

WUCHIA OBSERVATORY, TAIWAN

Latitude = 24.27 N

WMO No. 467700

Longitude = 120.62 E

Elevation = 16 feet

Period of Record = 1973 to 1996

Average Pressure = 29.26 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	93	82	149	10.5	W
0.4% Occurrence	90	81	147	10.5	W
1.0% Occurrence	90	81	147	10.5	W
2.0% Occurrence	88	80	144	10.0	W
Mean Daily Range	13	-	-	-	-
97.5% Occurrence	50	48	46	13.5	NNE
99.0% Occurrence	48	46	42	14.0	NNE
99.6% Occurrence	46	44	38	13.9	NNE
Median of Extreme Lows	43	40	33	16.4	NNE
	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	85	89	176	10.2	W
0.4% Occurrence	83	88	164	10.2	W
1.0% Occurrence	82	88	157	10.1	W
2.0% Occurrence	81	87	153	9.8	W
	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	185	89	1.19	9.6	WSW
0.4% Occurrence	165	87	1.06	9.5	W
1.0% Occurrence	160	86	1.05	10.3	W
2.0% Occurrence	155	85	0.99	9.1	W
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		5	1727	3202	4755

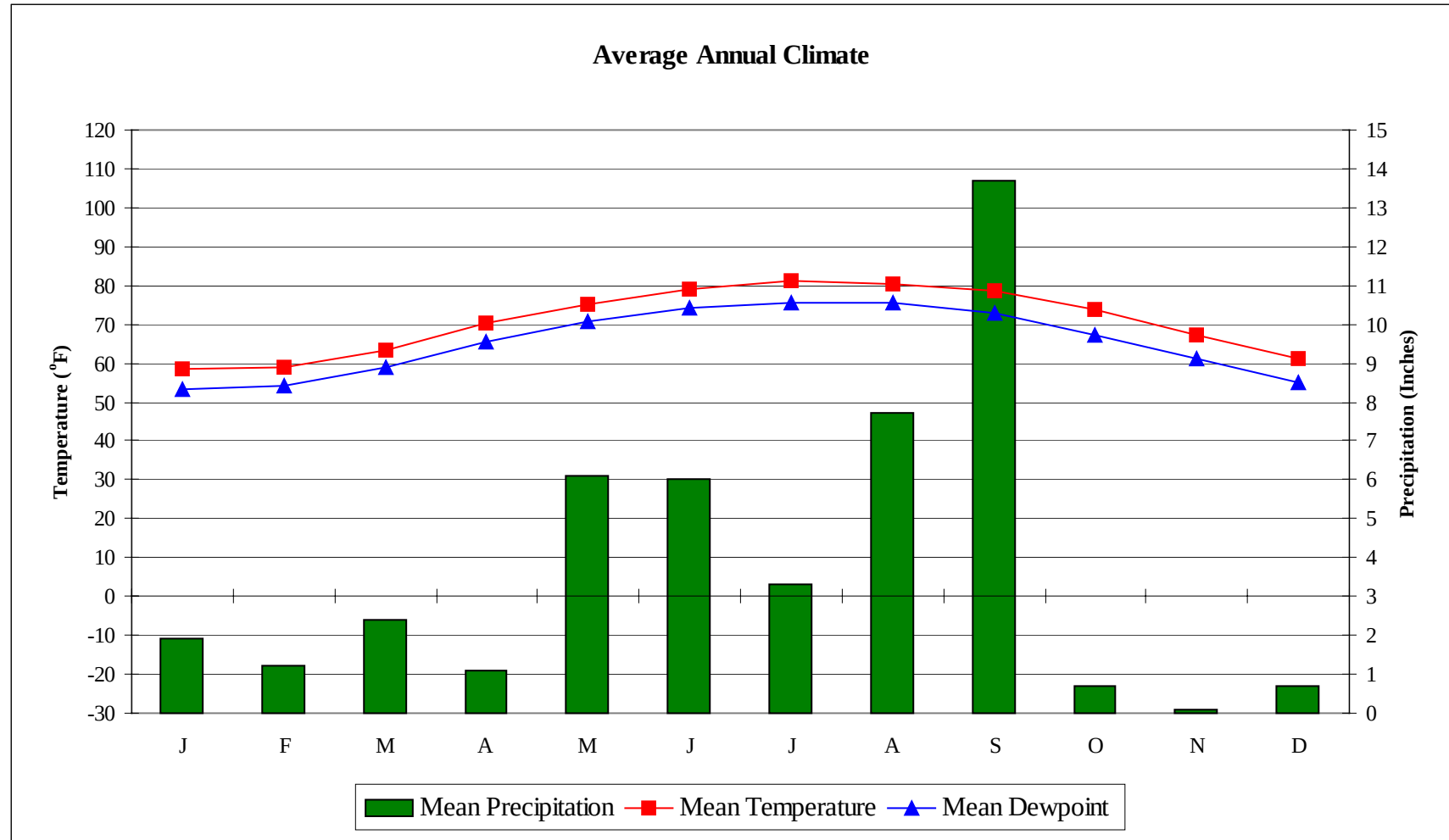
Other Site Data

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	10.9 + 1.8
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 (#)
73.2	N/A	N/A	0

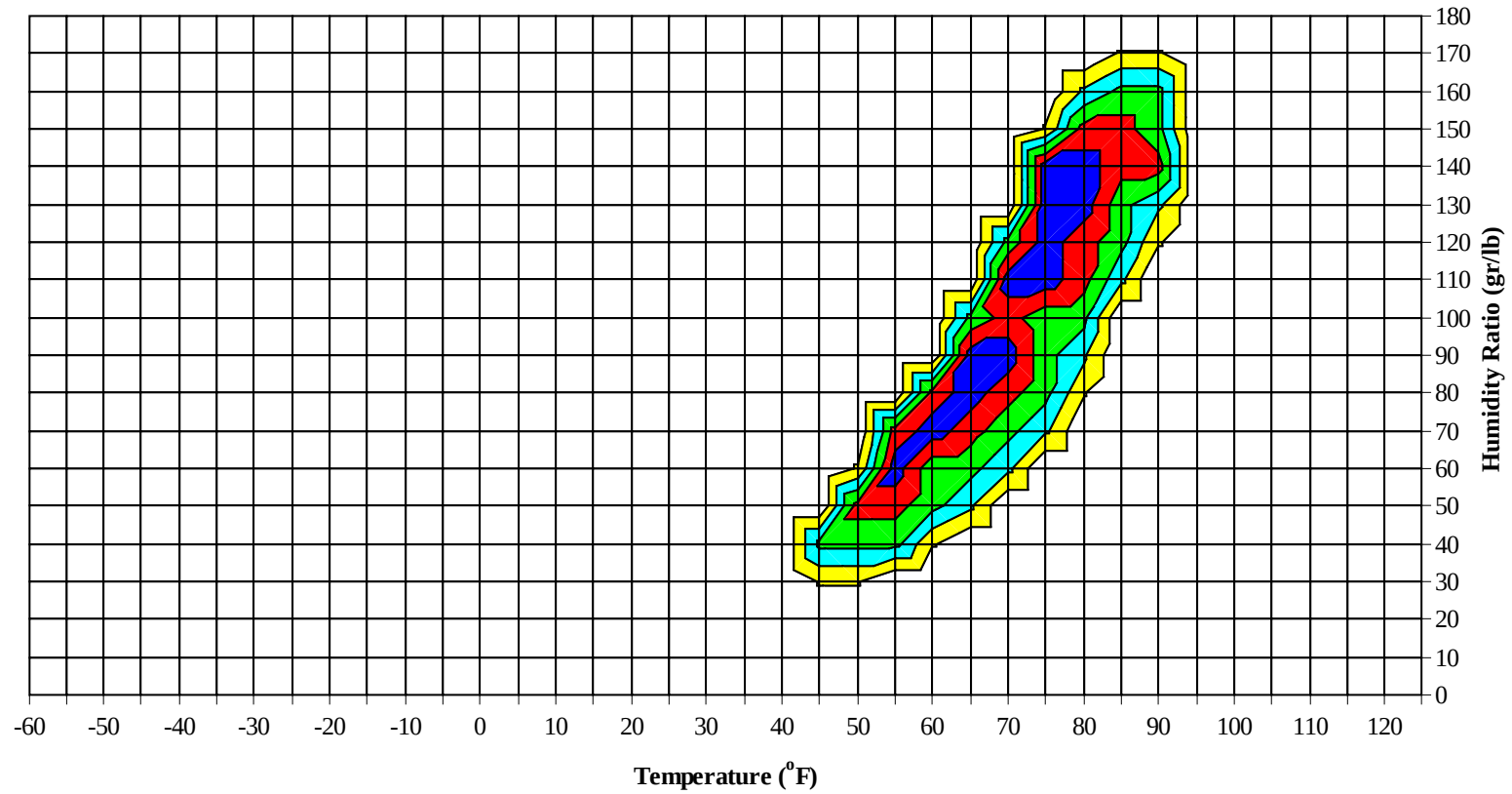
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

WUCHIA OBSERVATORY, TAIWAN

WMO No. 467700

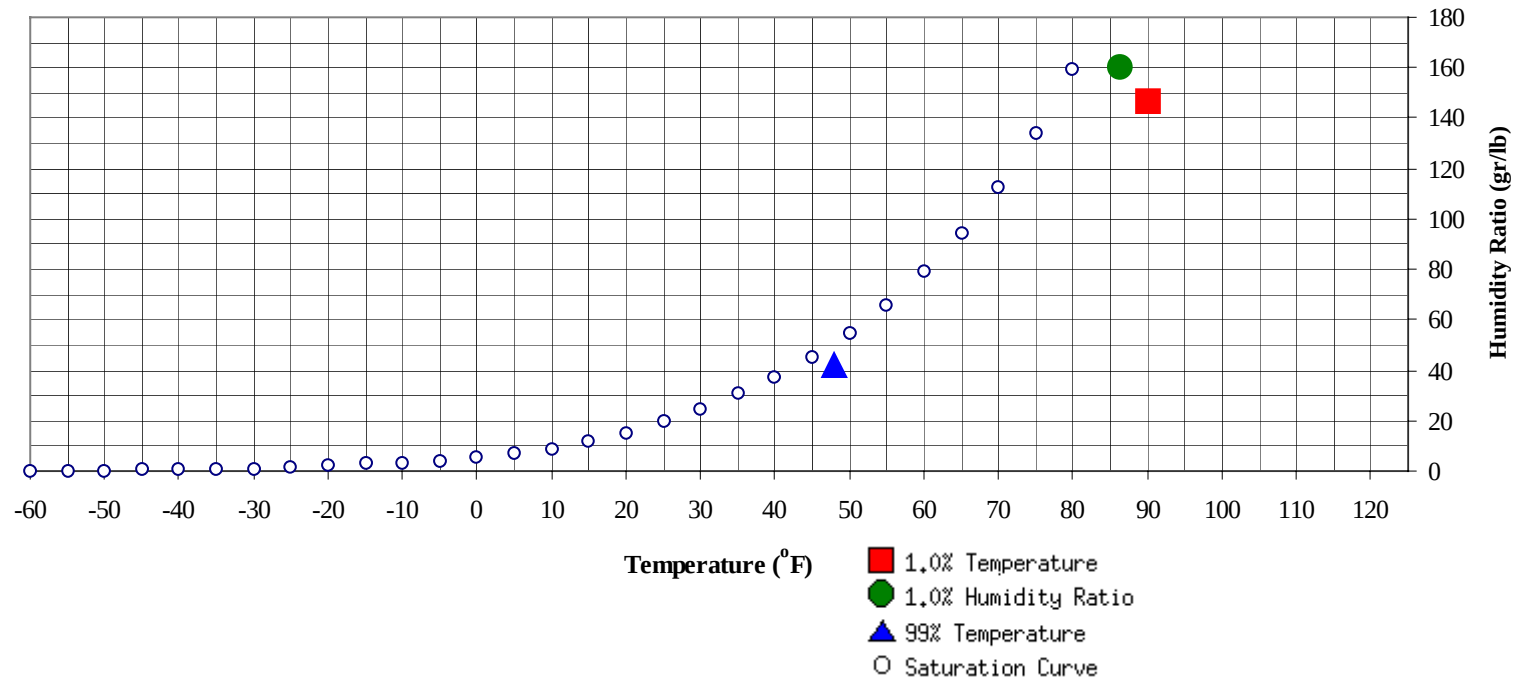


Long Term Psychrometric Summary



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

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)
	48	42.2	18.0		160.3	86.4	81.8	80.2	45.9

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	90	146.6	80.3	44.7

WUCHIA OBSERVATORY, TAIWAN

WMO No. 467700

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		
100 / 104															
95 / 99															
90 / 94															
85 / 89							0	0	0	73.5		0	0	0	76.5
80 / 84		0	0	0	67.1	0	4	0	4	70.9		0	0	0	73.7
75 / 79		7	0	7	66.3	0	16	1	17	68.3	0	15	0	15	72.9
70 / 74	0	38	2	40	64.0	3	35	11	49	65.5	0	39	6	45	70.1
65 / 69	1	47	10	58	61.7	9	34	15	58	62.5	15	59	35	109	67.1
60 / 64	34	88	68	190	59.1	34	61	51	146	59.3	32	39	36	107	64.4
55 / 59	101	48	96	245	54.9	87	50	85	223	55.1	80	50	80	211	60.6
50 / 54	81	15	54	150	50.3	66	18	46	131	50.5	76	32	61	169	55.4
45 / 49	28	4	18	50	44.8	22	4	13	39	44.3	34	12	26	72	51.0
40 / 44	2	0	1	3	40.1	2	1	2	5	39.8	9	1	4	14	45.6
35 / 39	0		0	0	36.4	0		0	0	36.5	1	0	0	1	39.8
												0	0	0	39.0

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.

WUCHIA OBSERVATORY, TAIWAN

WMO No. 467700

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		
100 / 104															
95 / 99							0		0	79.0					
90 / 94		1		1	75.7	0	4		4	78.7	0	20	0	20	80.5
85 / 89	0	7	0	7	76.4	0	28	2	30	78.6	1	86	11	98	79.6
80 / 84	1	62	8	70	74.4	6	108	29	143	76.1	23	89	68	180	77.4
75 / 79	15	66	43	124	71.9	61	66	90	217	73.6	147	33	124	304	74.8
70 / 74	79	55	82	216	68.9	134	32	97	263	70.3	64	11	34	109	71.3
65 / 69	54	19	45	118	65.4	33	6	22	61	65.7	5	1	3	9	66.3
60 / 64	61	20	42	123	61.1	13	3	8	24	61.8	0	0		0	63.1
55 / 59	24	8	16	48	55.7	1	0	0	1	57.8					
50 / 54	5	2	4	11	51.4										
45 / 49	1		0	1	47.9										
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.

WUCHIA OBSERVATORY, TAIWAN

WMO No. 467700

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		
100 / 104															
95 / 99		0	0	0	83.4		0	0	0	82.7		0		0	82.3
90 / 94	0	52	1	53	80.8	0	28	1	29	80.8	0	16	0	16	80.0
85 / 89	1	119	23	143	79.7	0	110	15	125	79.8	0	79	5	84	78.9
80 / 84	42	62	101	205	77.6	30	92	91	213	77.9	14	114	54	182	76.7
75 / 79	181	13	114	308	75.2	189	17	130	336	75.4	130	27	134	291	74.3
70 / 74	24	2	9	35	72.1	29	1	11	41	71.8	84	4	41	130	70.1
65 / 69	0			0		0	0		0	66.3	10	0	5	15	65.2
60 / 64	0			0		0	0		0	63.0	2		0	2	61.4
55 / 59											0			0	
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.

WUCHIA OBSERVATORY, TAIWAN

WMO No. 467700

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		
100 / 104															
95 / 99															
90 / 94	0	2		2	80.0										
85 / 89	0	17	0	17	78.1		0	0	0	75.1	0	0		0	69.5
80 / 84	2	113	9	124	74.8	1	26	0	27	73.3	0	3	0	3	70.5
75 / 79	29	81	64	174	72.0	1	74	7	82	70.0	0	20	1	21	68.3
70 / 74	117	30	118	265	68.7	29	79	60	169	67.2	2	75	8	85	64.8
65 / 69	68	3	42	112	64.3	62	31	65	158	64.2	10	49	29	88	62.3
60 / 64	30	1	14	45	60.0	102	24	77	203	59.9	67	64	95	226	59.5
55 / 59	2	0	2	4	54.0	35	4	24	63	54.4	99	27	73	199	54.5
50 / 54	0		0	0	52.7	9	1	6	16	48.7	49	9	31	89	49.5
45 / 49						1		0	1	43.9	19	2	11	32	44.5
40 / 44						0		0	0	39.5	1	0	1	2	38.8
35 / 39											0		0	0	36.9

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.

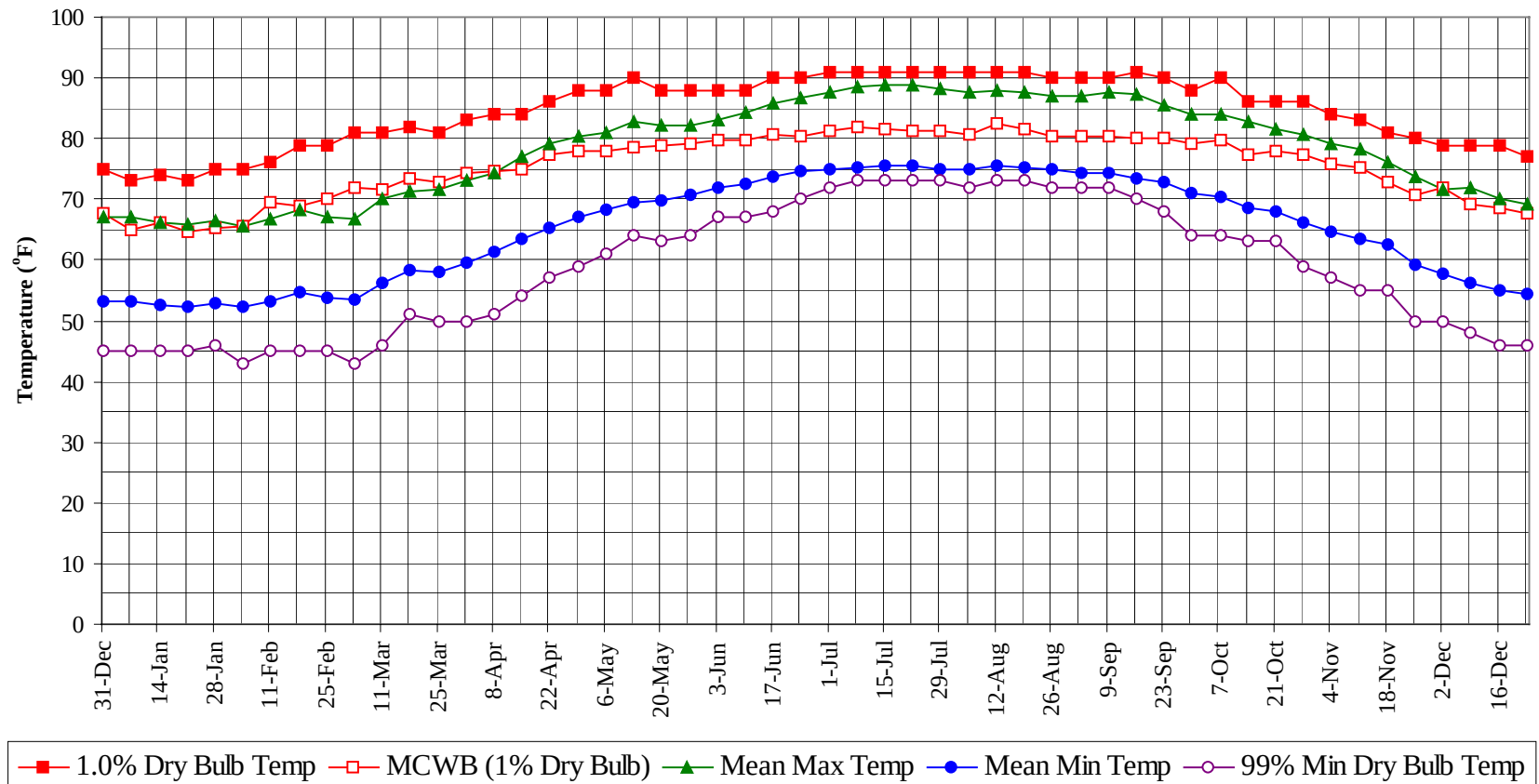
WMO No. 467700

Period of Record = 1973 to 1996

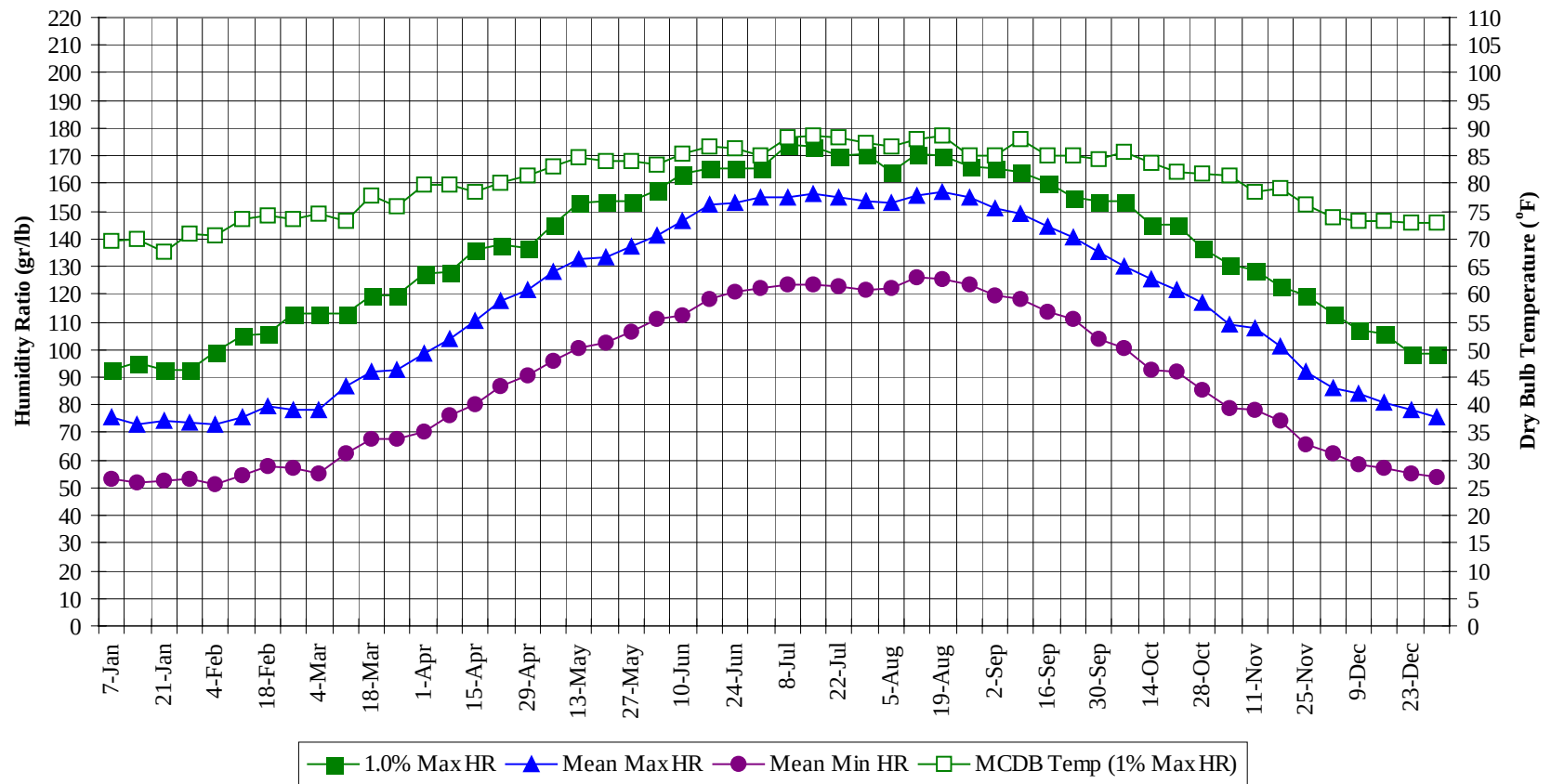
[illegible]

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

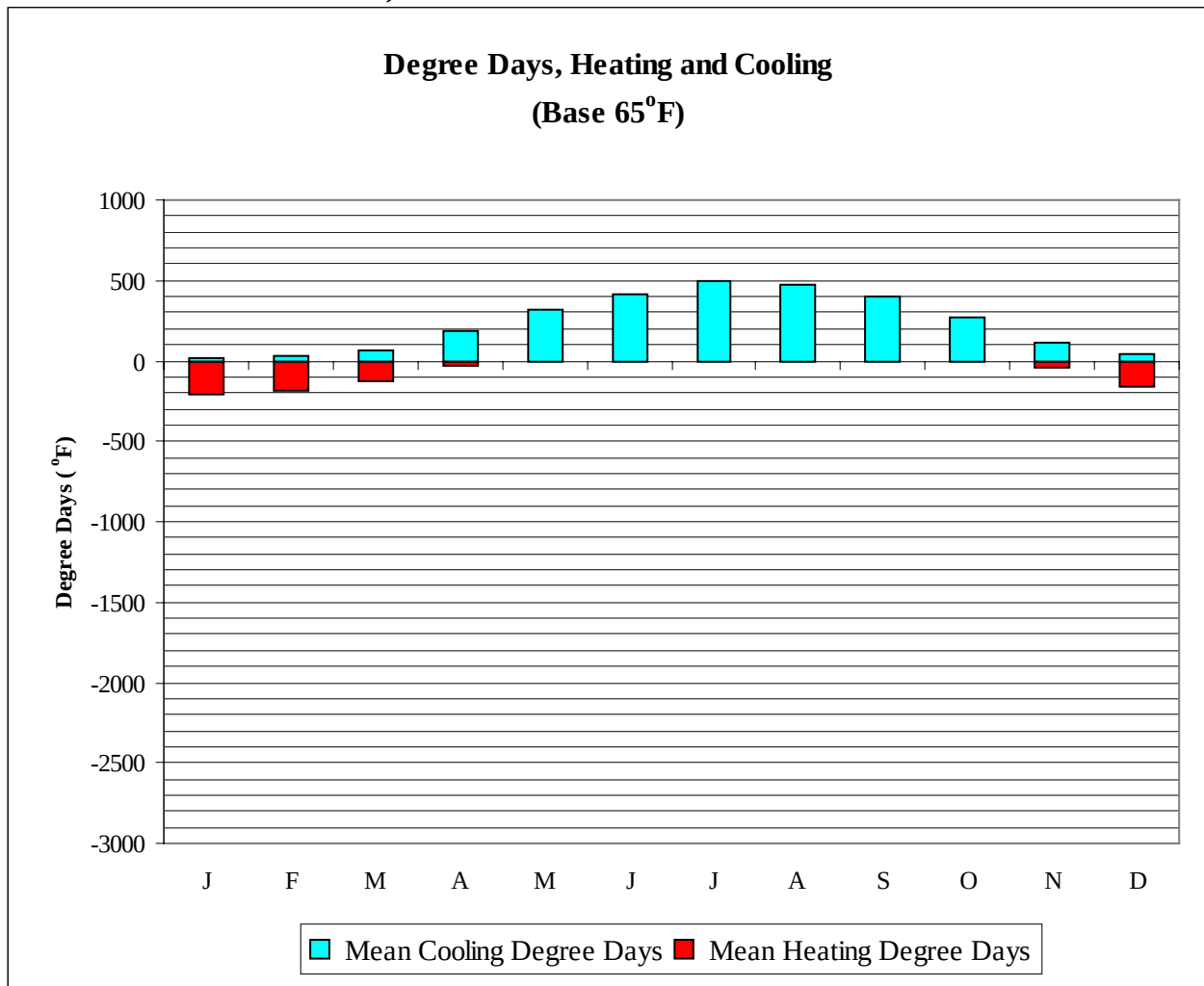


WUCHIA OBSERVATORY, TAIWAN

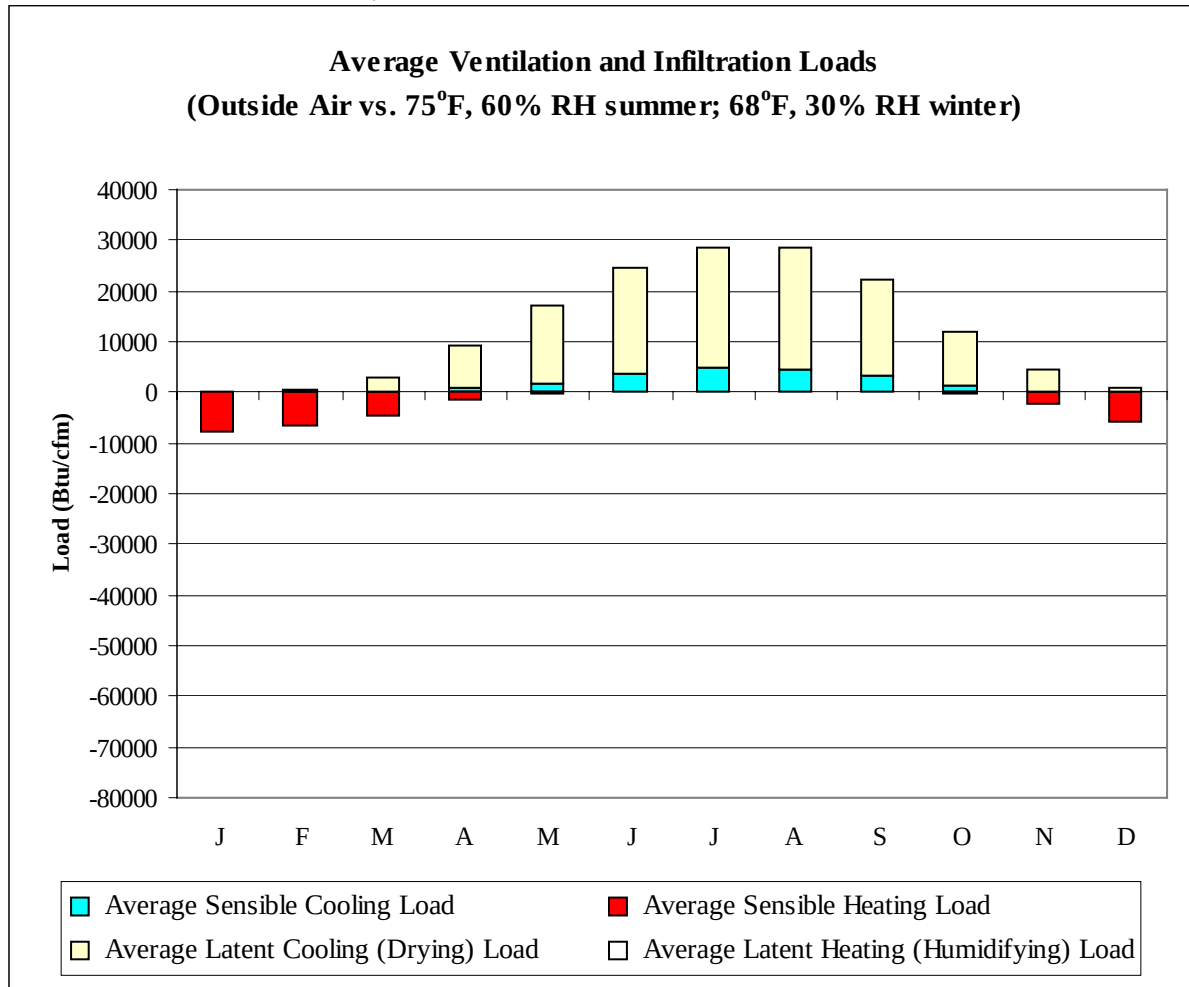
WMO No. 467700

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	73.0	64.9	67.2	53.1	45.0	92.4	69.7	75.5	53.4
14-Jan	74.0	66.3	66.3	52.7	45.0	95.2	70.0	72.9	51.8
21-Jan	73.0	64.7	66.0	52.4	45.0	92.4	67.7	74.2	52.6
28-Jan	75.0	65.3	66.4	52.7	46.0	92.4	70.9	73.7	53.0
4-Feb	75.0	65.6	65.6	52.3	43.0	99.4	70.5	72.9	51.5
11-Feb	76.0	69.5	66.7	53.1	45.0	105.0	73.5	75.6	54.5
18-Feb	79.0	68.9	68.3	54.6	45.0	105.7	74.1	79.2	57.7
25-Feb	79.0	70.0	67.1	53.9	45.0	112.7	73.4	78.5	57.0
4-Mar	81.0	72.1	66.8	53.6	43.0	112.7	74.5	77.8	55.4
11-Mar	81.0	71.7	70.0	56.3	46.0	112.7	73.2	86.4	62.3
18-Mar	82.0	73.4	71.3	58.3	51.0	119.7	77.9	92.0	67.7
25-Mar	81.0	72.9	71.5	58.1	50.0	119.7	75.8	92.4	67.7
1-Apr	83.0	74.3	73.2	59.4	50.0	127.4	79.8	98.6	70.3
8-Apr	84.0	74.6	74.3	61.2	51.0	128.1	79.9	104.0	76.2
15-Apr	84.0	74.9	77.0	63.4	54.0	135.8	78.5	110.6	80.4
22-Apr	86.0	77.2	79.0	65.1	57.0	137.9	80.0	117.5	86.9
29-Apr	88.0	77.8	80.3	67.0	59.0	136.5	81.3	121.8	90.9
6-May	88.0	77.9	81.1	68.4	61.0	144.9	83.2	127.8	95.7
13-May	90.0	78.6	82.7	69.5	64.0	153.3	84.6	132.8	100.6
20-May	88.0	79.0	82.2	69.7	63.0	154.0	84.2	133.3	102.7
27-May	88.0	79.1	82.1	70.6	64.0	154.0	84.2	137.0	106.3
3-Jun	88.0	79.8	83.1	71.9	67.0	157.5	83.5	140.9	111.1
10-Jun	88.0	79.8	84.4	72.4	67.0	163.8	85.4	146.3	112.5
17-Jun	90.0	80.6	85.9	73.8	68.0	165.2	86.6	152.3	118.5
24-Jun	90.0	80.3	86.7	74.6	70.0	165.2	86.3	152.7	121.1
1-Jul	91.0	81.3	87.6	75.0	72.0	165.2	85.1	155.0	121.9
8-Jul	91.0	81.9	88.7	75.3	73.0	174.3	88.2	155.1	123.3
15-Jul	91.0	81.6	89.0	75.4	73.0	173.6	88.8	156.1	123.7
22-Jul	91.0	81.2	88.9	75.6	73.0	170.1	88.2	155.3	122.8
29-Jul	91.0	81.2	88.2	75.0	73.0	170.8	87.4	153.7	121.7
5-Aug	91.0	80.6	87.5	74.8	72.0	164.5	86.5	153.2	122.3
12-Aug	91.0	82.4	87.9	75.5	73.0	170.8	88.1	155.7	126.4
19-Aug	91.0	81.6	87.8	75.2	73.0	170.1	88.6	156.8	125.2
26-Aug	90.0	80.4	87.2	75.0	72.0	165.9	85.0	154.9	123.2
2-Sep	90.0	80.3	86.9	74.4	72.0	165.2	85.1	150.7	119.8
9-Sep	90.0	80.4	87.7	74.2	72.0	164.5	88.1	149.2	118.2
16-Sep	91.0	80.2	87.3	73.4	70.0	160.3	85.1	144.6	113.5
23-Sep	90.0	80.1	85.5	72.8	68.0	154.7	85.1	140.6	110.9
30-Sep	88.0	79.2	84.1	71.1	64.0	154.0	84.4	135.5	104.0
7-Oct	90.0	79.7	83.9	70.4	64.0	154.0	85.7	130.2	100.4
14-Oct	86.0	77.2	82.6	68.7	63.0	144.9	83.7	125.3	92.3
21-Oct	86.0	77.8	81.5	68.0	63.0	144.9	82.0	121.3	92.0
28-Oct	86.0	77.4	80.6	66.1	59.0	136.5	81.9	117.1	85.7
4-Nov	84.0	75.9	79.1	64.5	57.0	130.9	81.3	108.8	78.8
11-Nov	83.0	75.2	78.2	63.4	55.0	128.8	78.5	107.9	77.9
18-Nov	81.0	72.8	76.2	62.4	55.0	122.5	79.2	101.1	73.9
25-Nov	80.0	70.8	73.8	59.4	50.0	119.7	76.0	92.2	65.8
2-Dec	79.0	71.8	71.5	57.8	50.0	112.7	73.8	86.1	62.2
9-Dec	79.0	69.3	72.0	56.3	48.0	107.1	73.2	84.2	58.7
16-Dec	79.0	68.6	70.1	55.1	46.0	105.7	73.1	80.7	56.8
23-Dec	77.0	67.8	69.2	54.4	46.0	98.7	72.9	78.1	55.4
31-Dec	75.0	67.8	67.0	53.3	45.0	98.7	72.8	75.5	53.8



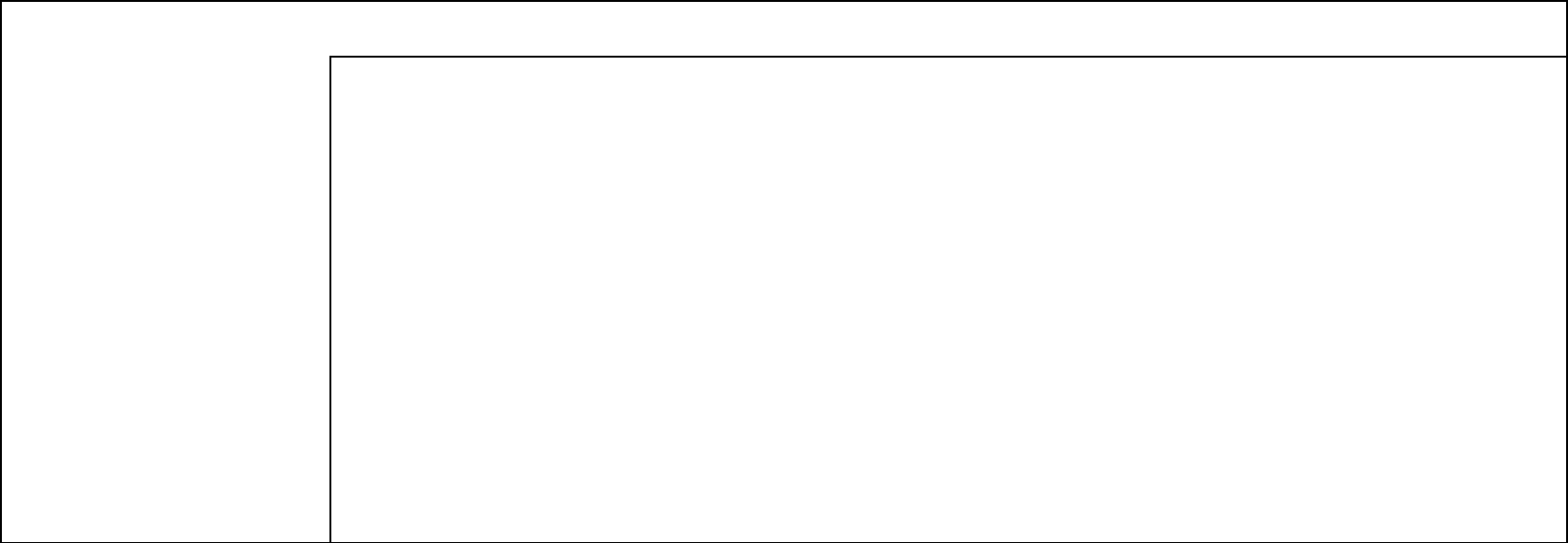
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	16	215
FEB	26	186
MAR	68	122
APR	186	31
MAY	314	2
JUN	418	0
JUL	493	0
AUG	476	0
SEP	402	0
OCT	275	4
NOV	115	43
DEC	38	156
ANN	2828	759



	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	8	-7672	268	-11
FEB	50	-6615	658	-13
MAR	178	-4765	2579	-3
APR	804	-1513	8336	0
MAY	1837	-182	15370	0
JUN	3546	-7	21147	0
JUL	5010	0	23432	0
AUG	4533	-1	23951	0
SEP	3286	-18	18925	0
OCT	1453	-355	10673	0
NOV	310	-2177	4104	-1
DEC	42	-5917	849	-14
ANN	21057	-29222	130292	-42

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

No Solar Radiation
Data Available

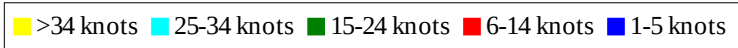
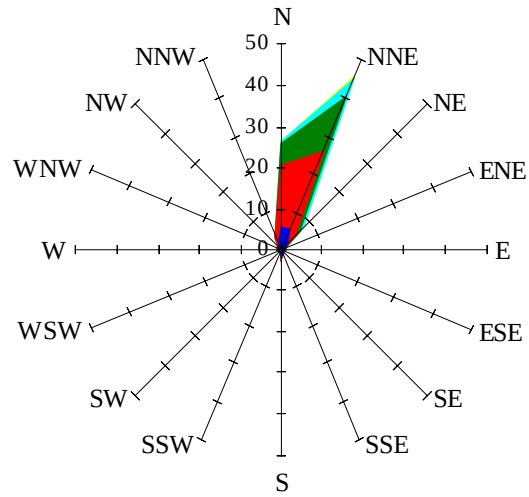


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

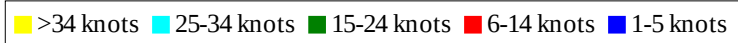
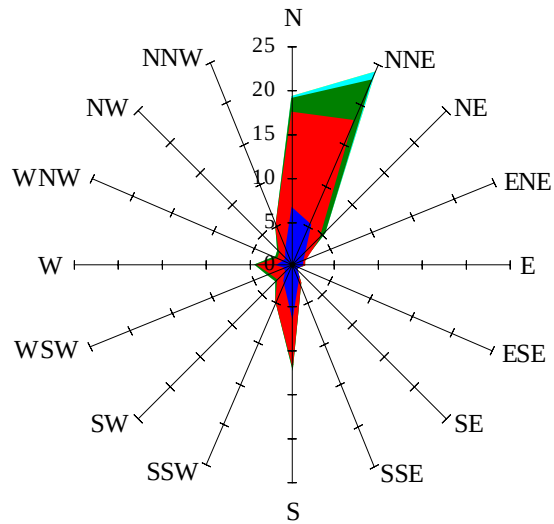
Labels of Percent Frequency on North Axis



Percent Calm = 6.82

Wind Summary - March, April, and May

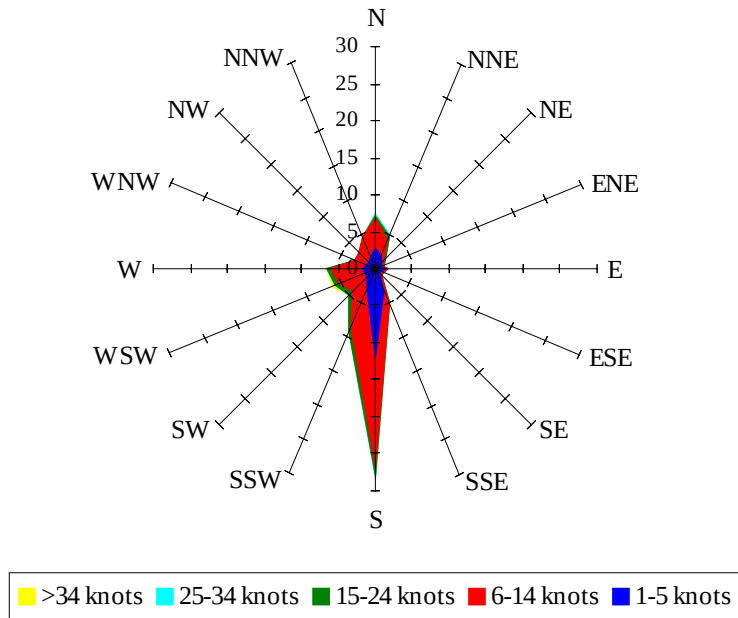
Labels of Percent Frequency on North Axis



Percent Calm = 10.29

Wind Summary - June, July, and August

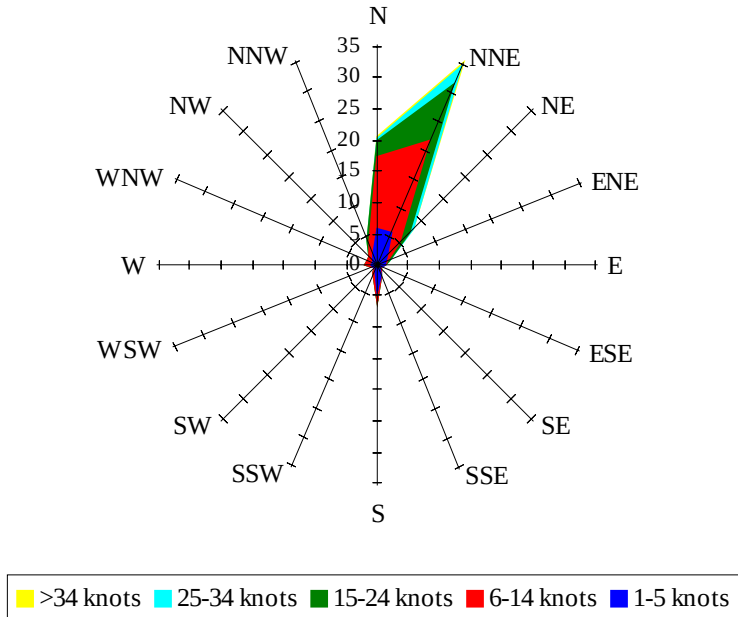
Labels of Percent Frequency on North Axis



Percent Calm = 10.61

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 11.41