

KORAT/NAKHON RATCHA TH

Latitude = 14.97 N

WMO No. 484310

Longitude = 102.08 E

Elevation = 617 feet

Period of Record = 1973 to 1996

Average Pressure = 29.15 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	104	76	92	3.4	W
0.4% Occurrence	102	76	94	3.5	S
1.0% Occurrence	100	76	101	3.7	W
2.0% Occurrence	98	76	105	3.7	W
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	64	60	72	1.0	NE
99.0% Occurrence	61	58	67	0.7	NE
99.6% Occurrence	57	54	58	0.6	ENE
Median of Extreme Lows	54	51	52	0.3	NE
	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	84	93	163	3.7	S
0.4% Occurrence	80	91	136	3.4	W
1.0% Occurrence	80	91	136	3.4	W
2.0% Occurrence	79	89	133	3.2	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	165	87	1.06	1.6	SSW
0.4% Occurrence	146	83	0.94	1.7	S
1.0% Occurrence	145	83	0.94	1.4	W
2.0% Occurrence	142	82	0.92	1.3	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		727	4672	5665	7472

Other Site Data

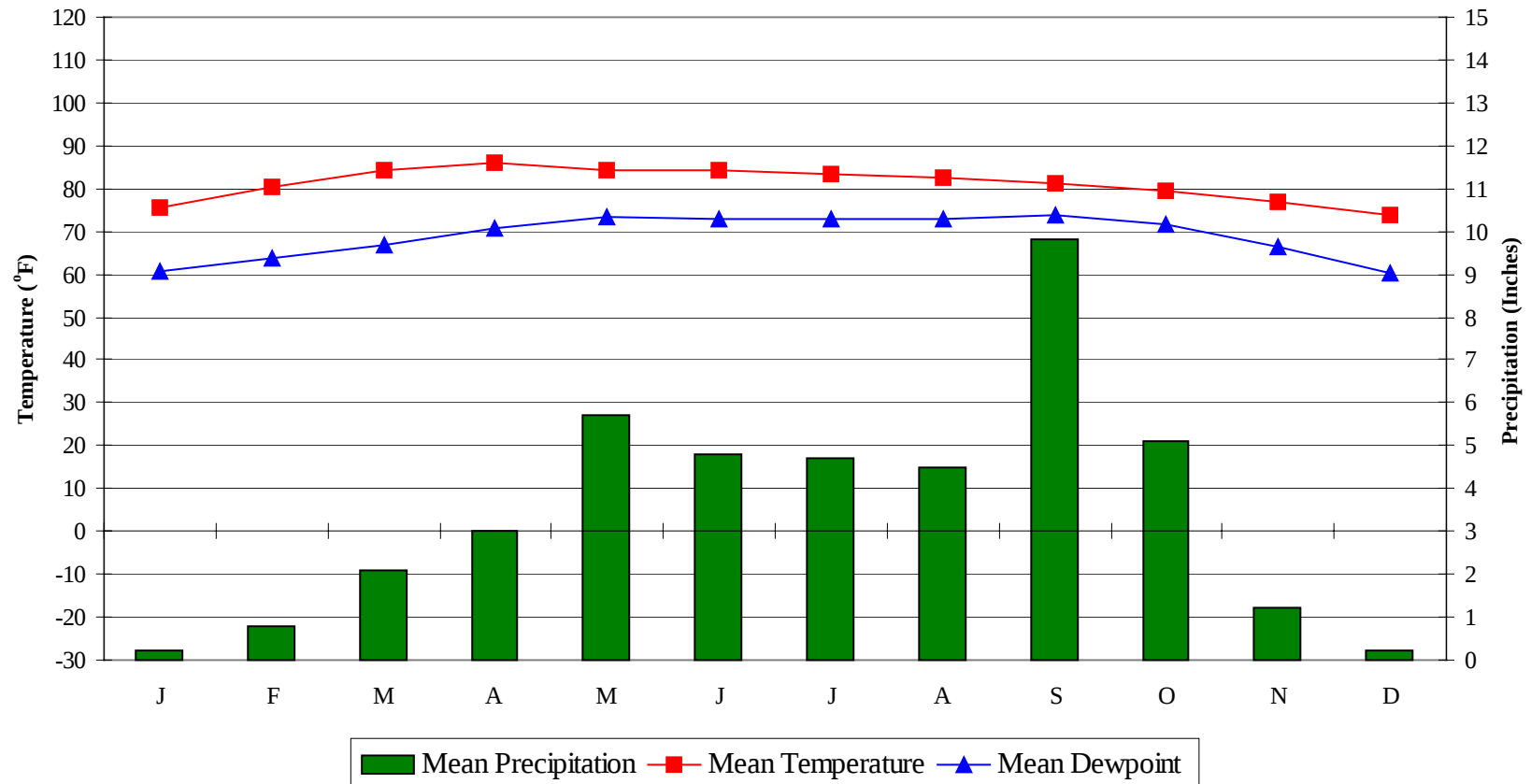
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	4.9 + 5.6
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
83.5	N/A	N/A	0

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

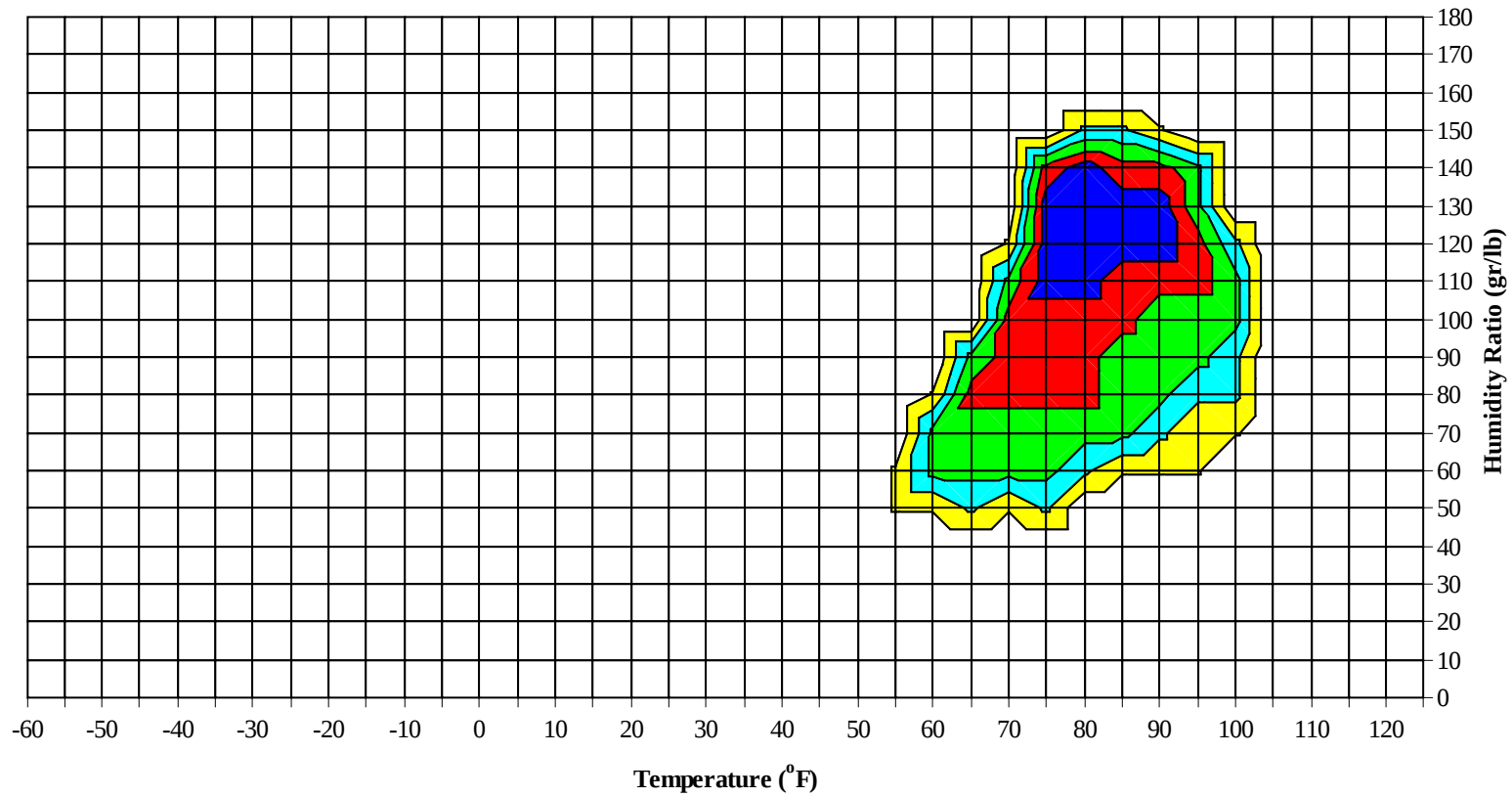
KORAT/NAKHON RATCHA TH

WMO No. 484310

Average Annual Climate

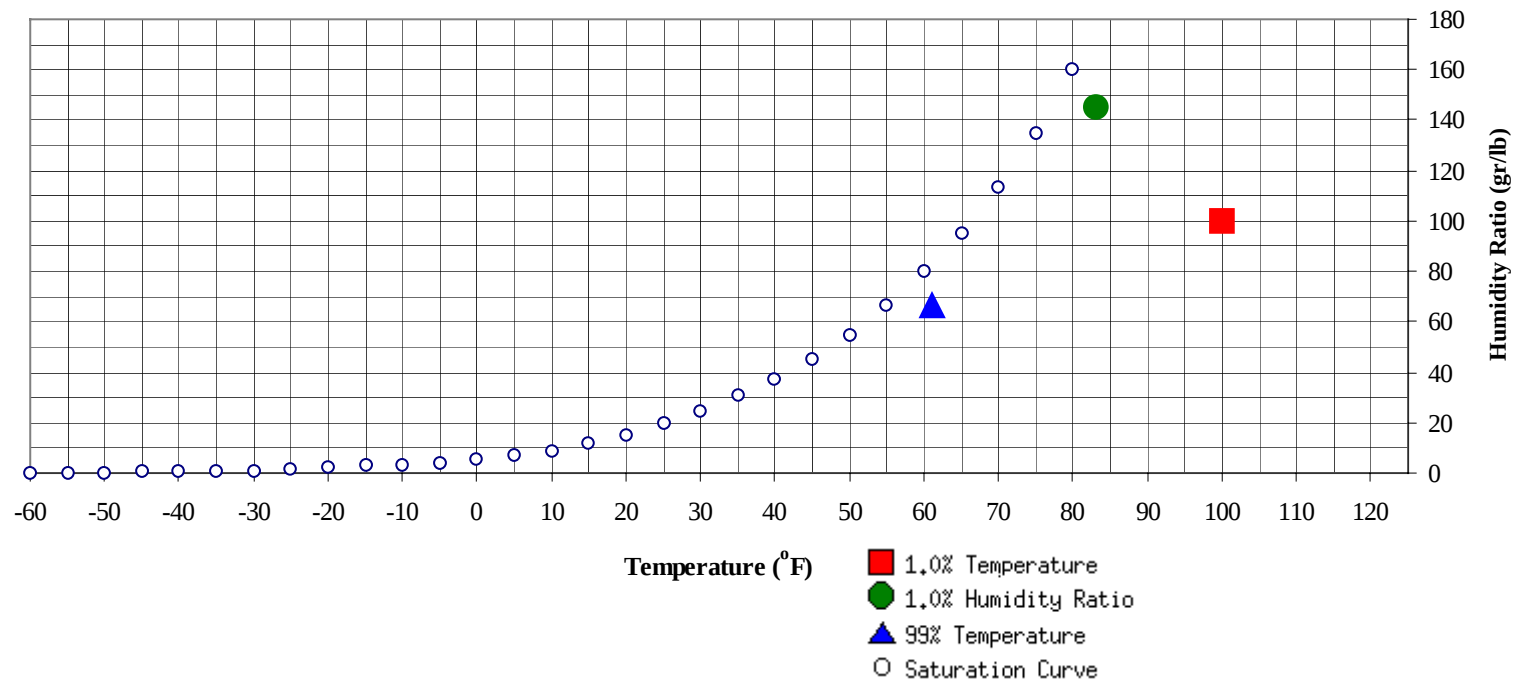


Long Term Psychrometric Summary



- 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)
	61	66.8	25.0		144.9	83.2	78.6	77	42.7

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	100	99.8	76	39.8

KORAT/NAKHON RATCHA TH

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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												1		1	73.7
100 / 104							3		3	73.4		31		31	74.3
95 / 99		6		6	72.2		39		39	73.2		66	5	71	74.7
90 / 94		42	0	42	71.8	0	56	14	70	72.9	0	57	48	105	74.2
85 / 89	1	54	16	71	70.1	0	42	50	92	72.1	3	50	71	124	73.8
80 / 84	1	61	73	135	69.0	9	45	84	139	70.7	50	23	77	150	72.6
75 / 79	24	47	81	152	67.1	71	21	49	142	69.3	122	12	35	169	71.3
70 / 74	68	27	52	146	65.2	75	14	21	109	66.2	56	6	9	71	67.9
65 / 69	69	9	19	97	62.3	44	3	5	52	62.1	11	2	3	15	61.9
60 / 64	59	2	7	68	58.9	20	1	0	21	58.6	5	0	0	5	57.7
55 / 59	20		1	21	54.6	5		0	5	54.1	2			2	50.6
50 / 54	5			5	50.1										
45 / 49	1			1	45.6										

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.

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		2		2	76.3										
100 / 104	0	40	0	40	76.6		9		9	77.9		2	0	2	77.4
95 / 99	0	64	11	75	77.0	0	48	1	49	78.0		34	0	34	78.2
90 / 94	0	76	45	121	76.5	0	95	20	115	77.8	1	100	11	111	77.7
85 / 89	10	35	83	127	75.7	3	57	56	116	77.2	1	71	63	135	76.8
80 / 84	100	16	71	187	74.7	89	30	113	232	76.1	77	26	121	224	75.9
75 / 79	113	7	27	147	73.4	151	9	56	217	74.9	159	7	46	211	74.7
70 / 74	17	1	4	22	69.8	5	0	1	6	72.2	2	0	0	2	72.1
65 / 69	0			0	63.7										
60 / 64															
55 / 59															
50 / 54															
45 / 49															

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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		0	0	0	80.0	0	0		0	78.0					
95 / 99		28	0	28	77.8	0	10		10	78.0		3		3	78.4
90 / 94	0	95	9	105	77.3	0	88	3	90	77.5	0	57	0	57	77.9
85 / 89	0	82	57	138	76.5	0	89	41	130	76.7	1	97	21	119	77.2
80 / 84	48	34	112	194	75.6	23	50	118	191	75.8	9	62	103	174	76.4
75 / 79	192	8	67	267	74.4	215	10	85	310	74.2	206	20	111	337	74.8
70 / 74	8	1	3	12	72.2	10	1	1	12	72.3	23	2	5	30	72.4
65 / 69															
60 / 64															
55 / 59															
50 / 54															
45 / 49															

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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	77.0							1		1	75.7
90 / 94	0	26	0	26	77.3	0	10		10	75.0	0	14	0	14	72.9
85 / 89	0	101	5	106	75.8	0	65	1	66	73.9	1	47	3	50	70.9
80 / 84	4	88	94	186	74.7	1	99	67	167	72.0	1	76	42	120	68.9
75 / 79	168	28	131	327	73.8	60	51	117	228	70.7	12	62	86	160	66.8
70 / 74	66	4	17	88	70.3	112	15	45	171	67.9	63	35	74	172	65.0
65 / 69	8	1	1	11	64.9	45	1	7	53	63.8	72	11	31	113	62.2
60 / 64	1			1	60.9	18	0	3	21	59.5	70	3	11	84	58.9
55 / 59						4		0	4	55.7	24	0	1	25	54.4
50 / 54											5			5	49.3
45 / 49											1			1	46.0

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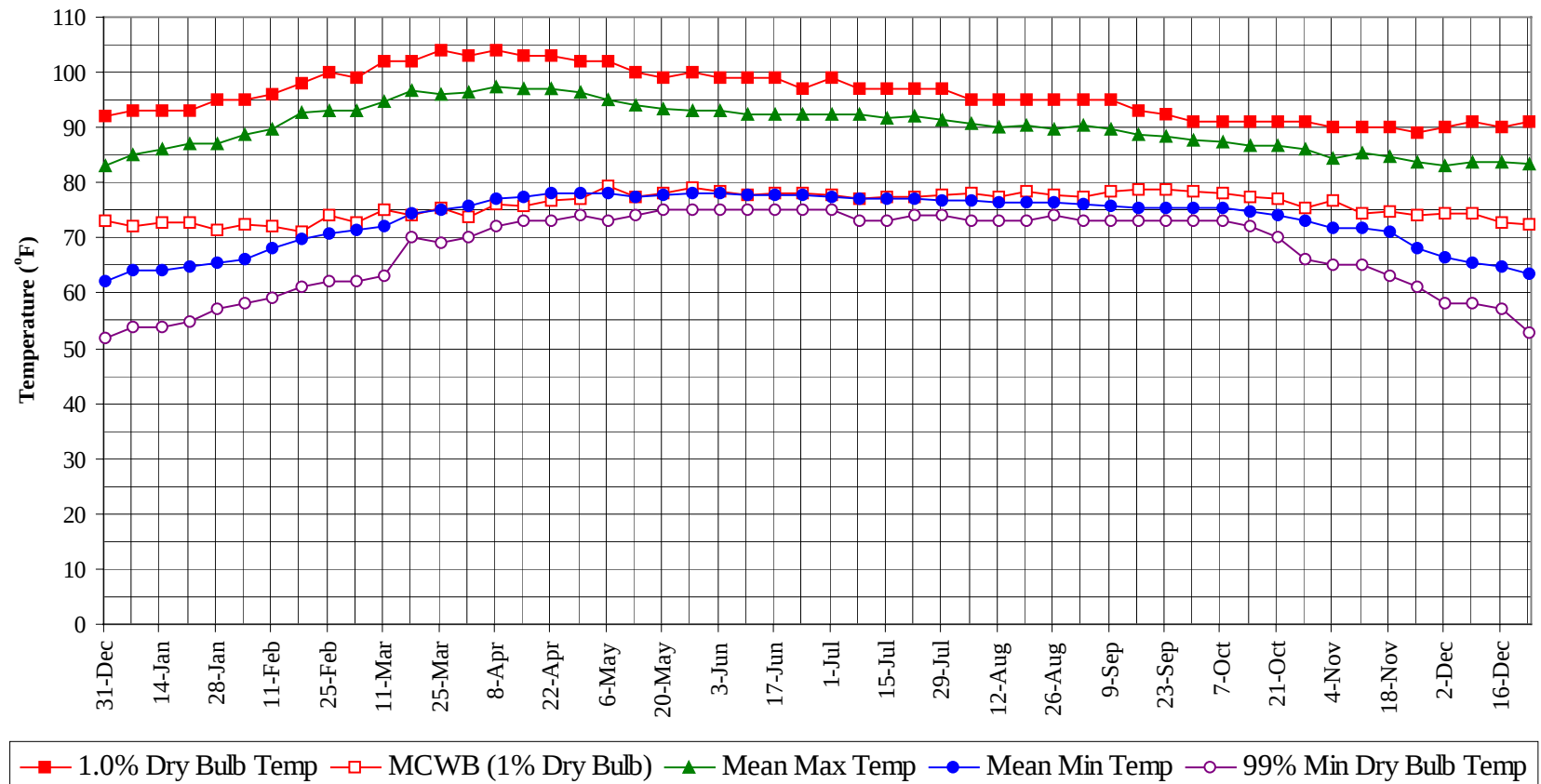
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

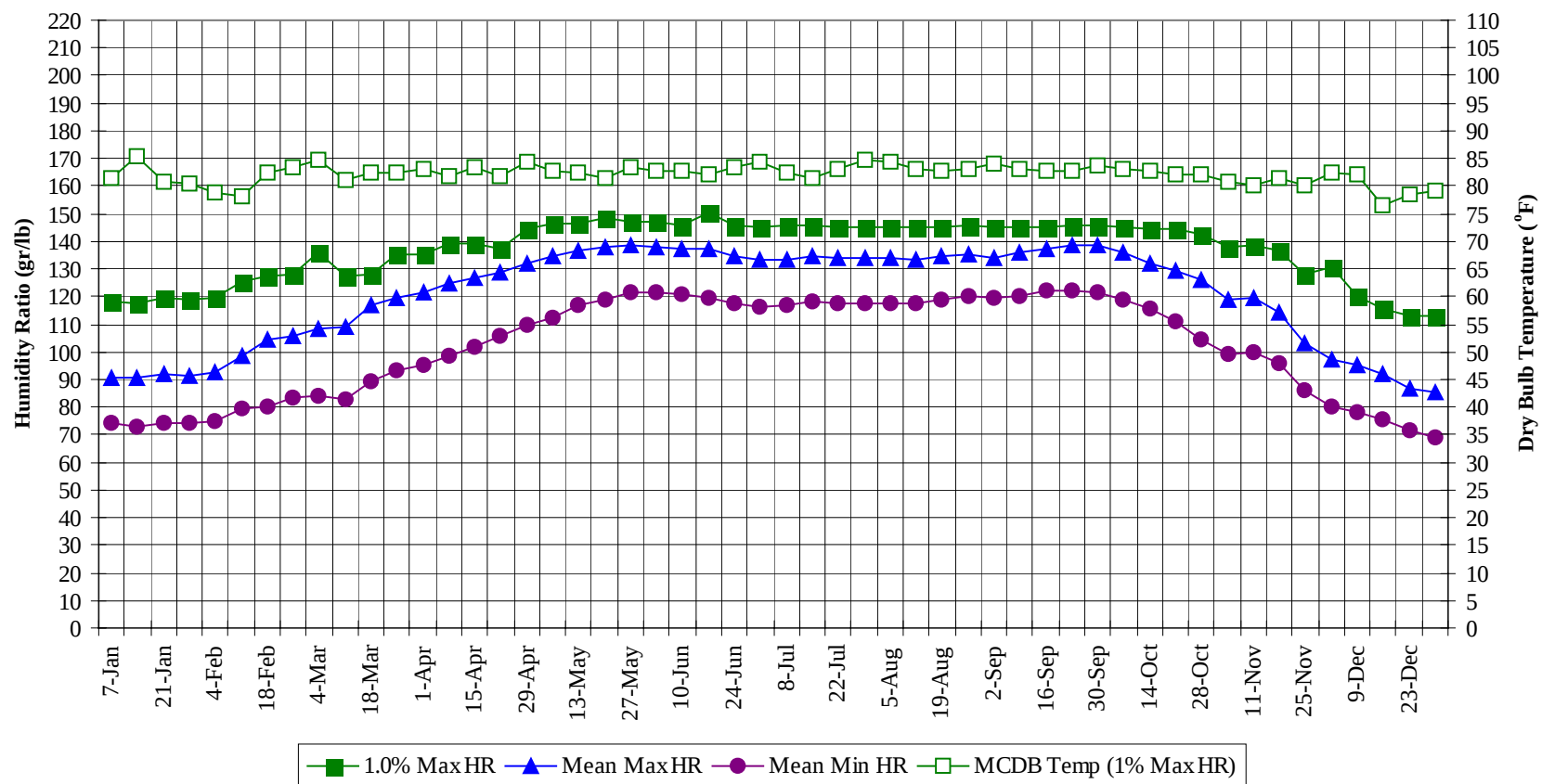
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
105 / 109	3			3	75.3
100 / 104	0	84	1	85	75.8
95 / 99	1	297	18	316	76.3
90 / 94	3	713	152	867	76.3
85 / 89	19	791	466	1276	75.2
80 / 84	418	611	1074	2103	73.9
75 / 79	1510	282	892	2683	72.8
70 / 74	501	105	231	837	67.3
65 / 69	242	27	62	331	62.5
60 / 64	165	7	20	192	58.9
55 / 59	51	0	4	55	54.4
50 / 54	9			9	49.7
45 / 49	2			2	45.8
	</				

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

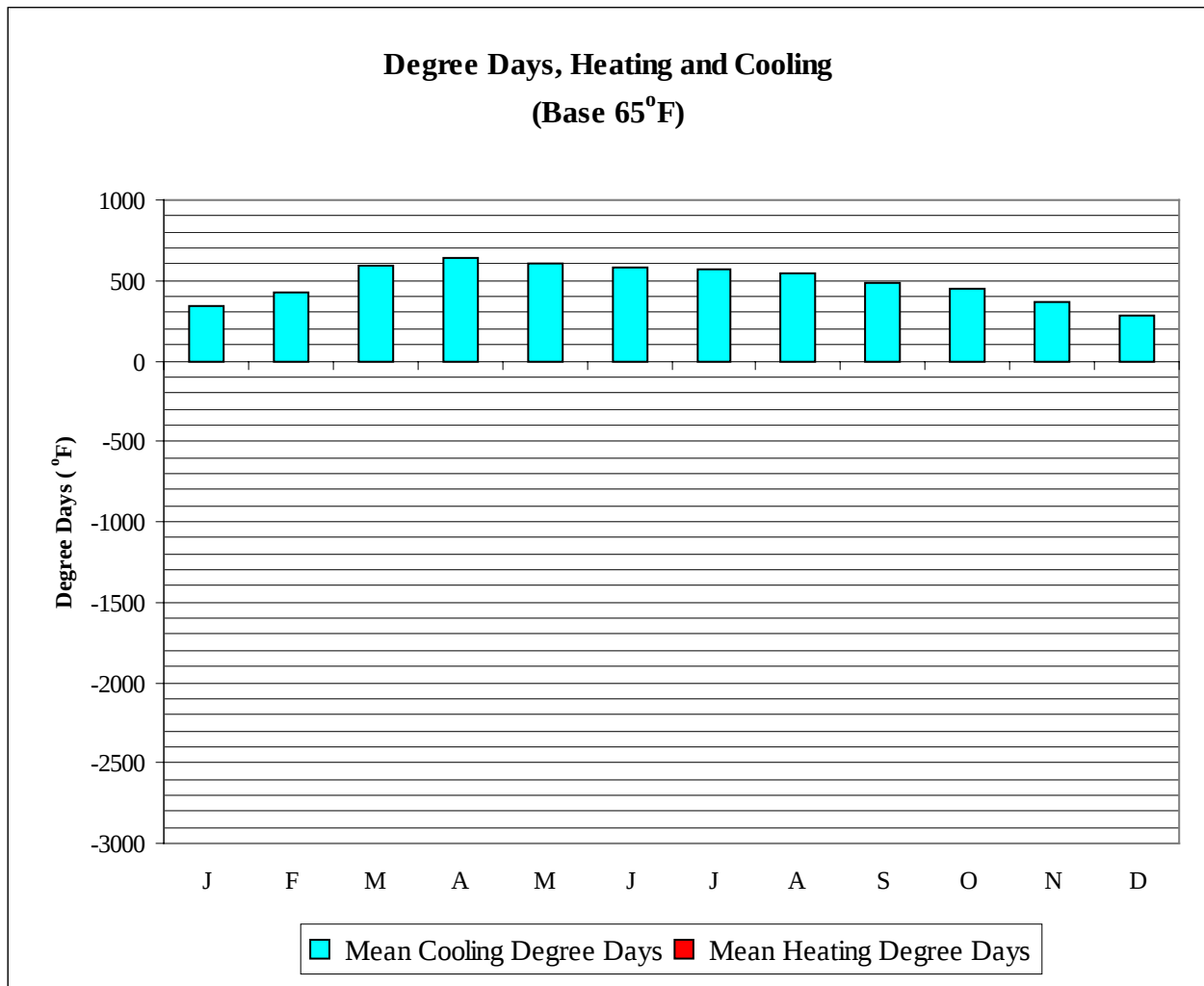


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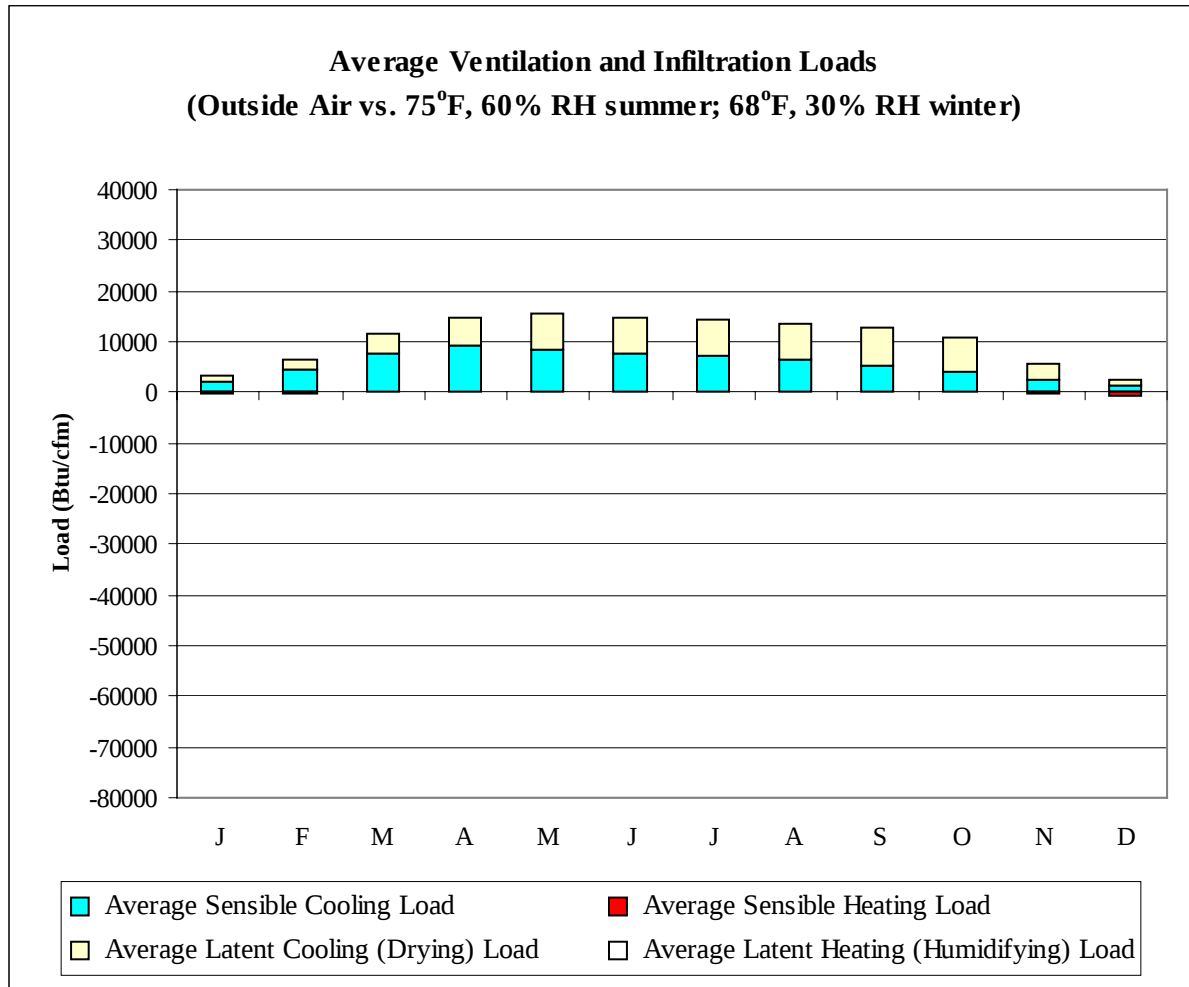
WMO No. 484310

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	93.0	72.3	85.2	64.2	54.0	118.3	81.4	90.9	74.3
14-Jan	93.0	72.9	86.0	64.1	54.0	117.6	85.3	90.7	73.2
21-Jan	93.0	72.7	87.1	64.9	55.0	119.7	80.7	91.8	74.4
28-Jan	95.0	71.6	87.1	65.5	57.0	119.0	80.3	91.3	74.0
4-Feb	95.0	72.5	88.6	66.0	58.0	119.7	78.7	92.5	74.6
11-Feb	96.0	72.2	89.6	68.2	59.0	125.3	78.1	98.8	79.5
18-Feb	98.0	71.0	92.7	69.8	61.0	127.4	82.4	104.6	80.2
25-Feb	100.0	74.2	93.0	70.6	62.0	128.1	83.3	105.5	83.3
4-Mar	99.0	72.8	93.0	71.3	62.0	135.8	84.8	108.5	84.2
11-Mar	102.0	75.1	94.7	72.0	63.0	127.4	81.2	109.2	82.9
18-Mar	102.0	74.2	96.7	74.5	70.0	128.1	82.6	116.8	89.6
25-Mar	104.0	75.5	96.1	75.1	69.0	135.1	82.3	119.4	93.4
1-Apr	103.0	73.7	96.2	75.7	70.0	135.1	83.1	121.4	95.1
8-Apr	104.0	76.0	97.5	77.0	72.0	139.3	81.6	124.9	98.3
15-Apr	103.0	75.9	97.0	77.4	73.0	139.3	83.3	126.7	102.0
22-Apr	103.0	76.9	97.0	78.0	73.0	137.2	81.9	128.4	105.9
29-Apr	102.0	77.2	96.3	78.1	74.0	144.2	84.3	132.1	109.8
6-May	102.0	79.6	95.2	78.1	73.0	146.3	82.8	134.8	112.6
13-May	100.0	77.4	93.9	77.4	74.0	146.3	82.3	136.4	116.8
20-May	99.0	78.2	93.4	77.8	75.0	148.4	81.4	138.1	119.1
27-May	100.0	79.0	93.0	78.0	75.0	147.0	83.5	138.7	121.7
3-Jun	99.0	78.5	93.2	78.1	75.0	147.0	82.9	137.9	121.4
10-Jun	99.0	77.8	92.6	77.9	75.0	145.6	82.8	137.4	120.6
17-Jun	99.0	78.0	92.4	77.8	75.0	150.5	82.0	137.0	119.6
24-Jun	97.0	78.1	92.5	77.7	75.0	145.6	83.5	135.0	117.7
1-Jul	99.0	77.9	92.3	77.5	75.0	144.9	84.4	133.2	116.0
8-Jul	97.0	77.2	92.2	77.0	73.0	145.6	82.6	133.6	116.8
15-Jul	97.0	77.5	91.7	77.1	73.0	145.6	81.3	134.4	118.2
22-Jul	97.0	77.5	91.9	77.0	74.0	144.9	83.0	134.1	117.4
29-Jul	97.0	77.9	91.4	76.8	74.0	144.9	84.6	133.7	117.3
5-Aug	95.0	78.1	90.7	76.8	73.0	144.9	84.5	133.9	117.8
12-Aug	95.0	77.6	90.2	76.4	73.0	144.9	82.9	133.2	117.7
19-Aug	95.0	78.5	90.5	76.6	73.0	144.9	82.9	134.5	118.8
26-Aug	95.0	77.9	89.9	76.5	74.0	145.6	83.1	135.4	120.3
2-Sep	95.0	77.6	90.4	76.1	73.0	144.9	84.0	134.3	119.6
9-Sep	95.0	78.4	89.6	75.8	73.0	144.9	83.2	136.3	120.5
16-Sep	93.0	78.7	88.9	75.5	73.0	144.9	82.8	137.6	121.9
23-Sep	92.5	78.6	88.4	75.6	73.0	145.6	82.7	138.8	122.1
30-Sep	91.0	78.3	87.8	75.5	73.0	145.6	83.7	138.8	121.7
7-Oct	91.0	78.3	87.5	75.3	73.0	144.9	83.1	135.9	118.7
14-Oct	91.0	77.5	86.8	74.8	72.0	144.2	82.9	132.2	115.4
21-Oct	91.0	77.1	86.7	74.2	70.0	144.2	82.1	129.7	111.1
28-Oct	91.0	75.3	86.0	73.1	66.0	142.8	82.0	126.0	104.7
4-Nov	90.0	76.7	84.4	71.7	65.0	137.9	80.8	118.9	99.5
11-Nov	90.0	74.4	85.6	71.9	65.0	138.6	80.1	119.3	100.1
18-Nov	90.0	74.9	84.8	71.0	63.0	136.5	81.6	114.6	96.2
25-Nov	89.0	74.0	83.8	68.2	61.0	128.1	80.2	102.9	85.9
2-Dec	90.0	74.5	83.1	66.6	58.0	130.9	82.3	97.3	80.2
9-Dec	91.0	74.4	83.8	65.5	58.0	120.4	82.1	95.4	78.1
16-Dec	90.0	72.8	83.6	64.8	57.0	115.5	76.5	91.7	75.2
23-Dec	91.0	72.5	83.3	63.4	53.0	112.7	78.6	86.6	71.3
31-Dec	92.0	73.2	83.2	62.1	52.0	112.7	79.1	85.4	69.0



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	337	6
FEB	431	1
MAR	591	0
APR	636	0
MAY	601	0
JUN	575	0
JUL	568	0
AUG	539	0
SEP	485	0
OCT	455	0
NOV	360	1
DEC	277	8
ANN	5853	16



	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	2256	-365	1108	0
FEB	4532	-77	2060	0
MAR	7815	-25	3687	0
APR	9276	0	5399	0
MAY	8308	0	7368	0
JUN	7658	0	6914	0
JUL	7245	0	6901	0
AUG	6494	0	7170	0
SEP	5369	0	7385	0
OCT	4243	-5	6401	0
NOV	2429	-82	3350	0
DEC	1360	-495	1072	-1
ANN	66985	-1049	58815	-1

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

No Solar Radiation
Data Available

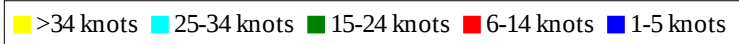
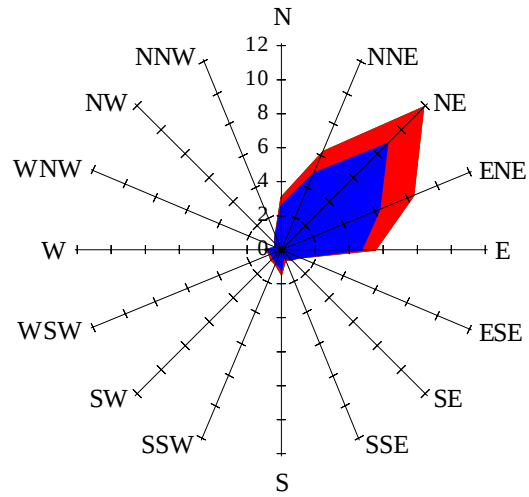


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

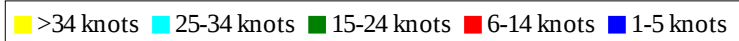
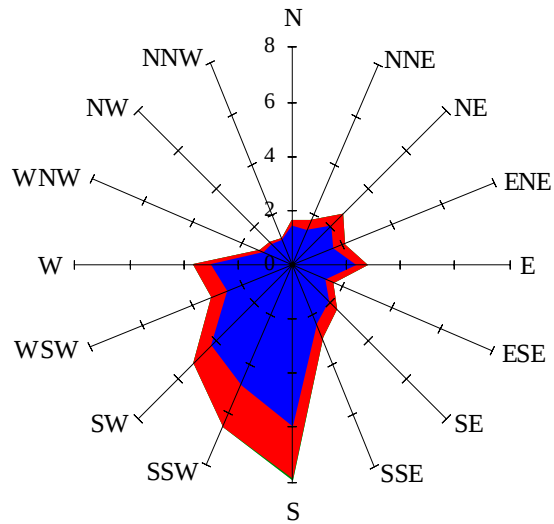
Labels of Percent Frequency on North Axis



Percent Calm = 56.46

Wind Summary - March, April, and May

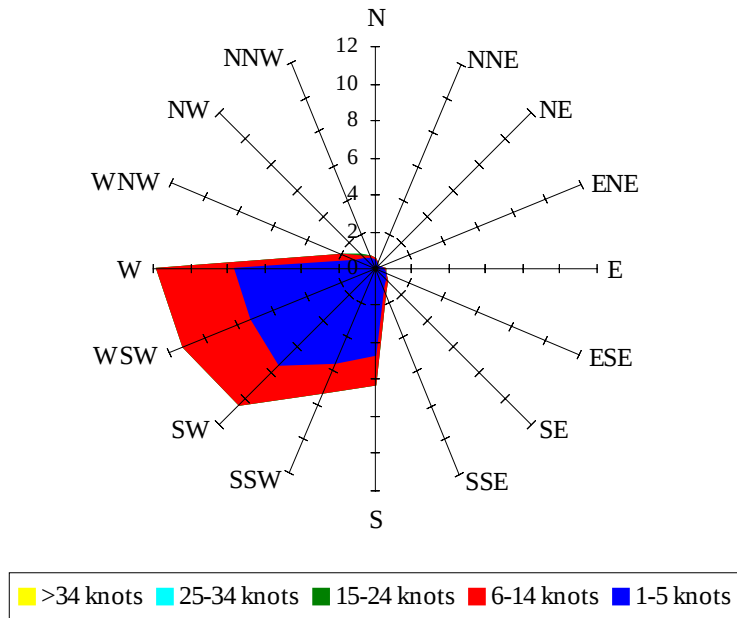
Labels of Percent Frequency on North Axis



Percent Calm = 52.73

Wind Summary - June, July, and August

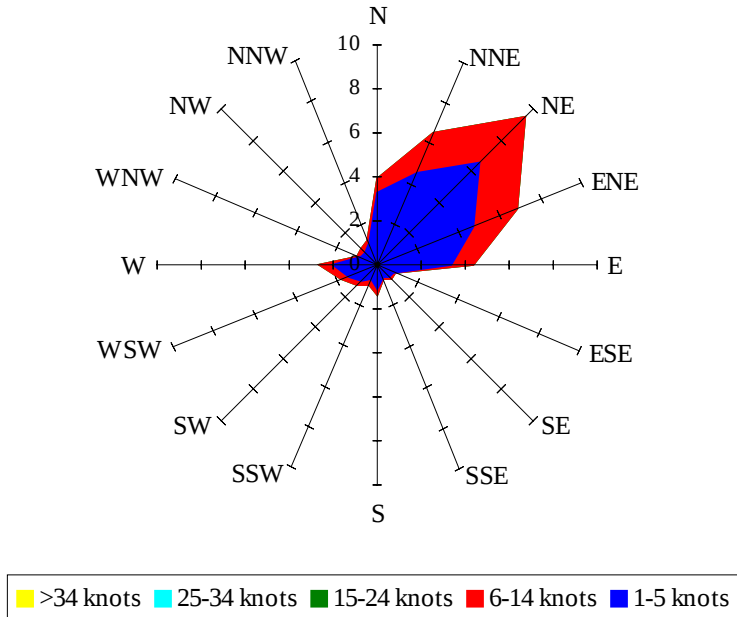
Labels of Percent Frequency on North Axis



Percent Calm = 45.11

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 55.09