

DA NANG VS	
Latitude = 16.03 N	WMO No. 488550
Longitude = 108.18 E	Elevation = 23 feet
Period of Record = 1973 to 1996	Average Pressure = 29.78 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	100	81	131	7.2	N
0.4% Occurrence	98	81	131	7.1	E
1.0% Occurrence	96	80	130	6.1	E
2.0% Occurrence	94	80	132	6.1	E
Mean Daily Range	10	-	-	-	-
97.5% Occurrence	66	64	85	3.1	NW
99.0% Occurrence	63	61	76	2.4	NW
99.6% Occurrence	61	59	70	2.1	NW
Median of Extreme Lows	55	53	58	3.2	NW
	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	86	94	174	5.8	E
0.4% Occurrence	83	91	154	5.5	E
1.0% Occurrence	82	90	149	5.1	E
2.0% Occurrence	81	89	146	4.6	E
	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	181	89	1.19	4.3	E
0.4% Occurrence	161	88	1.06	4.0	E
1.0% Occurrence	156	86	1.03	2.5	E
2.0% Occurrence	152	86	1.00	4.0	E
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		306	3684	5556	7526

Other Site Data

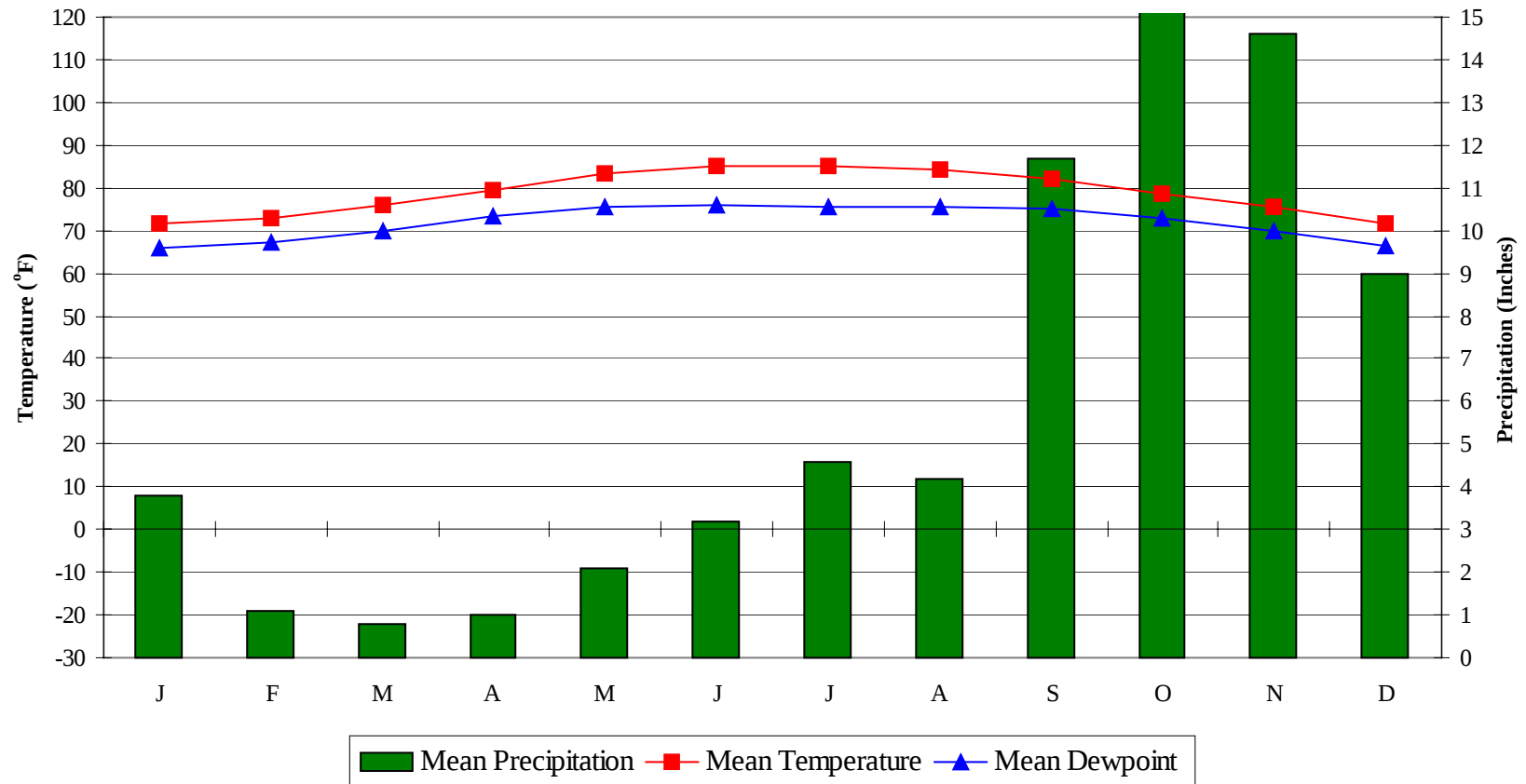
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	5.9 + 3.9
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
81.3	N/A	N/A	0

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

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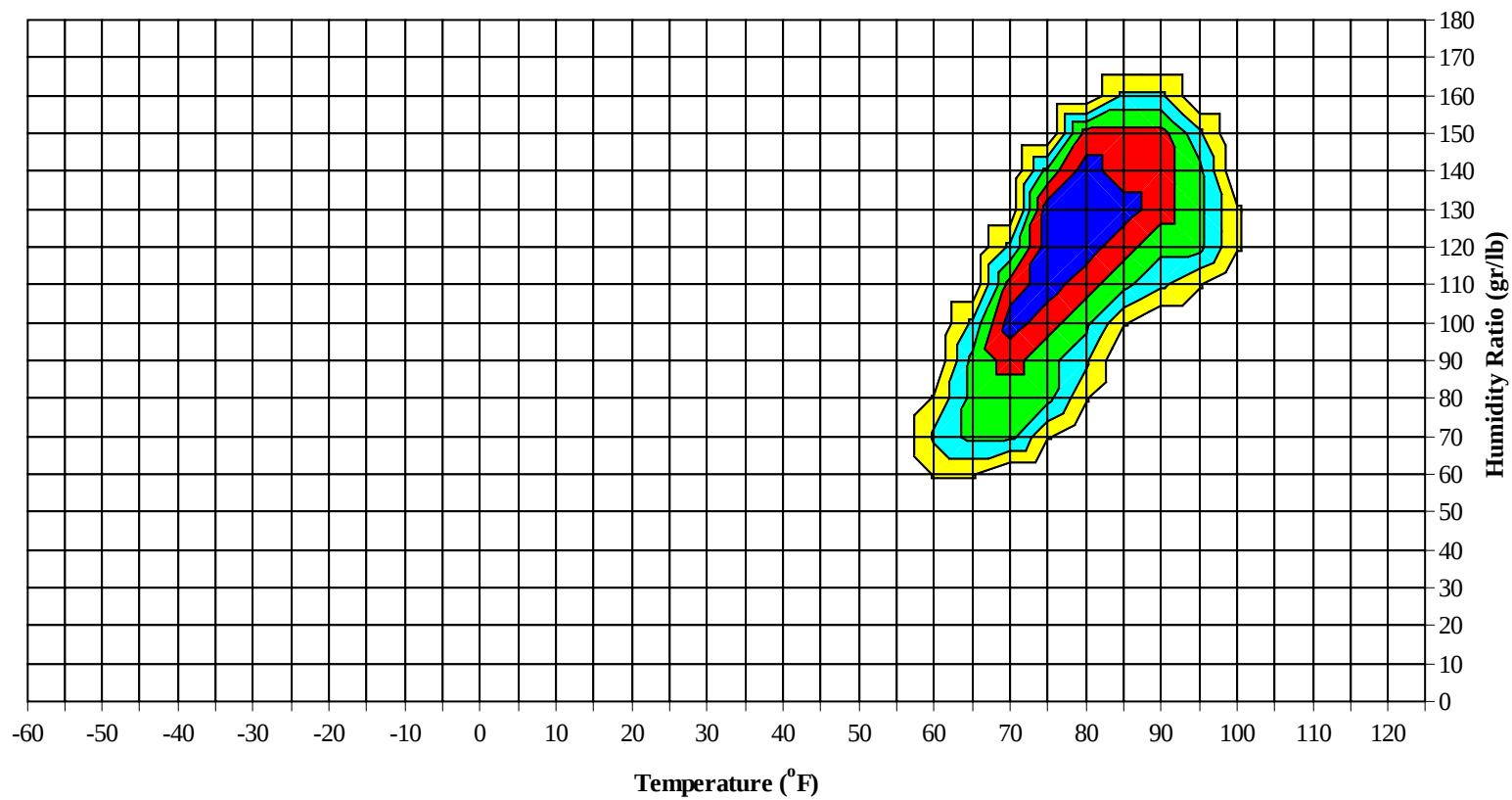
Average Annual Climate



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Long Term Psychrometric Summary

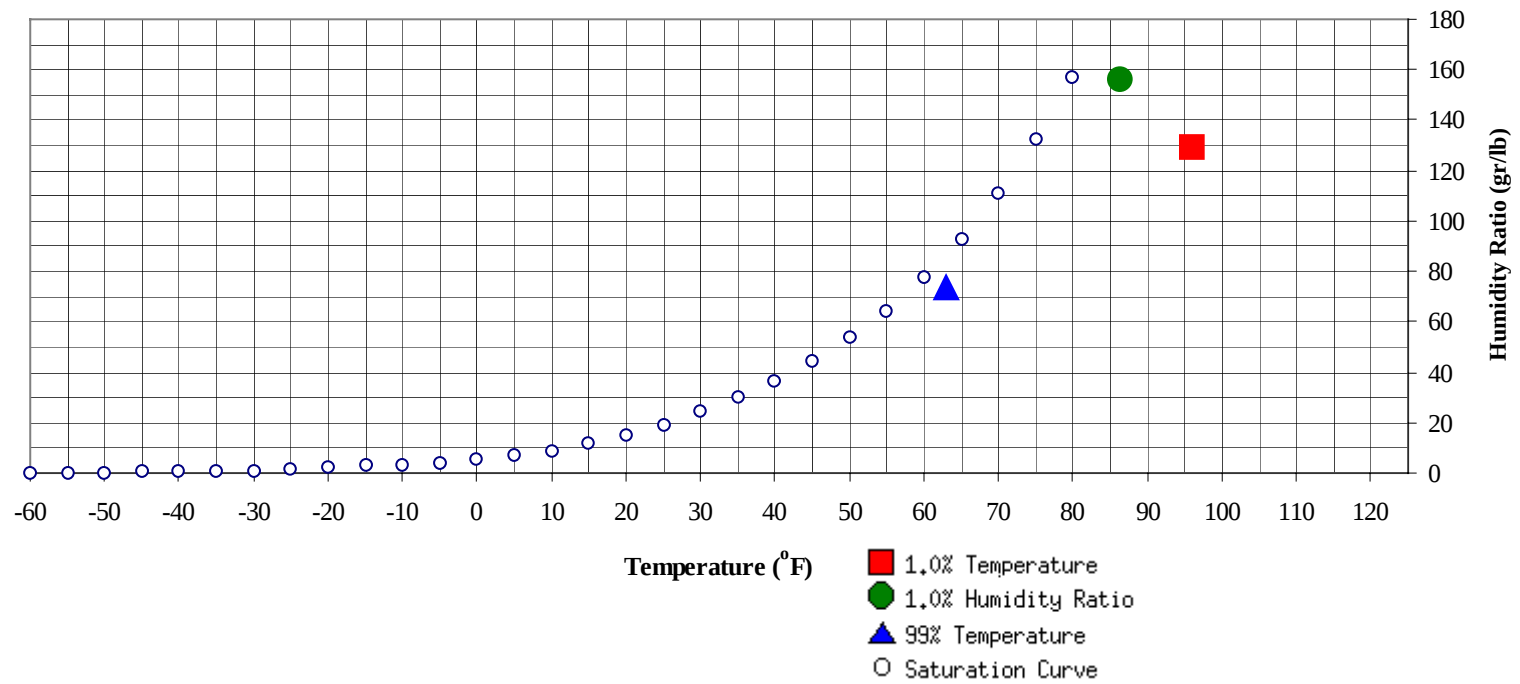


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR	Enthalpy	1.0% Humidity Ratio	(gr/lb)	MCDB	MCWB	MC Dewpt	Enthalpy
		(gr/lb)	(btu/lb)			(°F)	(°F)	(°F)	(btu/lb)
99% Dry Bulb	63	73.4	26.5	Ratio	156.1	86.3	81.4	79.7	45.2

1.0% Dry Bulb	(°F)	MCHR	MCWB	Enthalpy
		(gr/lb)	(°F)	(btu/lb)
96	129	79.8	43.4	

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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															
100 / 104															
95 / 99							0		0	75.0		1		1	75.6
90 / 94		0		0	78.0		0	0	0	77.5	0	4		4	78.4
85 / 89	0	1		1	74.4	0	6	1	7	77.1	1	28	1	31	77.1
80 / 84	1	25	2	29	73.3	1	57	7	65	74.4	3	111	16	129	74.8
75 / 79	9	111	30	149	70.7	23	87	63	174	72.1	75	67	130	273	73.1
70 / 74	106	82	150	337	68.5	105	53	107	266	69.0	133	29	78	240	69.5
65 / 69	93	25	52	170	64.9	70	16	35	120	64.8	29	5	17	51	64.5
60 / 64	34	4	13	51	60.7	23	5	10	38	60.0	7	2	5	13	59.9
55 / 59	4	0	1	5	55.9	1	0	0	1	56.8	1	0	1	2	55.0
50 / 54	1	0	0	1	51.7	0		0	0	42.0					
45 / 49	0			0	41.0			0	0	43.0					

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.

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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	83.0										
100 / 104		1		1	81.1	0	1	0	1	80.3	0	4	0	4	81.2
95 / 99	0	5	0	5	79.6	1	17	0	17	79.9	1	40	0	41	80.5
90 / 94	0	18	0	18	79.3	2	84	3	88	79.7	4	105	12	121	80.0
85 / 89	1	83	2	86	78.2	8	101	19	128	79.1	22	62	60	144	79.4
80 / 84	22	93	71	186	76.7	96	38	173	307	77.6	127	24	137	288	77.8
75 / 79	164	33	139	337	74.5	138	8	52	198	75.3	85	5	29	120	75.9
70 / 74	49	6	25	80	70.0	4	0	1	5	70.8	2	0	1	3	70.8
65 / 69	4	1	2	7	64.7	0	0		0	59.0	0	0	0	0	65.0
60 / 64	0	0		0	59.0									0	0
55 / 59															
50 / 54															
45 / 49															

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.

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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	2	1	3	82.9		1	0	1	79.6					
95 / 99	1	40	1	42	80.2	1	21	0	22	79.7	0	7	0	7	80.3
90 / 94	3	121	10	134	79.6	1	114	5	120	79.4	1	52	1	55	79.4
85 / 89	17	63	58	138	79.1	12	75	53	140	79.0	4	110	16	129	78.6
80 / 84	131	15	148	294	77.6	118	28	146	293	77.5	48	52	148	248	77.5
75 / 79	96	7	30	133	75.6	115	8	43	166	75.8	183	18	73	274	75.4
70 / 74	1	0	0	1	71.9	1	0	1	2	71.2	5	1	1	7	72.0
65 / 69	0	0	0	0	66.0										
60 / 64	0	0	0	0											
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	79.5		0		0	80.0					
90 / 94	0	7	0	7	78.8	0	2	0	2	79.0	0	1		1	75.5
85 / 89	1	54	1	56	78.4	1	9	0	10	77.2	0	2		2	74.2
80 / 84	17	116	70	202	76.2	5	78	12	95	75.2	1	23	1	25	73.7
75 / 79	170	62	151	382	74.3	84	103	121	307	72.9	17	95	42	155	71.4
70 / 74	56	9	25	90	70.6	119	43	92	253	69.7	114	89	128	332	68.7
65 / 69	5	0	1	6	65.4	25	6	12	44	65.4	82	31	59	172	65.0
60 / 64	0		0	0	60.0	7	0	2	9	61.7	31	6	15	52	60.9
55 / 59	0		0	0	54.3	0			0	56.0	3	1	2	6	55.3
50 / 54											0	0		0	
45 / 49															

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.

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

Period of Record = 1973 to 1996

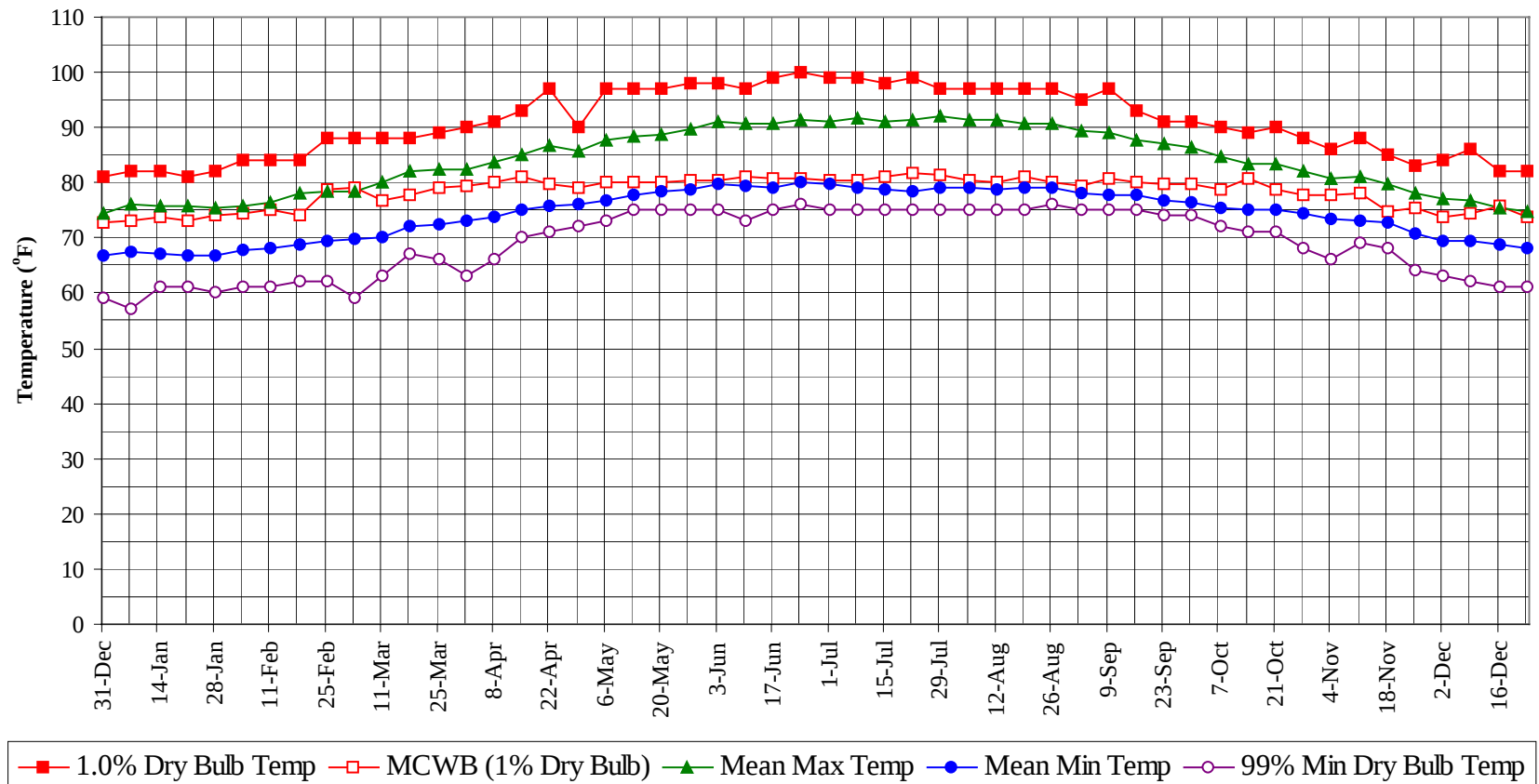
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
105 / 109		0		0	83.0
100 / 104	1	8	1	10	81.3
95 / 99	3	127	2	133	80.1
90 / 94	11	500	32	544	79.6
85 / 89	69	584	212	865	78.8
80 / 84	580	663	917	2159	76.8
75 / 79	1175	614	904	2693	73.9
70 / 74	680	319	620	1619	69.2
65 / 69	294	87	181	562	64.9
60 / 64	97	18	46	160	60.5
55 / 59	9	1	4	14	55.6
50 / 54	1	0	0	1	50.5
45 / 49	0		0	0	42.0

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.

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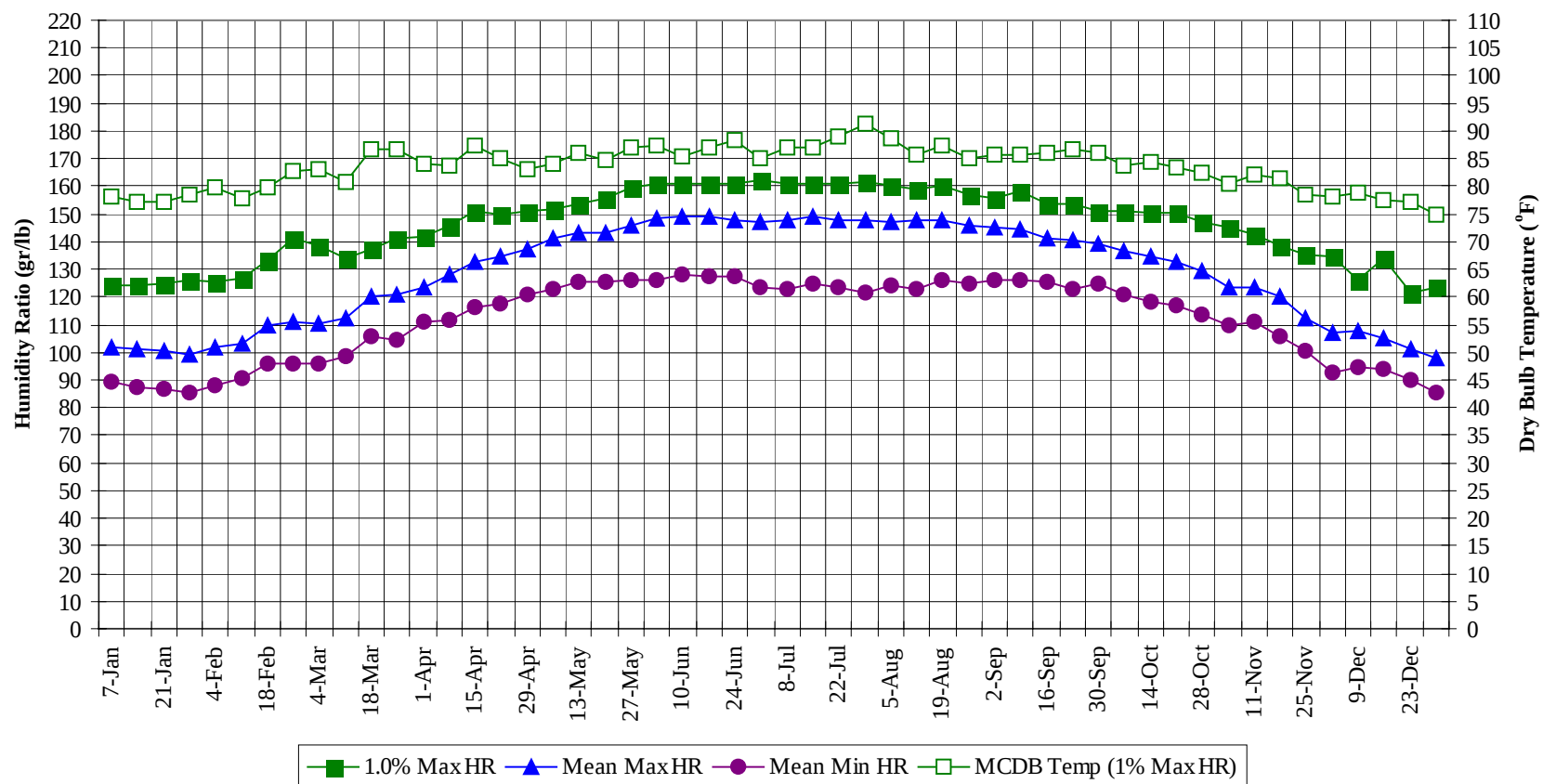
Annual Summary of Temperatures



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Long Term Humidity and Dry Bulb Temperature Summary

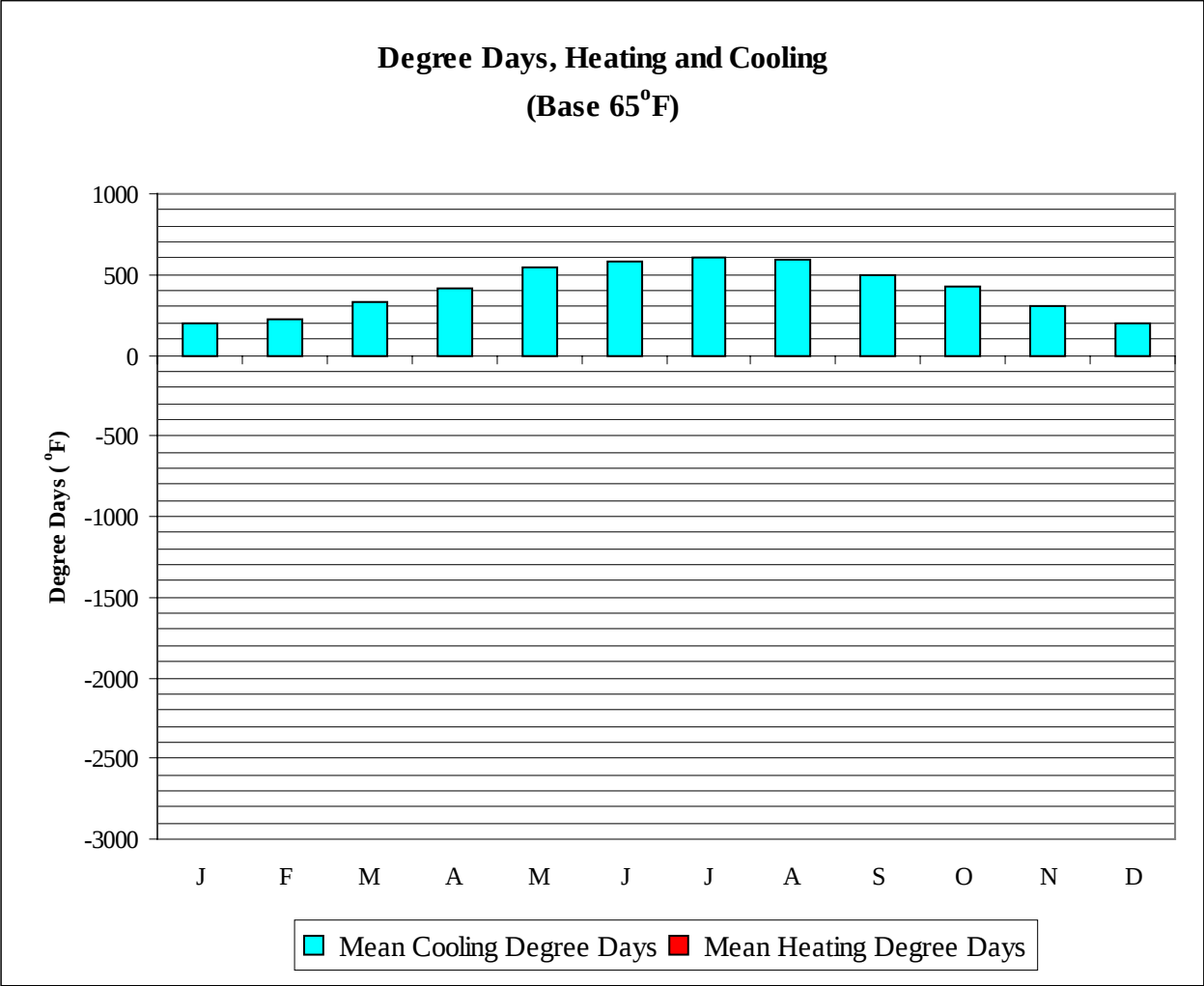


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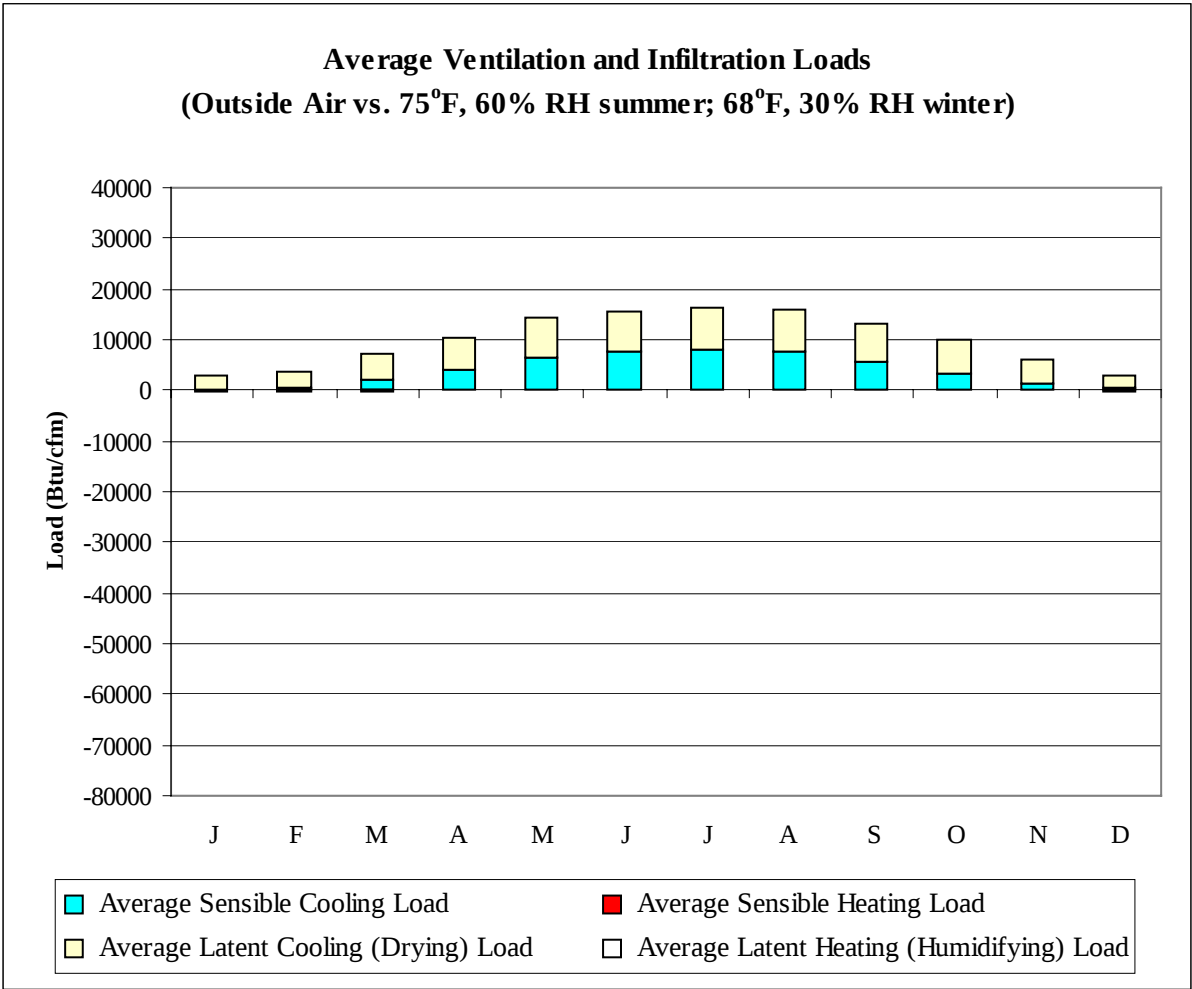
WMO No. 488550

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	82.0	73.2	76.1	67.6	57.0	123.9	78.1	102.1	89.5
14-Jan	82.0	73.7	75.8	67.2	61.0	123.9	77.1	101.4	87.4
21-Jan	81.0	73.2	75.7	66.7	61.0	124.6	77.1	100.8	86.7
28-Jan	82.0	74.0	75.6	66.8	60.0	126.0	78.3	99.5	85.4
4-Feb	84.0	74.6	75.7	67.7	61.0	125.3	79.8	101.5	88.2
11-Feb	84.0	75.2	76.5	68.0	61.0	126.7	77.7	103.4	90.8
18-Feb	84.0	74.0	78.0	68.9	62.0	133.0	79.7	109.8	95.8
25-Feb	88.0	78.7	78.5	69.3	62.0	141.4	82.6	111.3	95.8
4-Mar	88.0	79.1	78.5	69.8	59.0	138.6	83.0	110.1	95.7
11-Mar	88.0	76.8	80.0	70.2	63.0	133.7	80.8	112.4	98.2
18-Mar	88.0	77.8	82.1	72.1	67.0	137.2	86.6	120.1	105.5
25-Mar	89.0	79.0	82.4	72.3	66.0	141.4	86.8	121.1	104.3
1-Apr	90.0	79.6	82.3	73.1	63.0	142.1	83.9	123.7	110.7
8-Apr	91.0	80.1	83.8	73.7	66.0	145.6	83.7	128.0	111.9
15-Apr	93.0	81.1	85.1	75.1	70.0	151.2	87.2	132.3	116.5
22-Apr	97.0	79.8	86.7	75.6	71.0	149.8	84.9	134.6	117.7
29-Apr	90.0	79.1	85.9	76.0	72.0	151.2	83.2	137.4	120.7
6-May	97.0	80.0	87.8	76.6	73.0	151.9	84.2	141.3	122.8
13-May	97.0	80.0	88.3	77.7	75.0	154.0	85.9	143.0	125.3
20-May	97.0	80.2	88.8	78.4	75.0	155.4	84.6	143.3	125.7
27-May	98.0	80.5	89.9	78.9	75.0	159.6	87.1	145.7	126.2
3-Jun	98.0	80.4	91.1	79.6	75.0	161.0	87.2	148.4	126.4
10-Jun	97.0	81.1	90.7	79.3	73.0	161.0	85.4	149.0	128.1
17-Jun	99.0	80.8	90.7	79.1	75.0	161.0	86.9	148.8	127.4
24-Jun	100.0	80.7	91.3	80.0	76.0	161.0	88.2	147.7	127.5
1-Jul	99.0	80.3	91.2	79.8	75.0	162.4	85.0	147.1	123.4
8-Jul	99.0	80.3	91.8	79.0	75.0	161.0	87.1	148.1	122.6
15-Jul	98.0	81.0	91.1	78.9	75.0	161.0	87.0	148.8	125.0
22-Jul	99.0	81.7	91.4	78.5	75.0	161.0	89.1	147.5	123.7
29-Jul	97.0	81.5	92.1	79.2	75.0	161.7	91.2	147.7	121.6
5-Aug	97.0	80.4	91.4	79.2	75.0	160.3	88.6	147.1	124.2
12-Aug	97.0	80.1	91.5	78.8	75.0	158.9	85.8	147.6	122.7
19-Aug	97.0	81.2	90.7	79.0	75.0	160.3	87.3	147.7	126.2
26-Aug	97.0	80.1	90.9	79.1	76.0	156.8	85.2	145.8	124.5
2-Sep	95.0	79.3	89.6	78.1	75.0	155.4	85.8	144.9	125.8
9-Sep	97.0	80.9	89.0	77.8	75.0	158.2	85.8	144.8	126.4
16-Sep	93.0	80.0	87.9	77.7	75.0	154.0	86.1	141.5	125.1
23-Sep	91.0	79.9	87.1	76.8	74.0	154.0	86.6	140.7	123.1
30-Sep	91.0	79.9	86.5	76.5	74.0	151.2	85.9	138.9	124.5
7-Oct	90.0	78.8	84.6	75.6	72.0	151.2	83.6	136.7	121.2
14-Oct	89.0	80.7	83.4	75.0	71.0	150.5	84.6	134.9	118.0
21-Oct	90.0	78.9	83.4	75.1	71.0	150.5	83.5	132.7	117.0
28-Oct	88.0	77.8	82.0	74.3	68.0	147.0	82.3	129.1	113.4
4-Nov	86.0	77.8	80.8	73.4	66.0	144.9	80.5	123.7	109.5
11-Nov	88.0	78.0	81.2	73.1	69.0	142.8	82.3	123.8	110.7
18-Nov	85.0	74.7	79.8	72.7	68.0	138.6	81.4	120.0	106.0
25-Nov	83.0	75.5	78.0	70.8	64.0	135.1	78.3	112.6	100.2
2-Dec	84.0	73.6	77.0	69.5	63.0	134.4	78.0	107.0	92.8
9-Dec	86.0	74.5	76.8	69.4	62.0	126.0	78.7	107.4	94.6
16-Dec	82.0	75.9	75.5	68.8	61.0	133.7	77.5	105.0	93.8
23-Dec	82.0	73.8	74.9	68.0	61.0	121.8	77.3	101.3	89.9
31-Dec	81.0	72.9	74.5	66.7	59.0	123.2	75.0	97.8	85.1



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	192	5
FEB	219	2
MAR	330	1
APR	410	0
MAY	544	0
JUN	584	0
JUL	606	0
AUG	592	0
SEP	502	0
OCT	422	0
NOV	308	0
DEC	200	5
ANN	4908	13

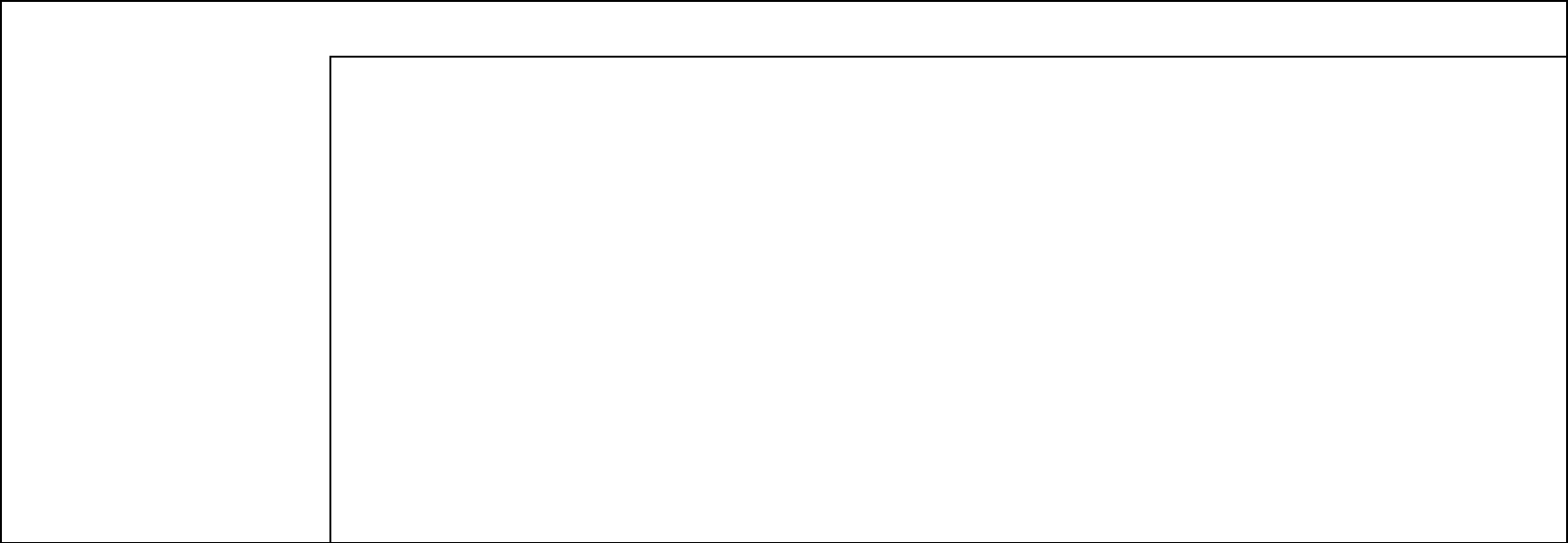


	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	254	-400	2785	0
FEB	659	-248	3130	0
MAR	1958	-89	5087	0
APR	3934	-3	6411	0
MAY	6605	0	7668	0
JUN	7707	0	7834	0
JUL	7982	-1	8254	0
AUG	7666	0	8353	0
SEP	5596	0	7625	0
OCT	3267	-6	6661	0
NOV	1394	-39	4569	0
DEC	344	-373	2696	0
ANN	47366	-1159	71073	0

Average Annual Solar Radiation – Nearest Available Site

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

No Solar Radiation
Data Available

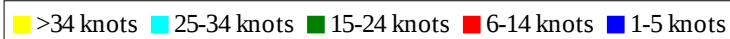
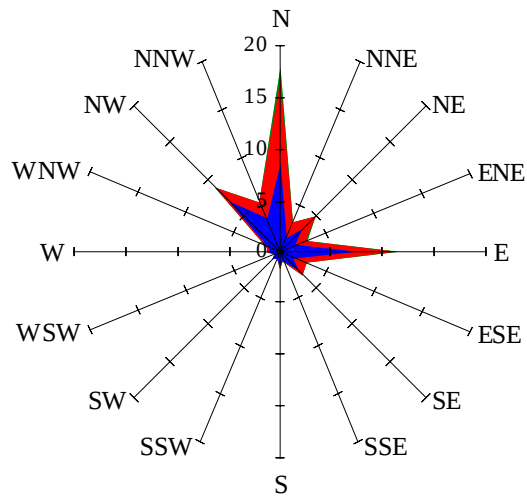


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

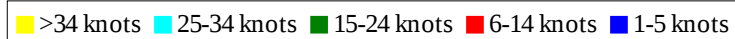
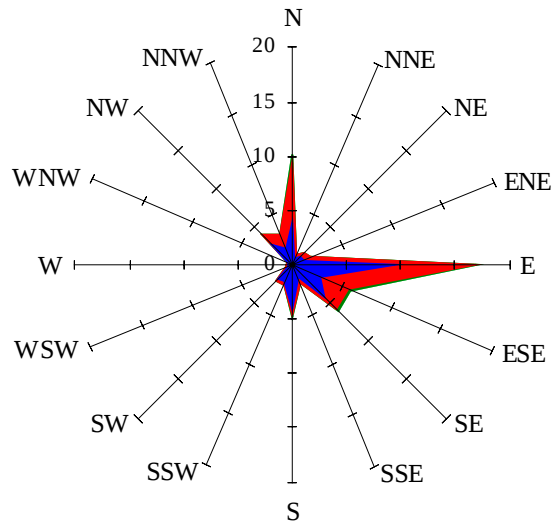
Labels of Percent Frequency on North Axis



Percent Calm = 36.50

Wind Summary - March, April, and May

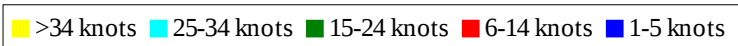
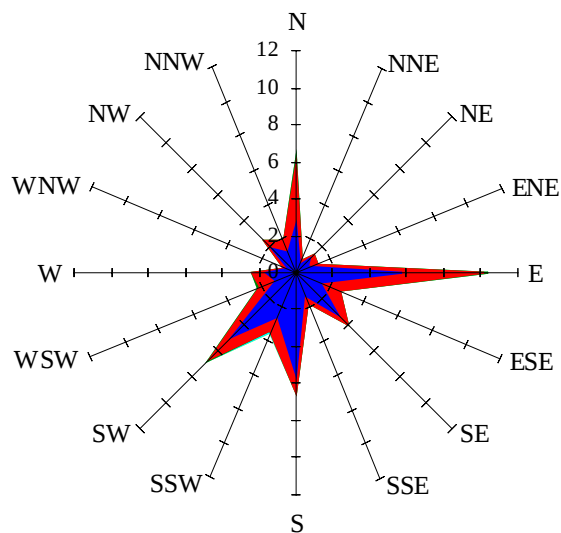
Labels of Percent Frequency on North Axis



Percent Calm = 37.66

Wind Summary - June, July, and August

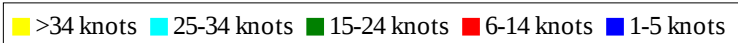
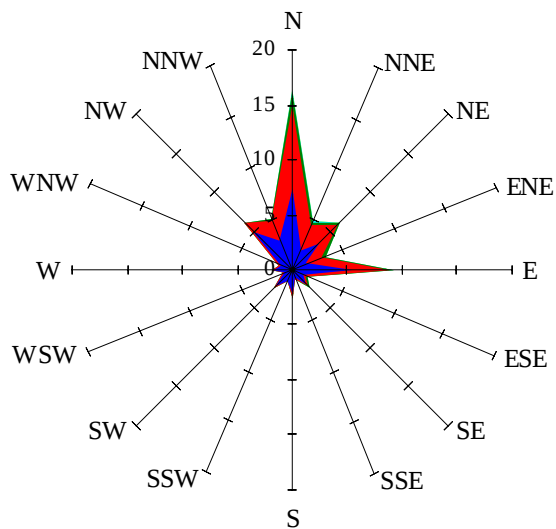
Labels of Percent Frequency on North Axis



Percent Calm = 45.26

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 38.26