Calm = 36.69

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 48.87