

PUSAN/KIMHAE KO

Latitude = 35.18 N

Longitude = 128.93 E

Period of Record = 1967 to 1996

WMO No. 471530

Elevation = 49 feet

Average Pressure = 29.92 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	94	80	135	8.9	SSW
0.4% Occurrence	91	80	136	9.1	SSW
1.0% Occurrence	88	79	136	9.3	SSW
2.0% Occurrence	86	78	132	8.7	SSW
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	25	22	12	6.0	NNW
99.0% Occurrence	21	18	10	6.4	NNW
99.6% Occurrence	19	17	9	5.7	NNW
Median of Extreme Lows	14	12	7	7.6	NNW
	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	90	162	10.1	SSW
0.4% Occurrence	81	88	147	9.1	S
1.0% Occurrence	80	87	143	8.7	SSW
2.0% Occurrence	79	84	140	7.8	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	169	88	1.12	9.3	SSW
0.4% Occurrence	151	85	0.99	8.8	SSW
1.0% Occurrence	144	82	0.95	7.8	S
2.0% Occurrence	142	83	0.94	7.1	SSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		14	674	1089	2091

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
7	N/A	N/A	4.1 + 0.7
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 (#)
59.2	N/A	N/A	67

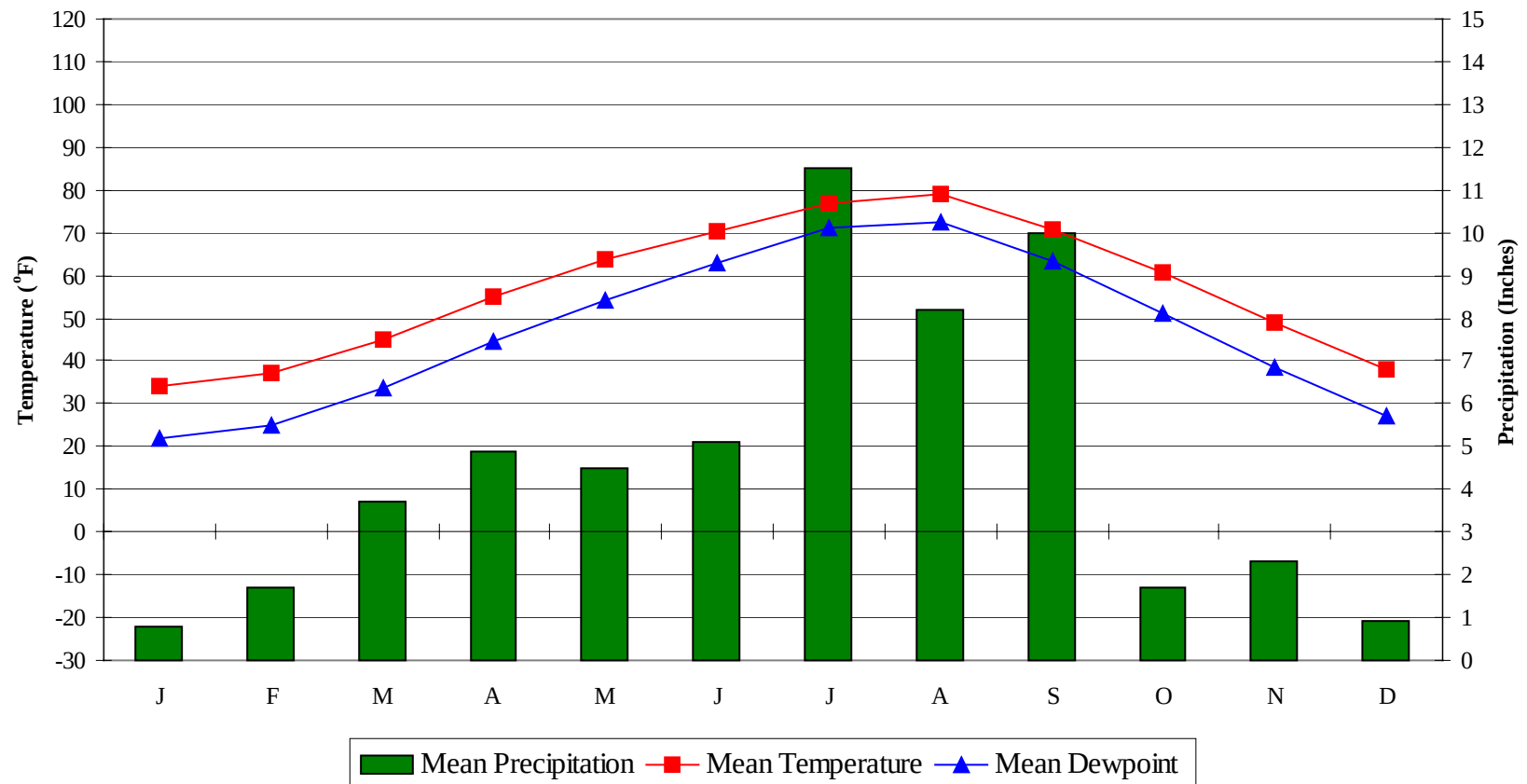
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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Average Annual Climate

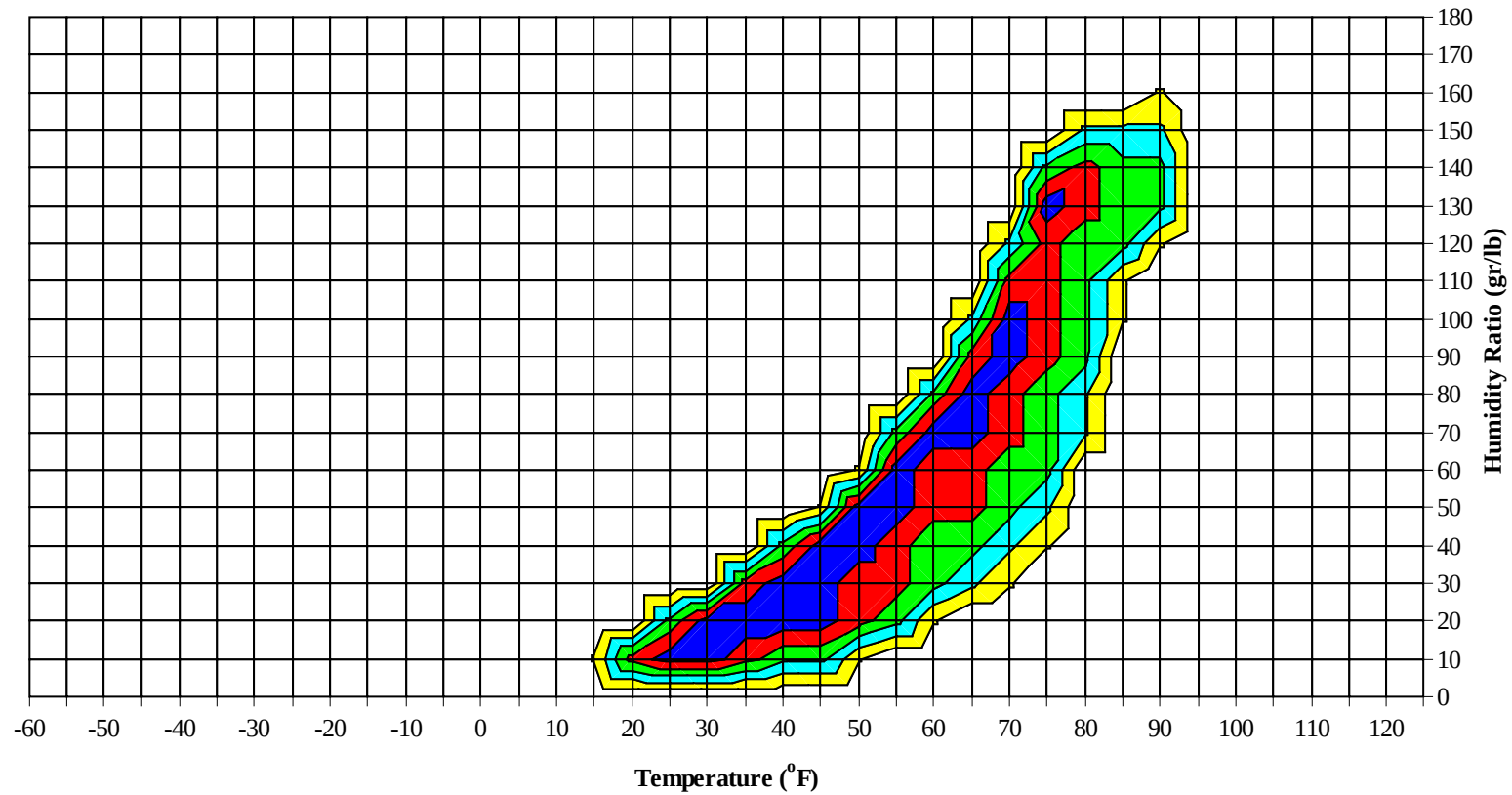


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Long Term Psychrometric Summary



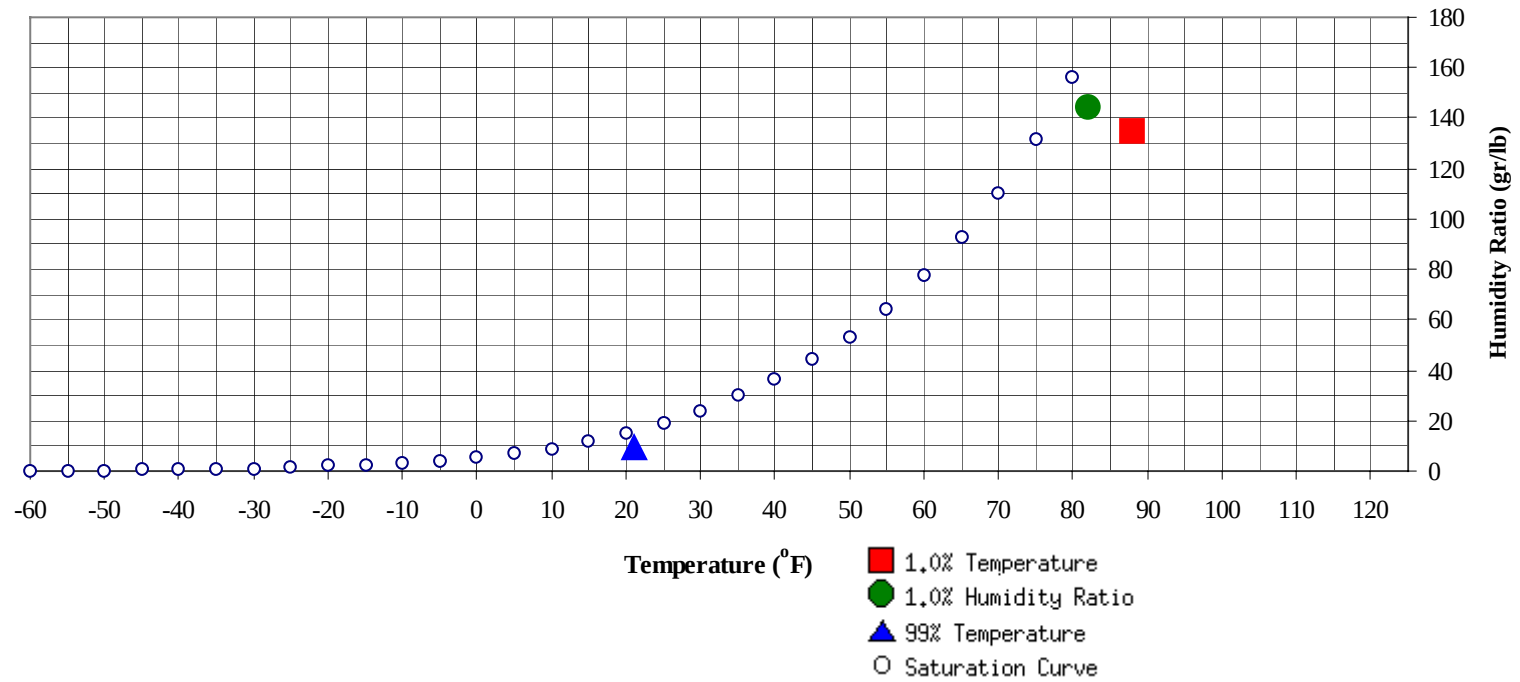
- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



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)
	21	9.5	6.5		144.2	82	78.6	77.3	42.3

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	88	134.5	78.8	42.3

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

Period of Record = 1967 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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74							0		0	59.5		0	0	0	54.3
65 / 69							0		0	58.0		3	0	3	55.2
60 / 64		0	0	0	50.9	0	2	0	2	55.2	0	19	3	22	52.0
55 / 59	0	5	1	6	48.3	1	10	3	14	49.1	3	53	20	77	49.1
50 / 54	1	21	6	28	44.1	3	32	14	49	44.3	14	68	53	135	45.7
45 / 49	7	42	22	71	40.3	10	51	36	97	40.5	43	58	76	177	41.8
40 / 44	11	42	30	83	36.7	18	37	39	95	37.3	46	26	47	118	38.0
35 / 39	27	61	59	147	32.7	36	45	55	137	33.1	69	17	33	119	34.2
30 / 34	60	45	70	176	28.4	60	30	45	135	28.5	54	5	15	74	29.2
25 / 29	79	23	45	147	23.7	59	13	26	98	23.7	18	0	1	19	24.8
20 / 24	38	6	12	56	19.5	23	3	5	31	19.5	1	0	0	1	20.0
15 / 19	22	2	3	27	15.9	11	1	1	13	15.8	0		0	0	16.6
10 / 14	3	0	0	3	11.5	2		0	2	11.4					
5 / 9	0			0	8.0	0			0	7.0					

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 = 1967 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		
95 / 99						0	0	0	73.7						
90 / 94						0	0	0	70.6		0			0	73.3
85 / 89						1	0	1	67.3		3	0		3	71.4
80 / 84		0		0	62.0	7	1	8	66.6		38	5		43	70.6
75 / 79		3	0	3	60.4	44	8	52	64.4		3	94	36	133	69.1
70 / 74		24	4	28	58.7	2	79	34	115	62.4	47	70	98	215	67.2
65 / 69	1	40	12	52	57.5	14	53	55	122	61.0	79	27	67	172	64.5
60 / 64	11	71	45	128	55.4	69	47	89	205	58.4	88	8	31	127	60.5
55 / 59	34	60	78	172	52.1	95	15	52	161	54.1	23	0	3	26	56.3
50 / 54	68	33	63	163	47.8	57	1	10	68	49.7	1			1	51.3
45 / 49	68	9	29	106	43.4	11	0	0	11	45.2					
40 / 44	35	1	7	43	39.3	0			0	43.5					
35 / 39	18	0	2	20	35.2										
30 / 34	4	0	0	4	30.3										
25 / 29	0			0	25.0										
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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

Period of Record = 1967 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		
95 / 99		2	0	2	80.4		2	0	2	81.7		0		0	77.0
90 / 94	0	24	4	28	79.8		38	5	43	79.8		2	0	2	78.5
85 / 89	0	39	12	51	78.7	0	68	21	89	78.5		11	1	12	76.9
80 / 84	15	67	51	132	76.4	22	78	76	176	76.5	2	54	13	69	73.0
75 / 79	95	73	96	264	74.0	122	48	100	269	74.2	18	83	46	147	70.2
70 / 74	87	34	65	187	69.7	85	13	43	141	69.5	48	60	80	188	67.1
65 / 69	37	8	17	62	65.4	17	1	4	22	65.8	59	22	57	138	64.2
60 / 64	13	1	4	18	61.1	2		0	2	62.6	72	8	37	117	60.2
55 / 59	0			0	55.7						34	0	7	41	55.5
50 / 54											6		0	6	51.2
45 / 49											0			0	46.1
40 / 44															
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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

Period of Record = 1967 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		
95 / 99															
90 / 94															
85 / 89		0		0	73.0										
80 / 84		4	0	4	67.3										
75 / 79		31	3	34	64.7		0		0	63.0					
70 / 74	2	71	20	93	61.9		8	0	8	59.7					
65 / 69	7	55	34	97	60.1	1	20	3	24	58.1		0		0	57.6
60 / 64	37	51	77	165	57.5	4	45	18	67	54.9	0	8	1	9	53.5
55 / 59	68	24	66	158	53.8	18	55	44	117	51.4	1	21	6	28	49.7
50 / 54	73	10	33	117	49.3	32	51	54	137	46.9	4	40	19	62	45.3
45 / 49	43	2	12	57	44.4	49	34	51	134	42.5	15	51	38	104	41.0
40 / 44	14	0	3	17	40.2	41	15	30	86	38.4	20	40	34	94	37.3
35 / 39	4	0	0	4	36.3	51	10	29	90	34.4	44	48	62	154	33.3
30 / 34	0			0	31.7	37	2	10	49	29.9	71	28	58	156	29.0
25 / 29						7	0	1	8	25.2	65	11	25	102	24.4
20 / 24						0			0	20.0	20	2	4	26	20.0
15 / 19											8	0	1	9	16.0
10 / 14											1	0	0	1	11.7
5 / 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.

PUSAN/KIMHAE KO

WMO No. 471530

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

Period of Record = 1967 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		
95 / 99		4	0	4	80.8
90 / 94	0	63	9	72	79.7
85 / 89	1	122	33	157	78.3
80 / 84	40	249	145	433	75.0
75 / 79	238	376	290	904	71.7
70 / 74	272	360	344	977	66.6
65 / 69	216	227	249	692	62.5
60 / 64	295	260	303	858	57.9
55 / 59	276	241	280	796	52.6
50 / 54	258	254	252	763	47.1
45 / 49	244	249	262	755	42.0
40 / 44	183	163	188	534	37.8
35 / 39	249	183	241	672	33.5
30 / 34	286	110	198	593	28.8
25 / 29	230	47	98	376	24.0
20 / 24	83	11	21	115	19.6
15 / 19	43	3	7	52	15.9
10 / 14	6	0	0	6	11.5
5 / 9	0			0	7.7

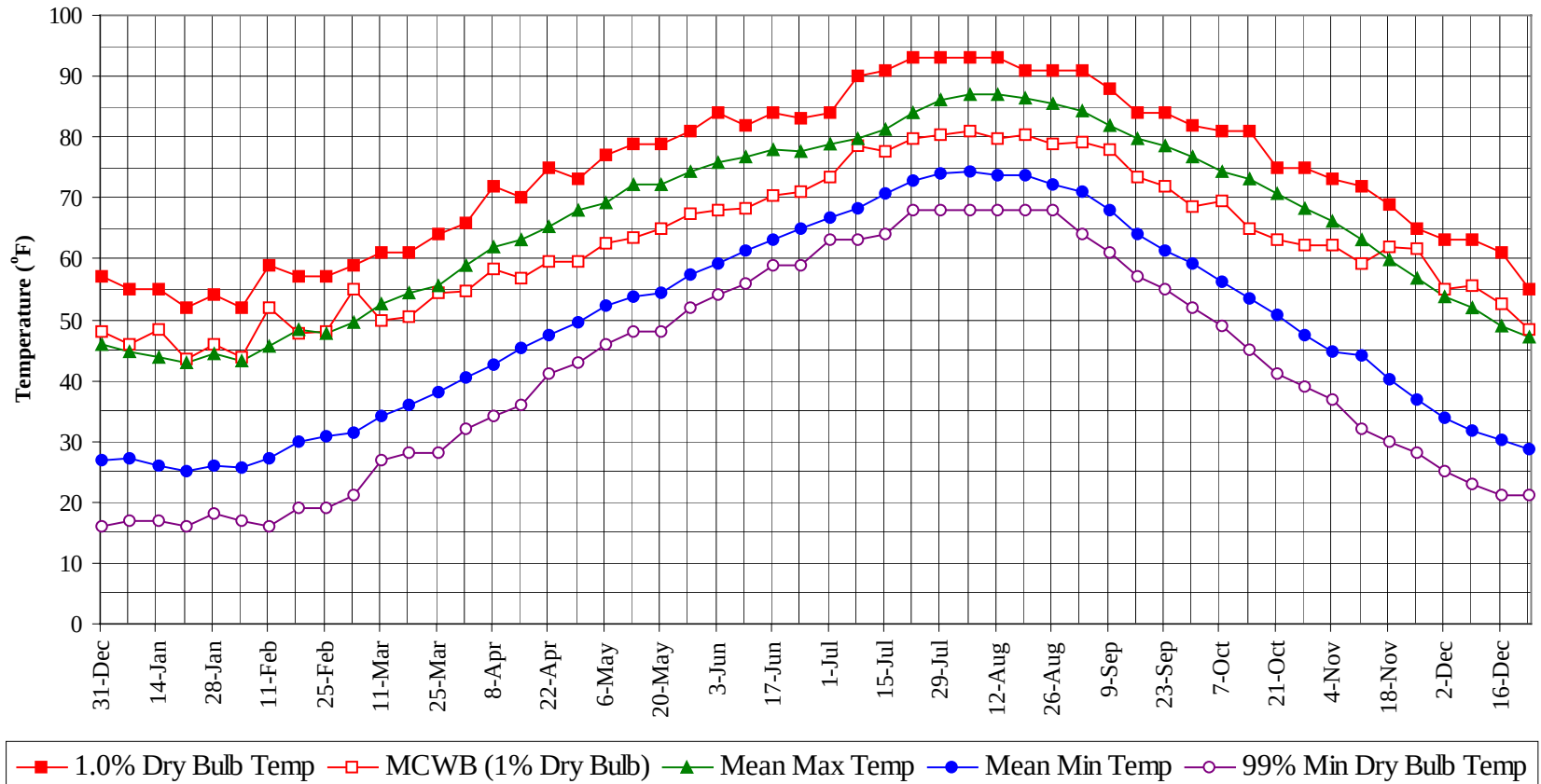
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

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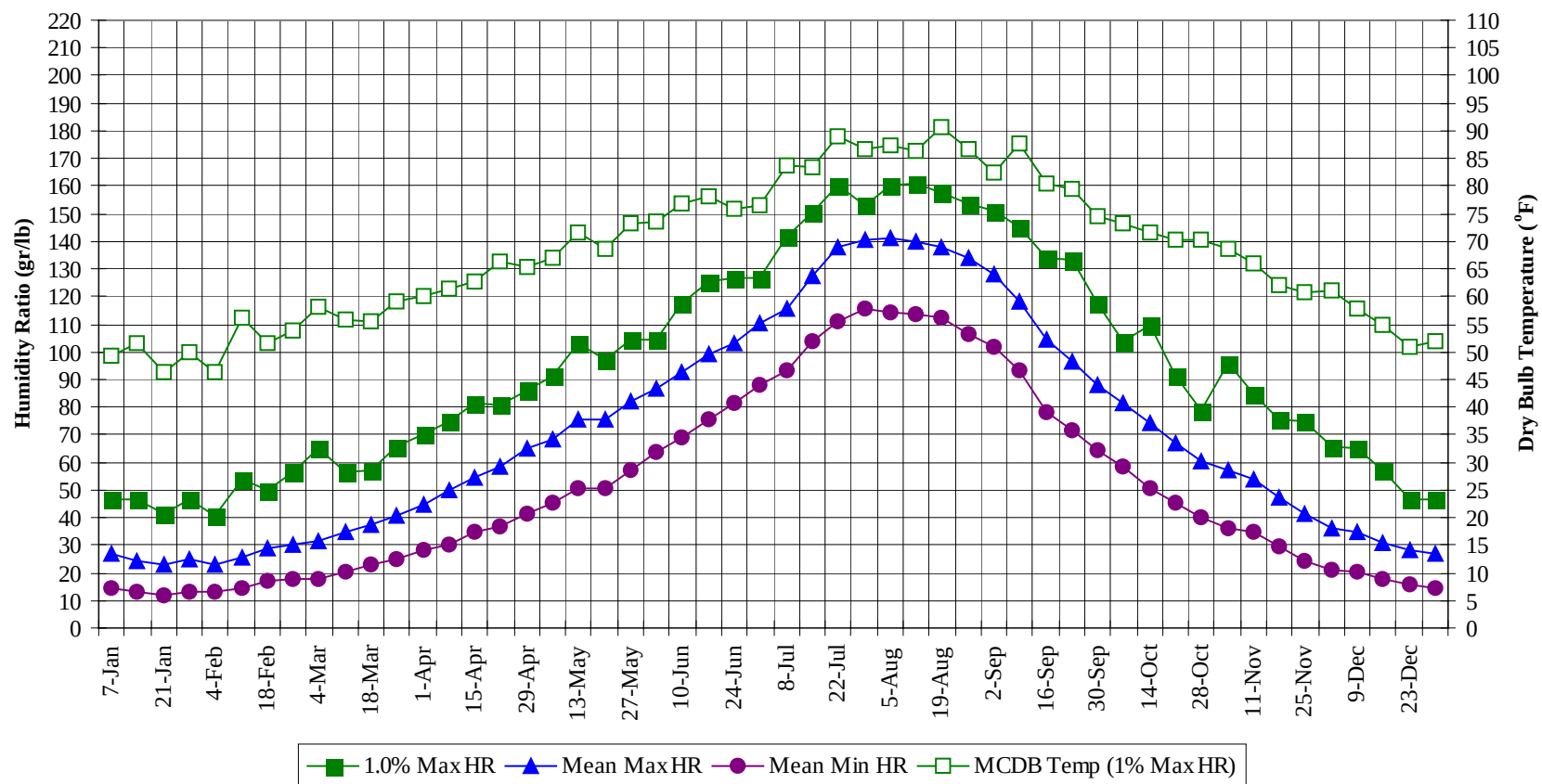
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WMO No. 471530

Annual Summary of Temperatures

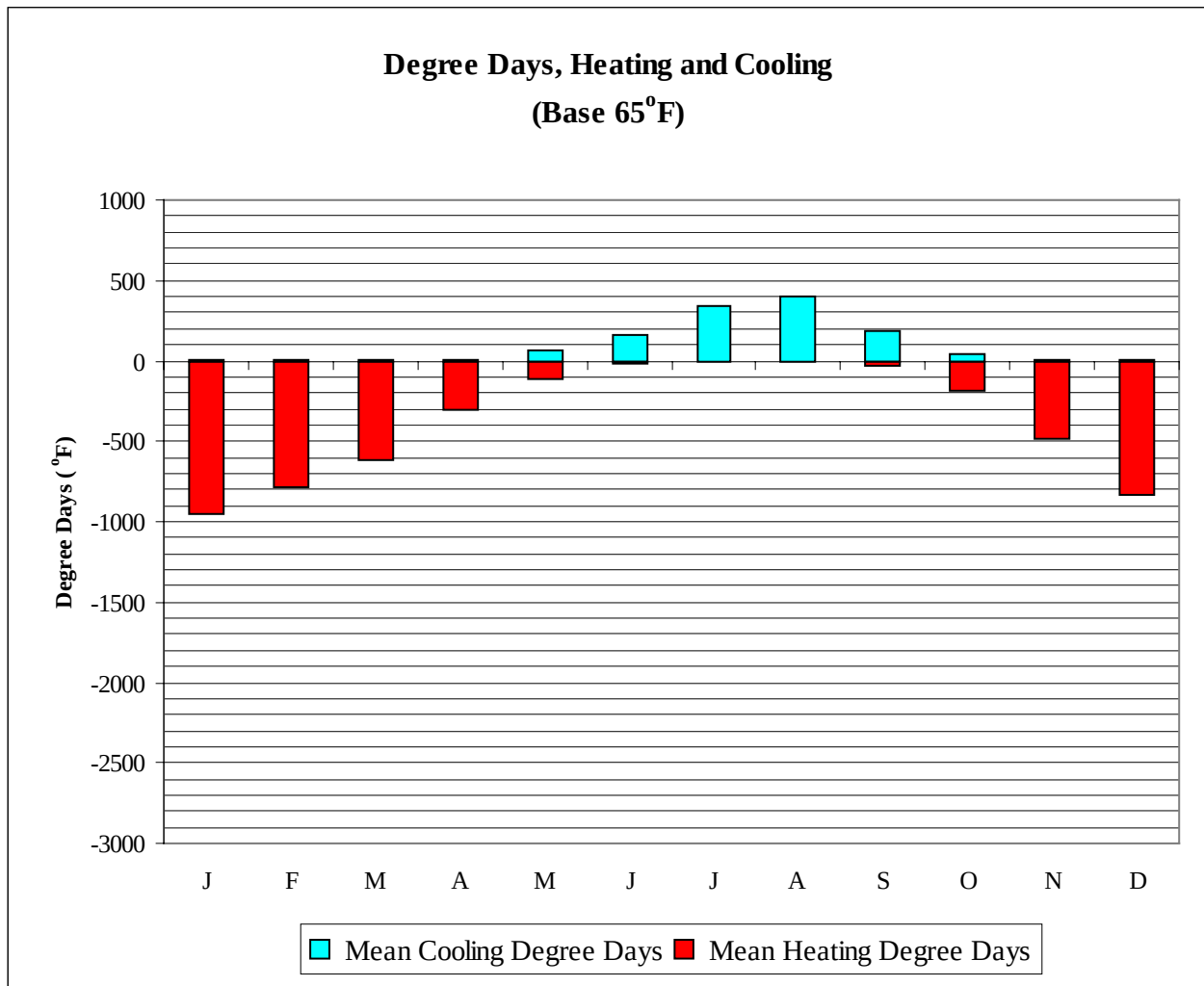


Long Term Humidity and Dry Bulb Temperature Summary

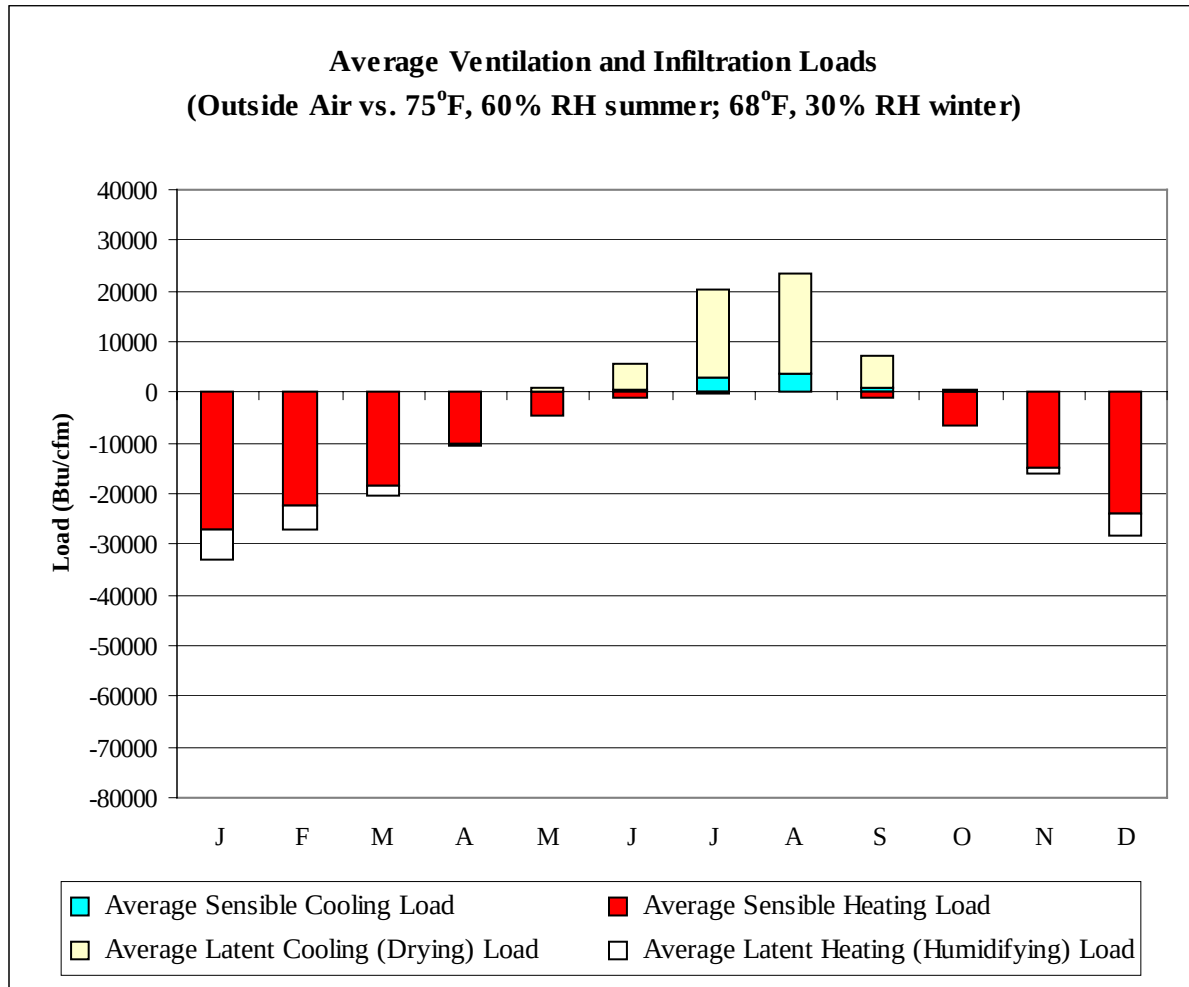


PUSAN/KIMHAE**KO****WMO No. 471530****Long Term Dry Bulb Temperature and Humidity Summary**

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	55.0	45.9	44.8	27.2	17.0	46.9	49.1	26.7	14.7
14-Jan	55.0	48.2	43.8	26.0	17.0	46.9	51.5	24.6	13.3
21-Jan	52.0	43.6	42.9	24.9	16.0	41.3	46.3	23.0	12.1
28-Jan	54.0	46.0	44.5	25.9	18.0	46.9	49.8	24.8	13.3
4-Feb	52.0	43.7	43.2	25.7	17.0	40.6	46.3	23.1	12.9
11-Feb	59.0	52.1	45.7	27.3	16.0	53.9	56.0	25.9	14.5
18-Feb	57.0	47.8	48.2	29.8	19.0	49.7	51.6	29.1	16.8
25-Feb	57.0	48.0	47.7	30.8	19.0	56.7	53.7	30.0	17.7
4-Mar	59.0	55.1	49.6	31.4	21.0	65.1	58.0	31.6	17.8
11-Mar	61.0	49.7	52.4	34.1	27.0	56.7	55.8	34.8	20.6
18-Mar	61.0	50.3	54.4	36.1	28.0	57.4	55.5	37.5	22.7
25-Mar	64.0	54.5	55.6	38.0	28.0	65.8	59.1	40.7	25.2
1-Apr	66.0	54.7	59.0	40.6	32.0	70.0	60.0	44.4	28.2
8-Apr	72.0	58.4	62.1	42.5	34.0	74.9	61.4	50.0	30.1
15-Apr	70.0	56.9	63.2	45.2	36.0	81.2	62.8	54.2	35.1
22-Apr	75.0	59.4	65.4	47.3	41.0	80.5	66.3	58.4	36.8
29-Apr	73.0	59.6	68.1	49.7	43.0	86.1	65.2	65.1	41.2
6-May	77.0	62.4	69.2	52.2	46.0	91.0	67.0	68.4	45.2
13-May	79.0	63.4	72.1	53.9	48.0	102.9	71.6	75.5	50.6
20-May	79.0	64.9	72.2	54.3	48.0	97.3	68.8	75.6	50.9
27-May	81.0	67.4	74.3	57.3	52.0	104.3	73.3	82.0	56.8
3-Jun	84.0	68.1	76.0	59.3	54.0	104.3	73.4	87.0	63.7
10-Jun	82.0	68.4	76.7	61.3	56.0	117.6	76.8	92.9	69.3
17-Jun	84.0	70.4	77.9	63.3	59.0	125.3	78.0	99.2	75.5
24-Jun	83.0	71.0	77.8	64.9	59.0	126.7	75.9	103.0	81.4
1-Jul	84.0	73.5	78.8	66.8	63.0	126.7	76.7	110.4	88.3
8-Jul	90.0	78.4	79.8	68.2	63.0	142.1	83.6	115.7	93.1
15-Jul	91.0	77.8	81.3	70.7	64.0	150.5	83.4	127.1	103.9
22-Jul	93.0	79.9	84.1	72.8	68.0	160.3	89.0	137.8	110.7
29-Jul	93.0	80.5	86.2	74.1	68.0	153.3	86.7	140.6	115.7
5-Aug	93.0	80.9	87.1	74.4	68.0	160.3	87.2	141.3	114.5
12-Aug	93.0	79.7	87.0	73.7	68.0	161.0	86.5	140.0	113.5
19-Aug	91.0	80.4	86.3	73.7	68.0	157.5	90.5	138.0	112.4
26-Aug	91.0	78.9	85.5	72.3	68.0	154.0	86.7	134.0	106.2
2-Sep	91.0	79.3	84.4	70.9	64.0	151.2	82.5	128.0	101.7
9-Sep	88.0	77.9	82.0	68.0	61.0	144.9	87.8	118.3	93.2
16-Sep	84.0	73.3	79.7	64.1	57.0	133.7	80.3	104.4	78.5
23-Sep	84.0	71.9	78.4	61.3	55.0	133.0	79.6	96.6	71.5
30-Sep	82.0	68.6	76.6	59.1	52.0	117.6	74.7	87.9	64.3
7-Oct	81.0	69.5	74.4	56.1	49.0	103.6	73.3	81.1	58.3
14-Oct	81.0	65.0	73.3	53.5	45.0	109.9	71.6	74.0	50.6
21-Oct	75.0	63.1	70.6	50.8	41.0	91.0	70.4	66.8	45.6
28-Oct	75.0	62.1	68.4	47.5	39.0	79.1	70.3	60.6	40.1
4-Nov	73.0	62.3	66.3	44.9	37.0	95.9	68.7	57.1	36.4
11-Nov	72.0	59.2	63.2	44.1	32.0	84.7	66.1	53.9	34.9
18-Nov	69.0	62.0	59.8	40.3	30.0	75.6	62.0	47.1	29.5
25-Nov	65.0	61.5	56.8	36.7	28.0	74.9	60.7	41.2	24.3
2-Dec	63.0	55.0	53.7	33.8	25.0	65.8	61.2	35.9	21.1
9-Dec	63.0	55.6	52.0	31.8	23.0	65.1	57.8	34.8	20.5
16-Dec	61.0	52.5	48.9	30.2	21.0	57.4	54.7	31.0	17.4
23-Dec	55.0	48.2	47.2	28.7	21.0	46.9	50.8	28.3	15.7
31-Dec	57.0	48.1	45.9	27.0	16.0	46.9	51.9	27.0	14.4



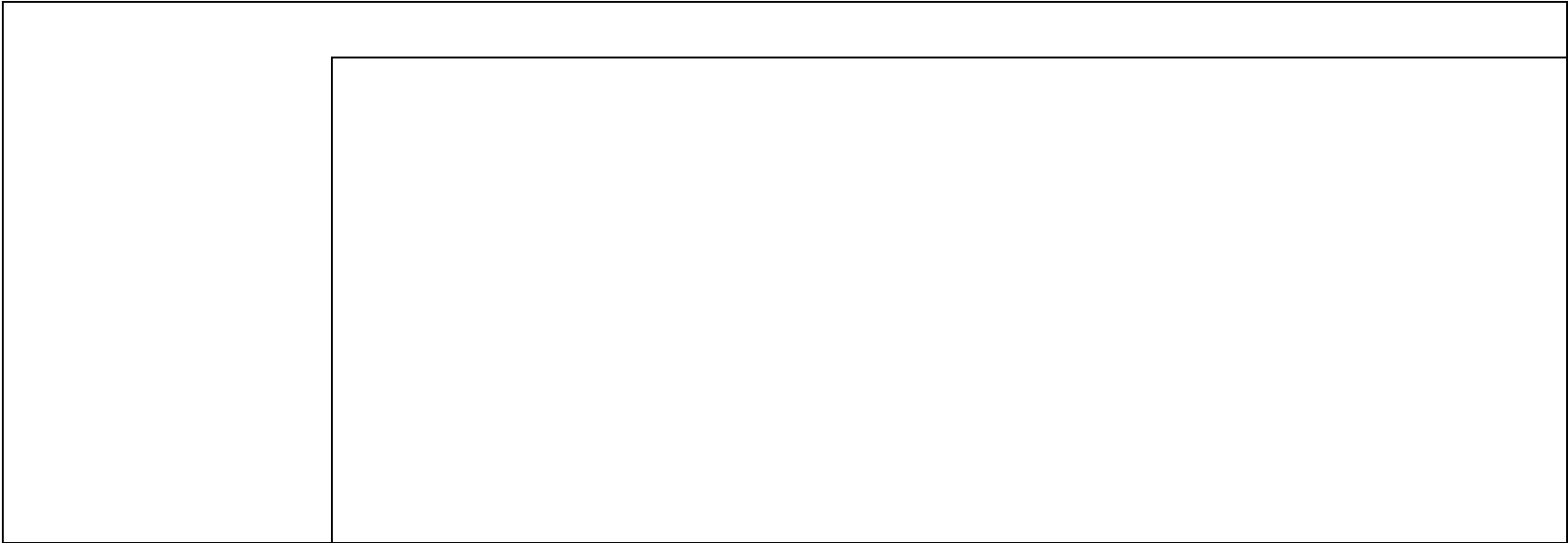
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	955
FEB	0	782
MAR	0	614
APR	11	304
MAY	65	112
JUN	160	17
JUL	342	1
AUG	406	0
SEP	187	24
OCT	45	185
NOV	3	484
DEC	0	828
ANN	1219	4306



	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	0	-27159	0	-5877
FEB	0	-22466	0	-4484
MAR	0	-18310	1	-2096
APR	5	-10008	43	-405
MAY	138	-4495	667	-13
JUN	550	-1070	5093	0
JUL	2726	-127	17467	0
AUG	3864	-20	19696	0
SEP	953	-1243	6331	0
OCT	69	-6551	426	-83
NOV	0	-14786	19	-1417
DEC	0	-23869	0	-4286
ANN	8305	-130104	49743	-18661

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

No Solar Radiation
Data Available

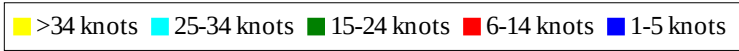
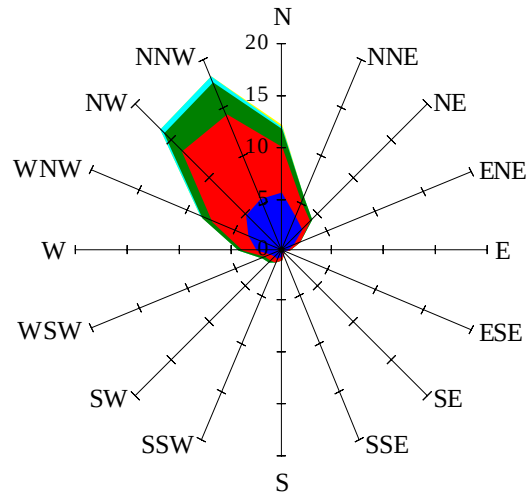


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

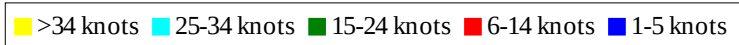
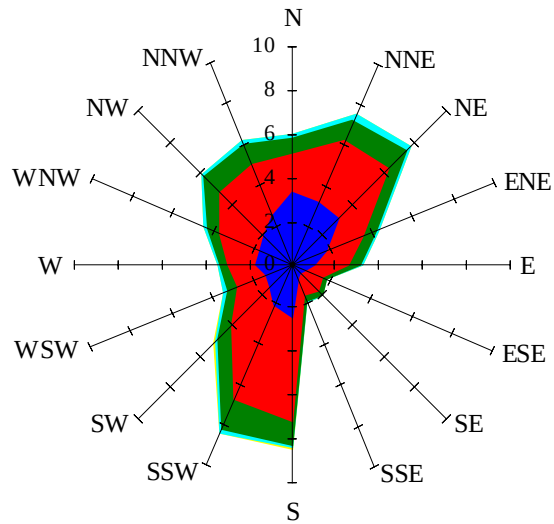
Labels of Percent Frequency on North Axis



Percent Calm = 21.88

Wind Summary - March, April, and May

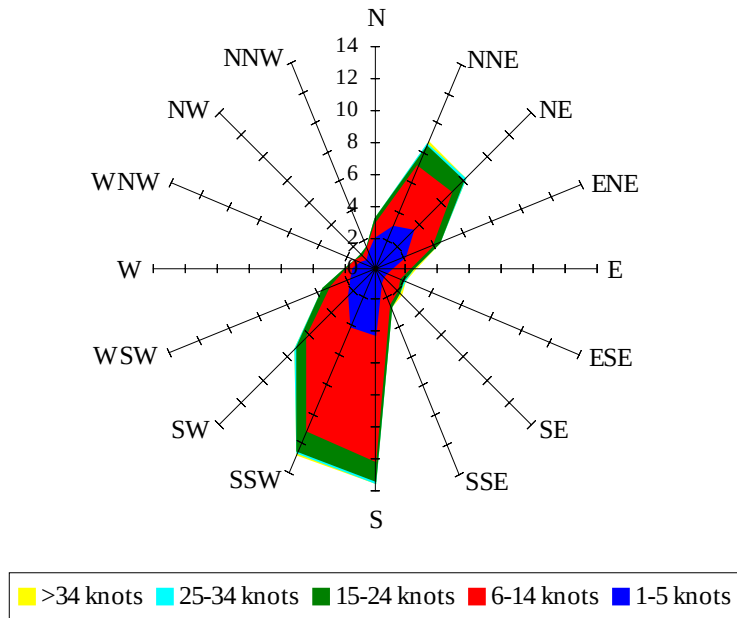
Labels of Percent Frequency on North Axis



Percent Calm = 21.07

Wind Summary - June, July, and August

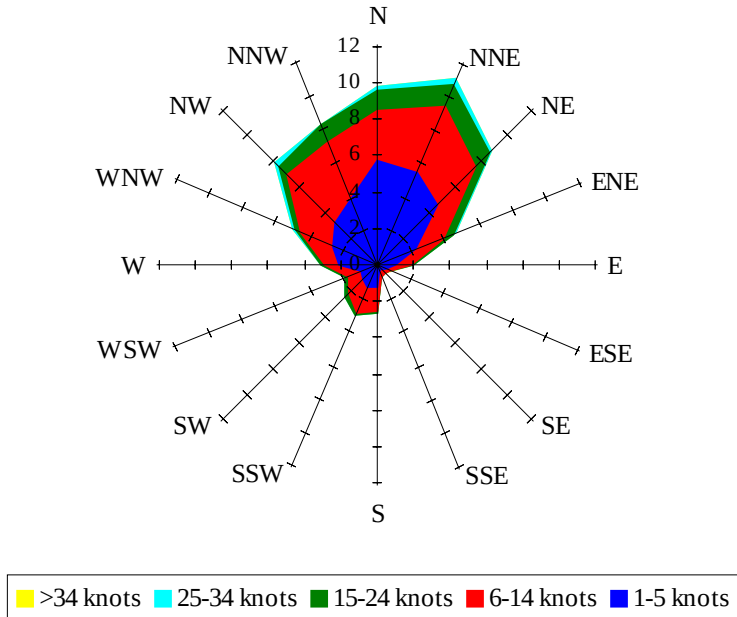
Labels of Percent Frequency on North Axis



Percent Calm = 23.56

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 27.91