

BARTER ISLAND AK

Latitude = 70.13 N

Longitude = 143.60 W

Period of Record = 1973 to 1992

WMO No. 700860

Elevation = 49 feet

Average Pressure = 29.91 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	65	56	54	8.4	E
0.4% Occurrence	55	51	48	9.5	E
1.0% Occurrence	51	48	44	10.9	E
2.0% Occurrence	48	46	42	11.1	E
Mean Daily Range	10	-	-	-	-
97.5% Occurrence	-34	-34	1	11.2	W
99.0% Occurrence	-39	-39	1	8.9	W
99.6% Occurrence	-43	-43	0	9.4	W
Median of Extreme Lows	-47	-46	0	8.9	WSW
	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	57	62	58	7.6	ESE
0.4% Occurrence	51	54	49	10.0	E
1.0% Occurrence	48	51	45	10.9	E
2.0% Occurrence	46	48	42	11.1	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	62	59	0.42	8.2	WSW
0.4% Occurrence	50	53	0.34	10.7	E
1.0% Occurrence	46	50	0.31	11.2	E
2.0% Occurrence	43	48	0.29	10.5	E
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	0	0	0

Other Site Data

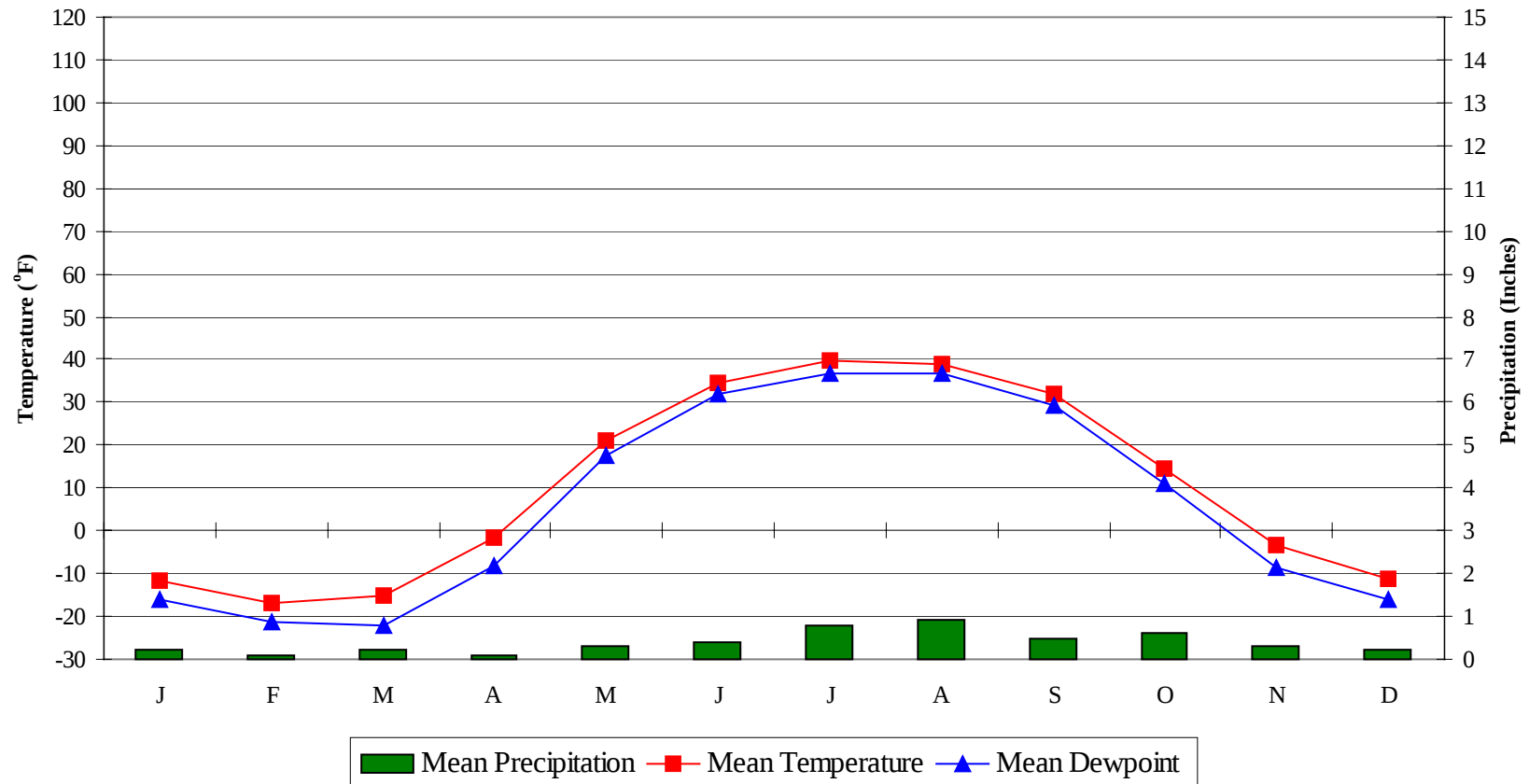
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
1	0.4	110	0.0 + 0.0
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
13.4	N/A	N/A	32

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

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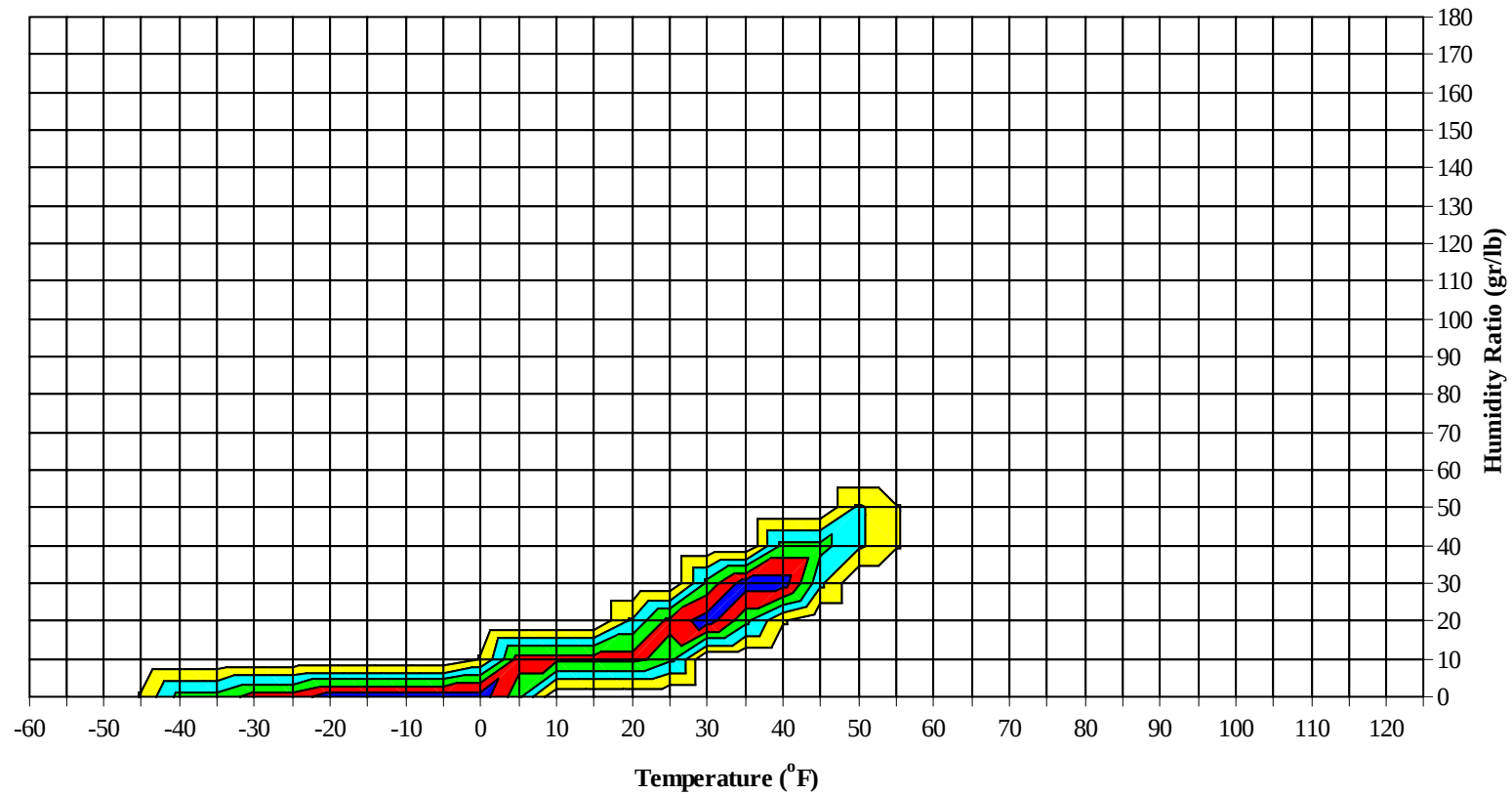
Average Annual Climate



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Long Term Psychrometric Summary

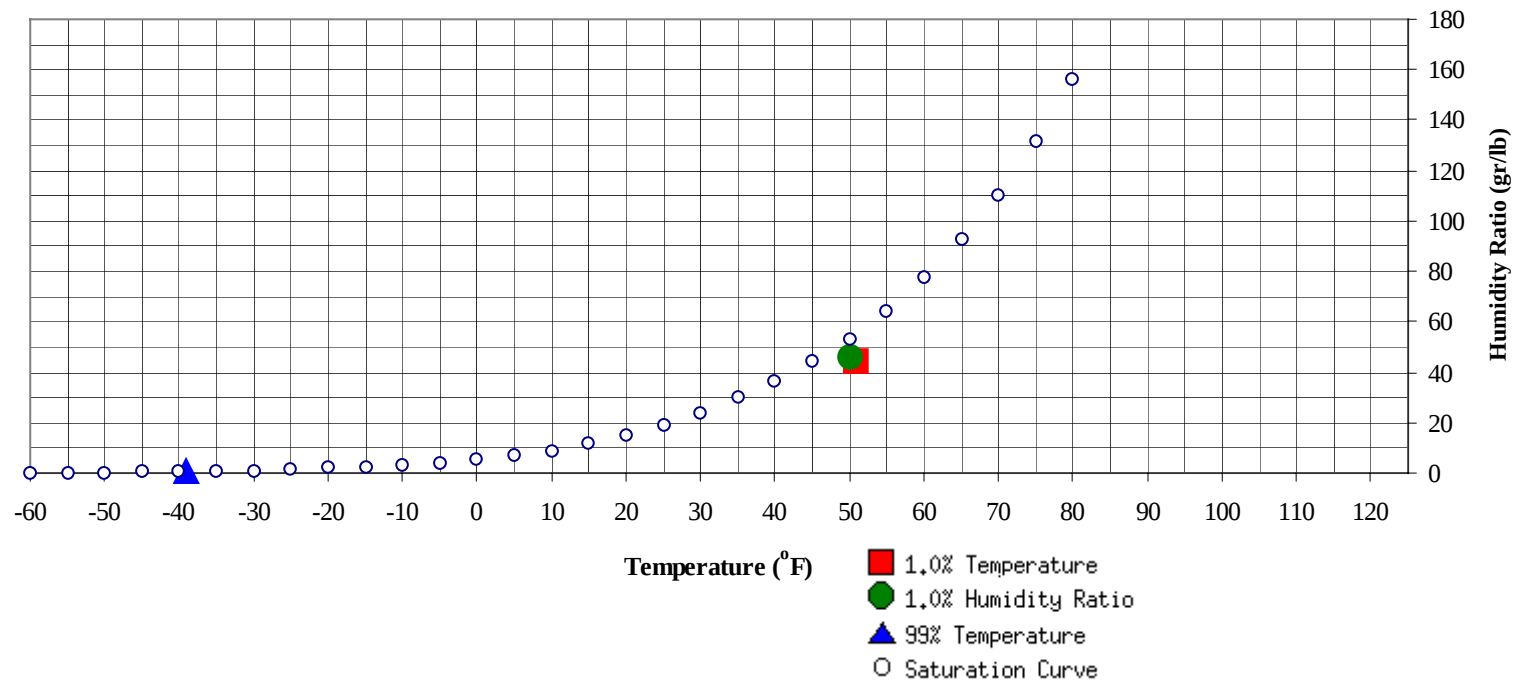


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	-39	0.7	-9.3		46.2	50.2	48	46.1	19.2

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	51	44.8	48	19.2

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

Period of Record = 1973 to 1992

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		
70 / 74															
65 / 69															
60 / 64															
55 / 59															
50 / 54															
45 / 49															
40 / 44															
35 / 39	0		0	0	34.5		0		0	34.0					
30 / 34	0	1	0	1	31.0	0	1	1	2	30.3	0	0	0	0	27.8
25 / 29	0	1	1	2	24.6	1	1	0	2	26.1	0	0	0	0	24.0
20 / 24	2	2	1	5	20.8	1	3	1	5	20.5	0	1	1	2	19.8
15 / 19	6	5	6	17	16.1	4	4	2	10	15.9	2	2	1	5	15.3
10 / 14	9	10	10	29	11.0	8	6	7	20	10.9	2	4	2	8	10.7
5 / 9	21	16	18	55	6.5	11	13	14	38	6.3	5	10	7	22	6.0
0 / 4	23	26	22	70	1.4	15	14	13	43	1.3	11	17	13	41	1.0
-5 / -1	25	23	24	71	-2.8	11	12	13	36	-2.9	14	22	20	56	-3.0
-10 / -6	29	31	25	85	-7.4	14	21	17	52	-7.5	25	37	29	91	-7.4
-15 / -11	30	24	28	82	-12.0	22	21	19	62	-12.1	38	44	40	122	-12.2
-20 / -16	31	33	35	99	-17.0	26	28	22	76	-16.9	36	37	40	113	-17.0
-25 / -21	26	26	23	74	-21.7	25	23	24	72	-21.8	37	33	41	111	-22.0
-30 / -26	21	22	22	64	-26.8	28	28	33	90	-27.1	34	23	27	84	-26.9
-35 / -31	15	15	18	48	-31.9	30	24	29	82	-32.0	23	12	19	54	-31.7
-40 / -36	6	9	6	21	-35.8	15	16	17	48	-36.3	13	5	6	24	-35.4
-45 / -41	4	3	5	12	-41.3	8	6	8	21	-41.9	5	1	2	8	-43.0
-50 / -46	1	2	2	5	-45.4	3	3	2	8	-46.5	2	1	0	3	-46.0
-55 / -51	1	1	1	3	-51.0	2	1	2	5	-50.4					
-60 / -56						0	0	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.

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

Period of Record = 1973 to 1992

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		
70 / 74															
65 / 69												0		0	55.0
60 / 64												1	0	1	54.2
55 / 59											1	2	1	4	51.4
50 / 54											1	2	2	5	47.7
45 / 49							0	0	0	41.8	4	7	5	16	43.4
40 / 44			0	0	33.0	0	3	1	4	38.0	11	29	22	62	39.0
35 / 39	0	1	1	2	33.2	3	14	9	26	34.3	51	98	73	222	35.2
30 / 34	1	5	3	9	30.0	20	46	41	108	30.6	135	91	120	346	31.8
25 / 29	3	8	8	19	25.6	49	51	53	154	26.1	34	9	15	58	27.0
20 / 24	8	13	8	29	20.9	48	48	50	147	21.4	2	1	2	5	22.1
15 / 19	9	15	13	38	16.0	47	44	43	135	16.4	1	0	0	1	17.8
10 / 14	12	22	21	55	11.0	39	30	34	103	11.3	0			0	13.3
5 / 9	19	33	26	78	6.1	23	10	11	44	6.5					
0 / 4	24	32	32	88	1.3	11	1	4	16	1.7					
-5 / -1	22	33	29	84	-3.1	5		1	6	-2.7					
-10 / -6	38	32	33	103	-7.3	2		0	2	-6.5					
-15 / -11	31	21	29	81	-12.2	0			0	-11.0					
-20 / -16	26	15	18	58	-16.8										
-25 / -21	23	8	12	43	-21.9										
-30 / -26	15	2	5	22	-26.6										
-35 / -31	6	1	1	8	-31.3										
-40 / -36	2	0	0	2	-35.0										
-45 / -41	1			1											
-50 / -46															
-55 / -51															
-60 / -56															

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

Period of Record = 1973 to 1992

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		
70 / 74		0		0	58.8										
65 / 69	0	1	0	1	58.1		0	0	0	59.0		0		0	52.0
60 / 64	0	3	2	5	55.0	0	1	0	1	54.6		1		1	52.0
55 / 59	3	6	5	14	51.8	1	6	4	11	51.4		1	0	1	48.5
50 / 54	10	16	13	39	48.4	7	17	11	35	48.5	0	3	2	5	46.7
45 / 49	19	33	30	82	44.5	22	37	28	87	45.1	2	8	3	13	43.3
40 / 44	45	65	61	171	40.2	52	64	63	178	40.6	8	20	14	42	39.8
35 / 39	104	98	95	296	36.1	87	76	79	243	36.2	44	59	48	151	35.8
30 / 34	65	27	42	134	32.6	68	43	56	168	32.1	103	96	107	305	31.4
25 / 29	2	0	1	3	28.5	10	4	7	21	27.3	54	34	39	127	26.6
20 / 24						0	0	0	0	23.4	17	13	17	47	21.3
15 / 19							0		0		10	6	7	23	16.9
10 / 14											1	1	2	4	12.2
5 / 9											1	0	0	1	6.6
0 / 4											0			0	4.0
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															
-45 / -41															
-50 / -46															
-55 / -51															
-60 / -56															

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

Period of Record = 1973 to 1992

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		
70 / 74															
65 / 69															
60 / 64															
55 / 59															
50 / 54															
45 / 49		0		0	41.0										
40 / 44		1	0	1	37.3										
35 / 39	0	3	0	3	34.3						0			0	32.5
30 / 34	10	12	9	31	30.2	1	1	1	3	30.5	0	0		0	30.3
25 / 29	39	42	45	127	26.0	3	4	2	9	25.6	0	1	0	1	24.7
20 / 24	55	50	45	150	21.4	8	8	5	21	21.0	3	3	3	9	20.7
15 / 19	38	37	33	108	16.5	12	13	11	36	15.9	7	6	6	19	16.0
10 / 14	29	31	33	93	11.5	25	22	23	69	11.2	13	12	15	39	11.2
5 / 9	25	24	29	79	6.5	29	30	28	87	6.4	16	15	14	45	6.5
0 / 4	20	20	23	62	1.9	32	35	34	100	1.5	19	22	20	61	1.2
-5 / -1	13	12	15	40	-3.1	23	20	21	63	-2.7	18	19	20	57	-2.9
-10 / -6	12	9	9	30	-7.3	30	30	27	87	-7.4	34	30	35	100	-7.2
-15 / -11	5	5	6	15	-12.3	24	26	27	77	-12.1	31	31	27	88	-12.0
-20 / -16	2	2	2	6	-16.2	24	24	27	75	-17.0	31	32	30	93	-17.0
-25 / -21	0	0	0	0	-21.8	16	13	15	44	-22.0	30	29	29	87	-21.9
-30 / -26	0	0		0		10	9	11	30	-26.7	25	24	21	70	-26.8
-35 / -31						5	5	5	15	-31.6	14	15	16	45	-31.8
-40 / -36						1	1	2	4	-35.0	8	6	6	20	-36.1
-45 / -41						0		0	0		1	3	3	7	-42.0
-50 / -46											0	0	0	0	-45.5
-55 / -51															
-60 / -56															

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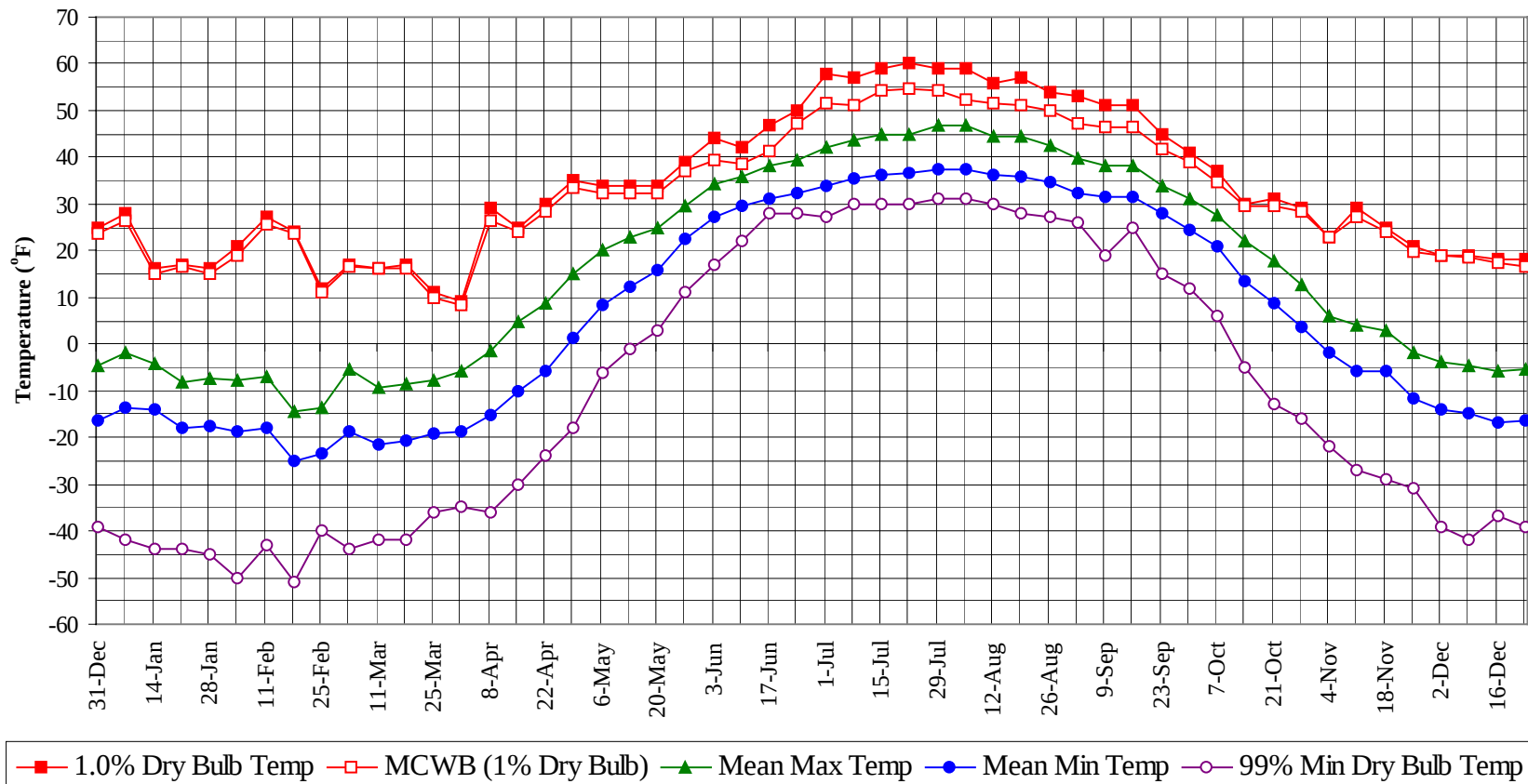
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1992

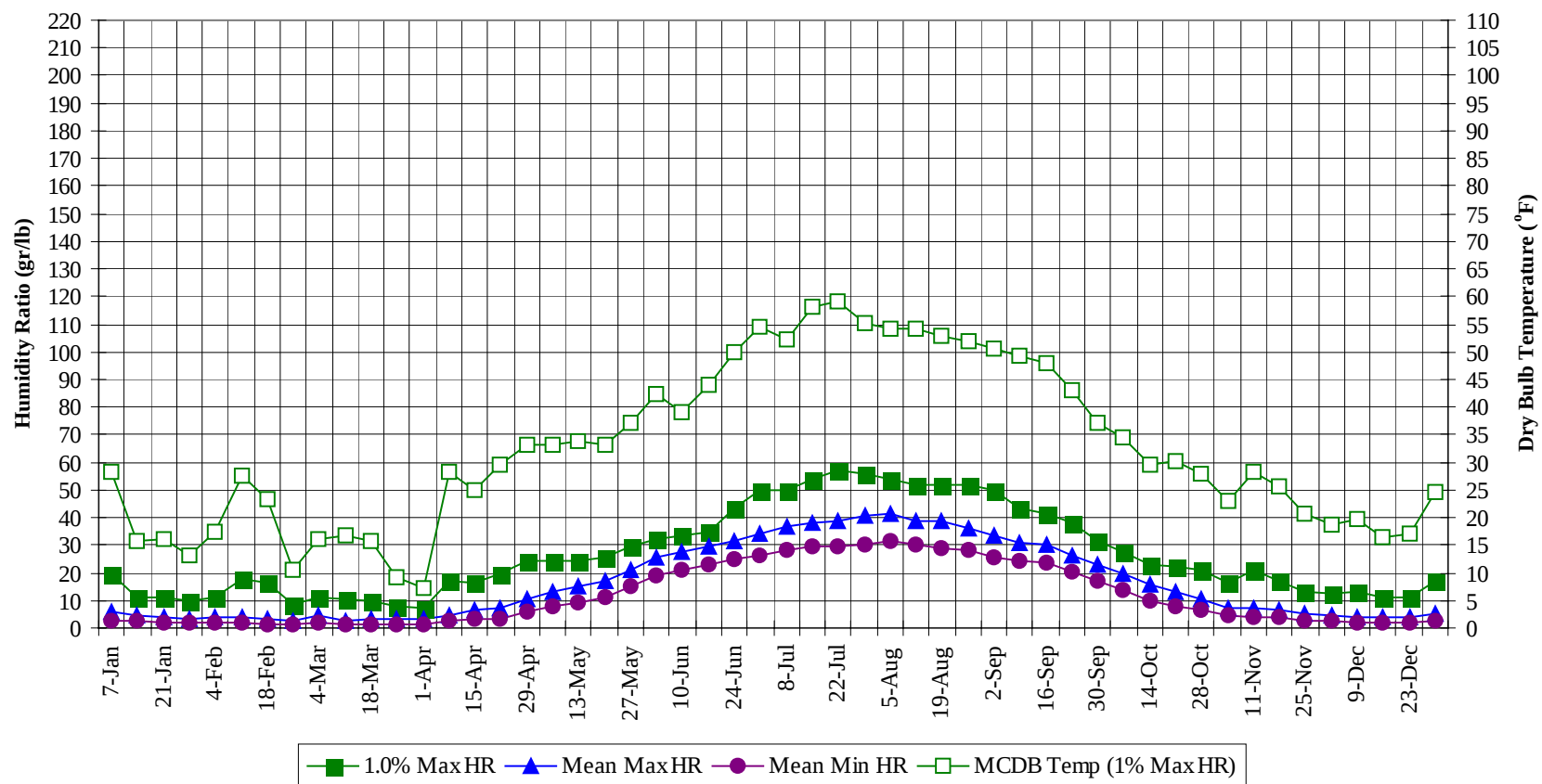
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
70 / 74	0			0	58.8
65 / 69	0	1	0	1	57.3
60 / 64	1	4	2	7	54.6
55 / 59	4	14	11	30	51.5
50 / 54	19	38	29	86	48.3
45 / 49	47	86	71	204	44.6
40 / 44	119	183	172	473	40.1
35 / 39	295	356	330	981	35.8
30 / 34	413	329	410	1153	31.6
25 / 29	200	158	176	535	26.3
20 / 24	145	140	135	420	21.3
15 / 19	136	132	123	392	16.3
10 / 14	135	137	140	412	11.2
5 / 9	148	150	141	439	6.4
0 / 4	153	166	152	472	1.4
-5 / -1	130	140	137	406	-2.9
-10 / -6	181	188	168	538	-7.3
-15 / -11	176	170	168	514	-12.1
-20 / -16	171	168	164	503	-17.0
-25 / -21	151	129	137	418	-21.9
-30 / -26	131	105	112	347	-26.9
-35 / -31	91	70	82	243	-31.8
-40 / -36	44	36	35	115	-36.0
-45 / -41	19	13	18	49	-41.7
-50 / -46	6	5	4	15	-45.8
-55 / -51	3	1	3	7	-50.7
-60 / -56	0	0	0	0	

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

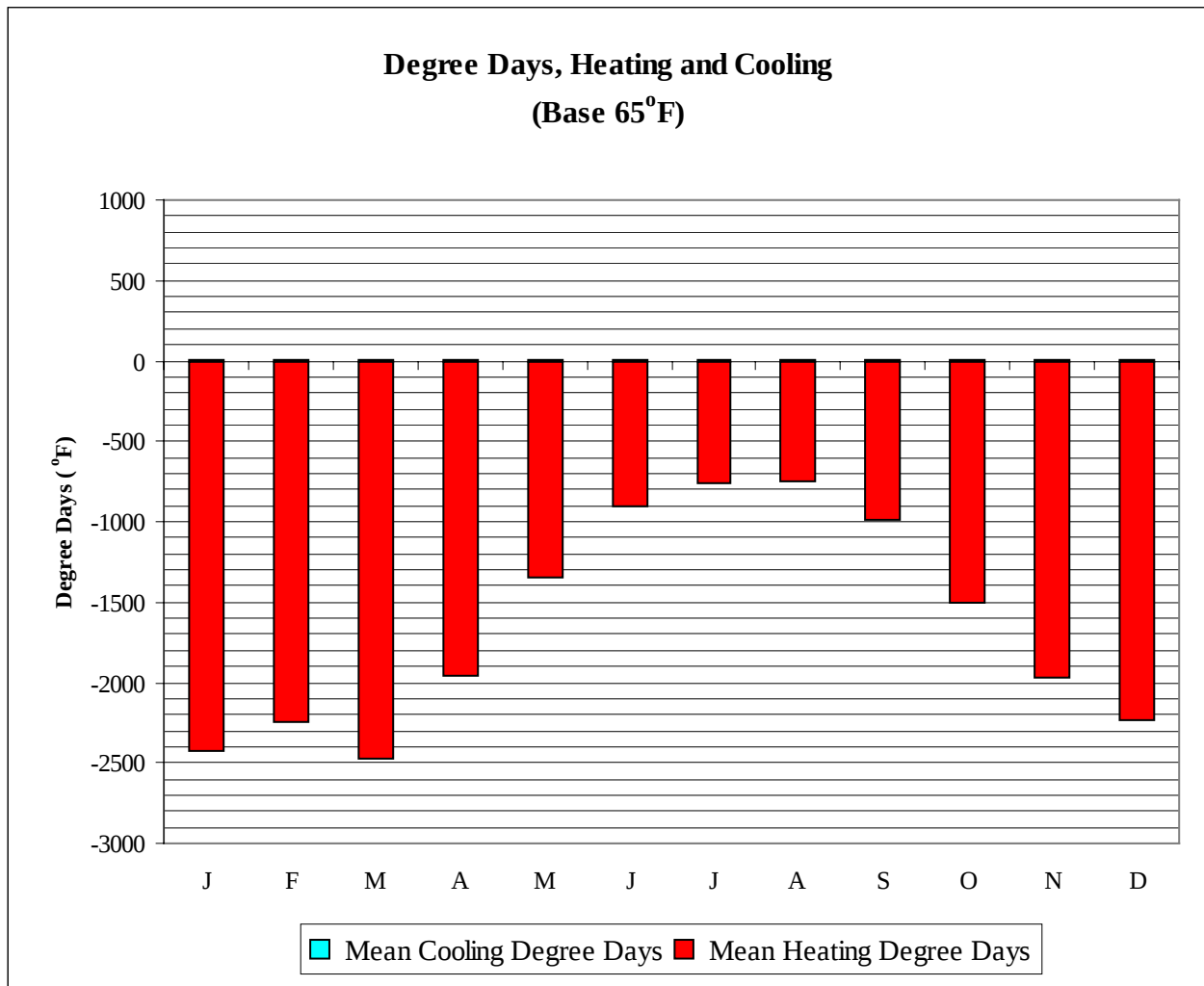


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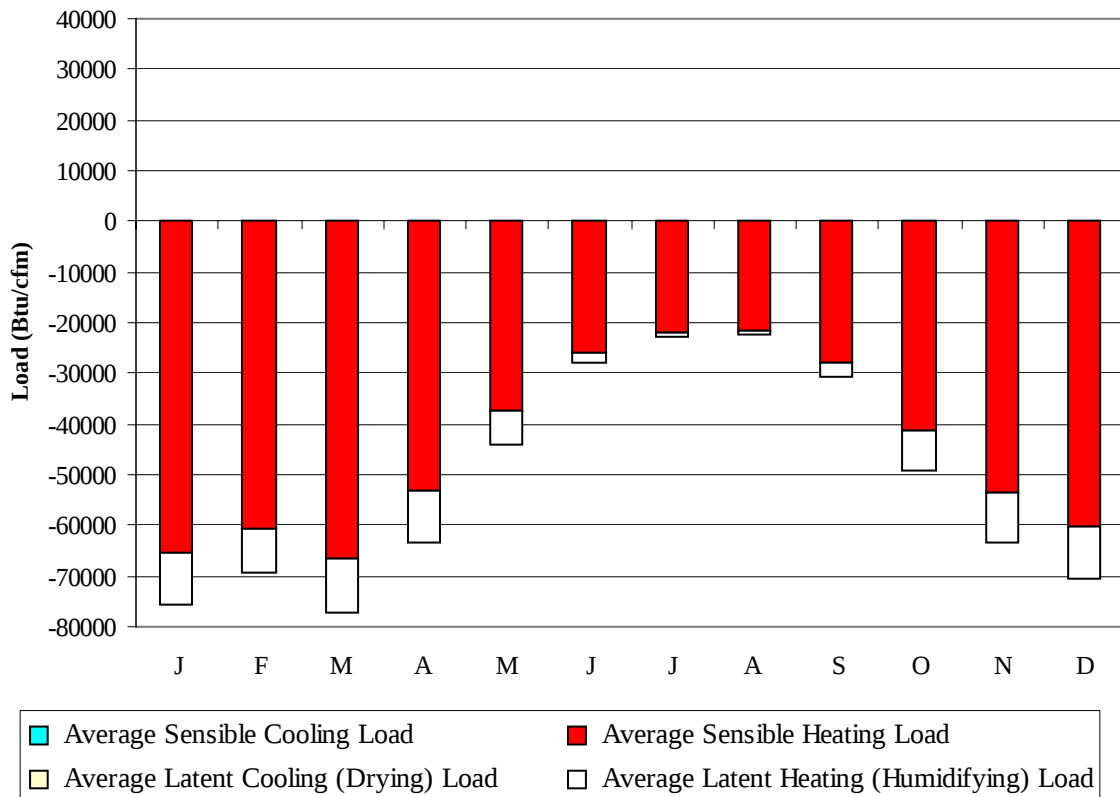
Long Term Dry Bulb Temperature and Humidity Summary

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	28.0	26.5	-1.8	-13.5	-42.0	19.6	28.4	5.6	2.8
14-Jan	16.0	15.1	-4.2	-14.1	-44.0	11.2	15.7	4.3	2.4
21-Jan	17.0	16.4	-8.3	-18.0	-44.0	11.2	16.2	3.6	2.0
28-Jan	16.0	15.0	-7.5	-17.5	-45.0	9.8	13.1	3.5	1.9
4-Feb	21.0	18.8	-7.7	-18.8	-50.0	11.2	17.5	3.7	1.7
11-Feb	27.0	25.8	-7.0	-18.1	-43.0	17.5	27.5	4.1	2.0
18-Feb	24.0	23.7	-14.3	-25.1	-51.0	16.1	23.3	3.1	1.6
25-Feb	12.0	11.0	-13.6	-23.7	-40.0	8.4	10.5	2.5	1.3
4-Mar	17.0	16.6	-5.3	-18.9	-44.0	11.2	16.0	4.4	1.8
11-Mar	16.0	16.0	-9.5	-21.4	-42.0	10.5	16.7	2.9	1.4
18-Mar	17.0	16.0	-8.6	-20.9	-42.0	9.8	15.8	3.1	1.5
25-Mar	11.0	10.0	-7.6	-19.0	-36.0	7.7	9.1	3.0	1.5
1-Apr	9.0	8.3	-5.9	-18.7	-35.0	7.0	7.2	3.2	1.6
8-Apr	29.0	26.4	-1.3	-15.1	-36.0	16.8	28.1	4.8	2.3
15-Apr	25.0	23.9	4.8	-10.3	-30.0	16.1	25.0	6.5	3.2
22-Apr	30.0	28.3	8.9	-5.8	-24.0	19.6	29.5	7.5	3.6
29-Apr	35.0	33.5	15.2	1.3	-18.0	24.5	33.2	10.8	5.6
6-May	34.0	32.2	20.0	8.2	-6.0	24.5	33.2	13.2	7.7
13-May	34.0	32.5	22.8	12.5	-1.0	24.5	33.7	15.2	9.5
20-May	34.0	32.4	24.7	15.9	3.0	25.9	33.2	16.9	11.1
27-May	39.0	37.0	29.5	22.5	11.0	29.4	37.2	21.1	15.3
3-Jun	44.0	39.2	34.3	27.2	17.0	32.2	42.3	25.3	19.0
10-Jun	42.0	38.6	36.0	29.5	22.0	33.6	39.1	27.6	21.2
17-Jun	47.0	41.5	38.3	31.1	28.0	35.0	44.0	29.7	23.2
24-Jun	50.0	47.3	39.4	32.3	28.0	43.4	49.8	31.5	24.7
1-Jul	58.0	51.6	42.2	33.8	27.0	49.7	54.6	34.5	26.1
8-Jul	57.0	51.1	43.7	35.3	30.0	49.7	52.4	36.8	28.5
15-Jul	59.0	54.2	44.8	36.3	30.0	53.9	58.1	37.9	29.3
22-Jul	60.0	54.6	44.8	36.6	30.0	57.4	59.1	39.0	29.3
29-Jul	59.0	54.4	46.7	37.4	31.0	56.0	55.2	40.9	30.1
5-Aug	59.0	52.5	46.7	37.5	31.0	53.9	54.3	41.7	31.3
12-Aug	56.0	51.5	44.5	36.2	30.0	51.8	54.2	39.0	30.0
19-Aug	57.0	51.1	44.4	35.8	28.0	51.8	53.0	38.6	29.1
26-Aug	54.0	50.1	42.6	34.5	27.0	51.8	52.0	36.3	28.0
2-Sep	53.0	47.4	40.0	32.5	26.0	49.7	50.7	33.8	25.3
9-Sep	51.0	46.4	38.3	31.5	19.0	43.4	49.3	31.2	24.4
16-Sep	51.0	46.5	38.1	31.4	25.0	41.3	48.0	30.4	23.6
23-Sep	45.0	41.9	33.9	28.0	15.0	37.8	43.1	26.0	20.4
30-Sep	41.0	38.8	31.0	24.3	12.0	31.5	37.3	22.7	16.8
7-Oct	37.0	34.7	27.5	21.0	6.0	27.3	34.3	19.4	14.1
14-Oct	30.0	29.5	22.0	13.3	-5.0	23.1	29.4	15.6	10.0
21-Oct	31.0	29.6	17.9	8.9	-13.0	22.4	30.3	12.9	7.9
28-Oct	29.0	28.3	12.5	3.8	-16.0	21.0	27.8	10.3	6.5
4-Nov	23.0	22.7	6.1	-1.7	-22.0	16.1	23.0	7.1	4.5
11-Nov	29.0	27.1	4.0	-5.7	-27.0	21.0	28.1	7.3	4.1
18-Nov	25.0	24.1	2.9	-6.0	-29.0	16.8	25.6	6.6	3.8
25-Nov	21.0	19.8	-1.8	-11.7	-31.0	13.3	20.6	5.0	2.7
2-Dec	19.0	18.8	-3.9	-14.2	-39.0	12.6	18.7	4.7	2.4
9-Dec	19.0	18.6	-4.5	-14.8	-42.0	13.3	19.8	4.2	2.2
16-Dec	18.0	17.4	-6.0	-17.0	-37.0	11.2	16.4	3.9	2.1
23-Dec	18.0	16.5	-5.4	-16.6	-39.0	11.2	17.2	4.1	2.1
31-Dec	25.0	23.7	-4.6	-16.4	-39.0	16.8	24.6	5.0	2.3



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	2422
FEB	0	2251
MAR	0	2468
APR	0	1955
MAY	0	1353
JUN	0	908
JUL	0	761
AUG	0	751
SEP	0	985
OCT	0	1498
NOV	0	1975
DEC	0	2232
ANN	0	19559

Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	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	-65216	0	-10334
FEB	0	-60503	0	-8747
MAR	0	-66393	0	-10955
APR	0	-53014	0	-10262
MAY	0	-37485	0	-6790
JUN	0	-25877	0	-2074
JUL	0	-22119	0	-683
AUG	0	-21769	0	-794
SEP	0	-27869	0	-2937
OCT	0	-41161	0	-7861
NOV	0	-53445	0	-9982
DEC	0	-60143	0	-10569
ANN	0	-534994	0	-81988

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

No Solar Radiation
Data Available

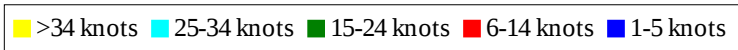
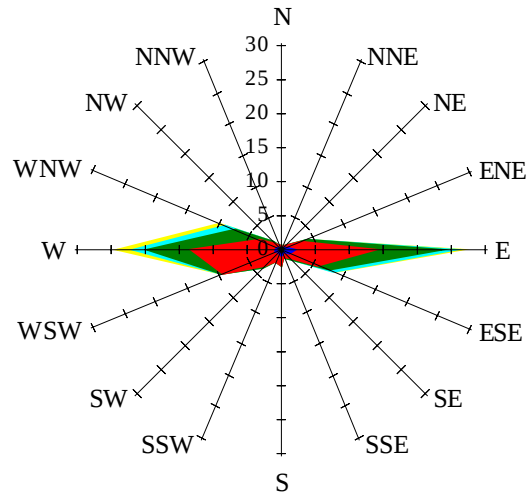


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

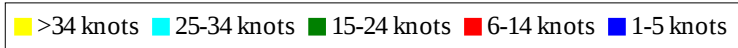
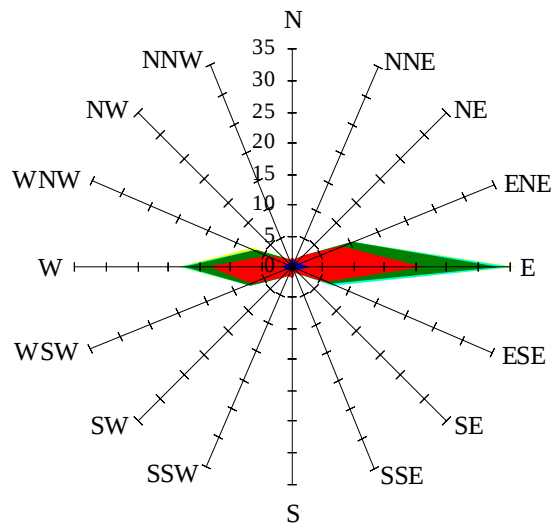
Labels of Percent Frequency on North Axis



Percent Calm = 2.91

Wind Summary - March, April, and May

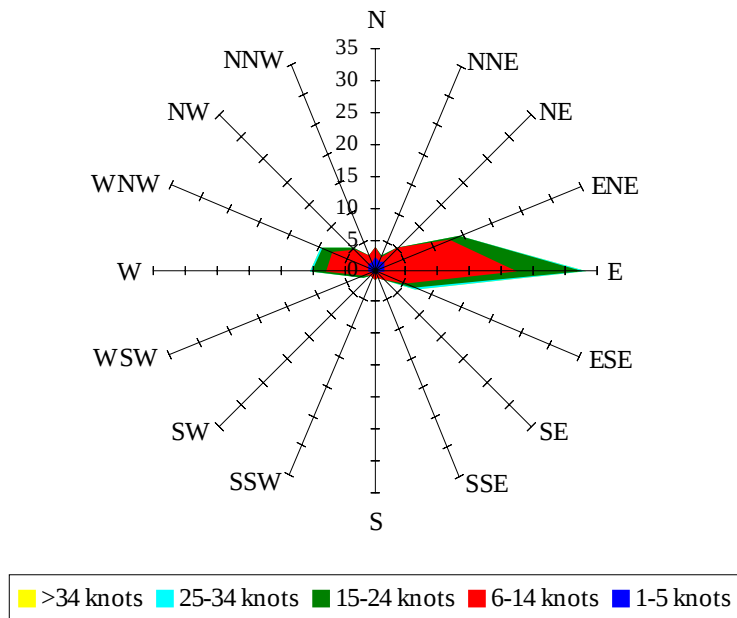
Labels of Percent Frequency on North Axis



Percent Calm = 1.94

Wind Summary - June, July, and August

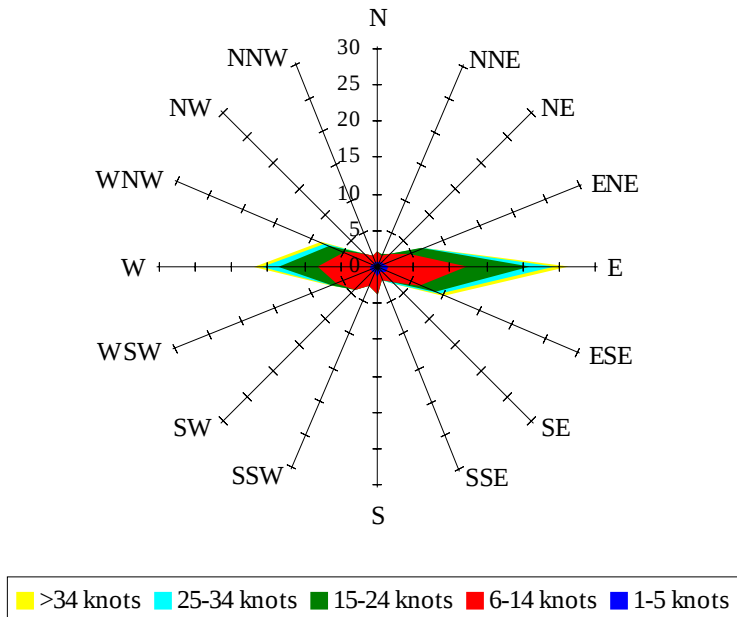
Labels of Percent Frequency on North Axis



Percent Calm = 1.01

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 1.63