

MOLINE/QUAD CITY IL

Latitude = 41.45 N

WMO No. 725440

Longitude = 90.52 W

Elevation = 594 feet

Period of Record = 1973 to 1996

Average Pressure = 29.36 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	97	77	113	12.0	SSW
0.4% Occurrence	93	76	112	11.5	SSW
1.0% Occurrence	90	75	107	11.0	S
2.0% Occurrence	88	73	104	10.7	S
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	5	4	5	10.2	WNW
99.0% Occurrence	-3	-4	3	10.1	W
99.6% Occurrence	-9	-10	2	8.9	WNW
Median of Extreme Lows	-13	-13	2	10.5	W
	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	82	92	148	10.3	SSW
0.4% Occurrence	79	90	133	10.3	S
1.0% Occurrence	77	87	125	9.9	S
2.0% Occurrence	75	84	118	9.3	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	153	88	1.00	8.4	S
0.4% Occurrence	135	85	0.88	9.7	S
1.0% Occurrence	130	83	0.85	8.2	S
2.0% Occurrence	122	82	0.79	8.8	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		46	724	440	1304

Other Site Data

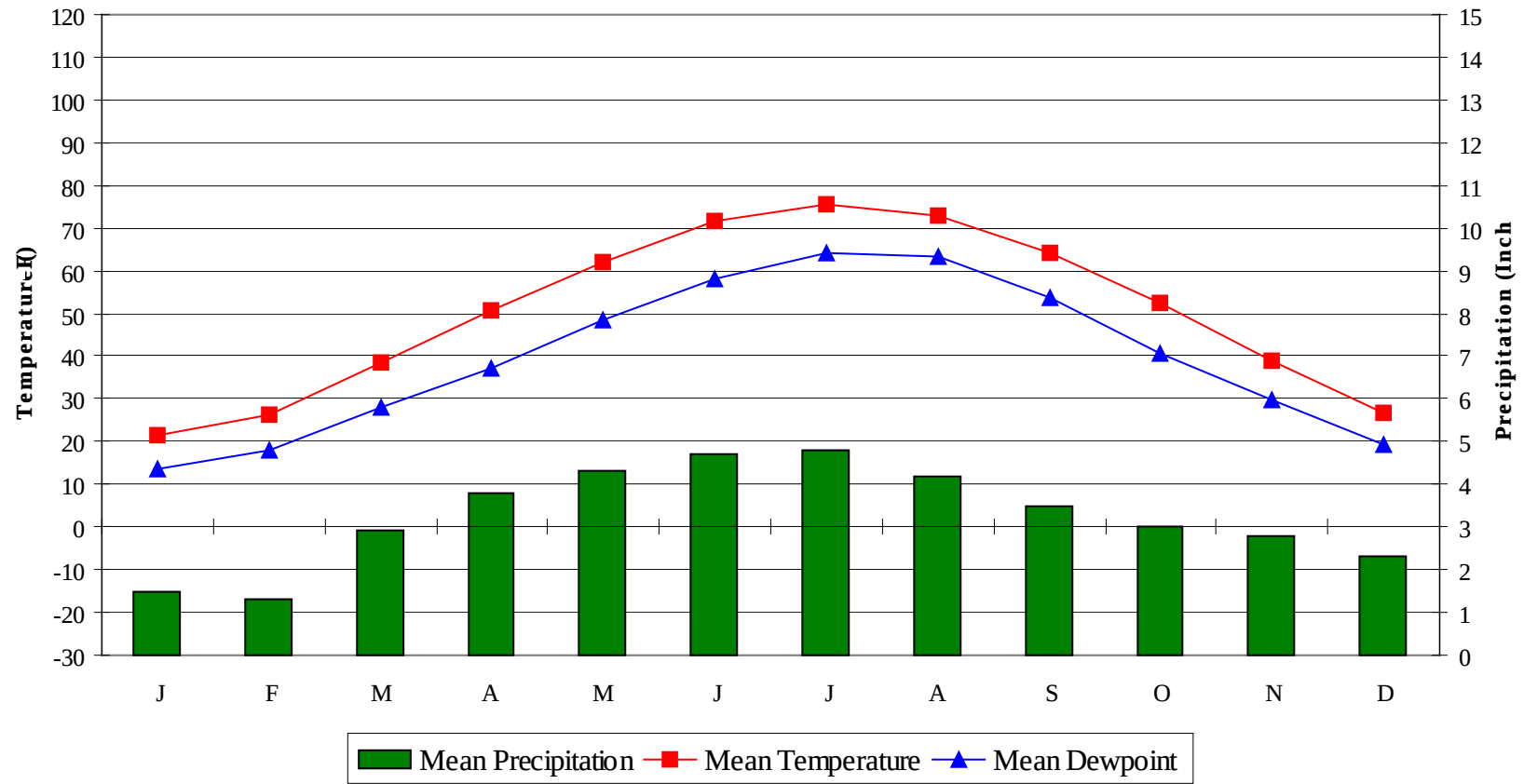
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
6	3.3	90	1.9 + 0.7
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
52.5	64	19	61

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

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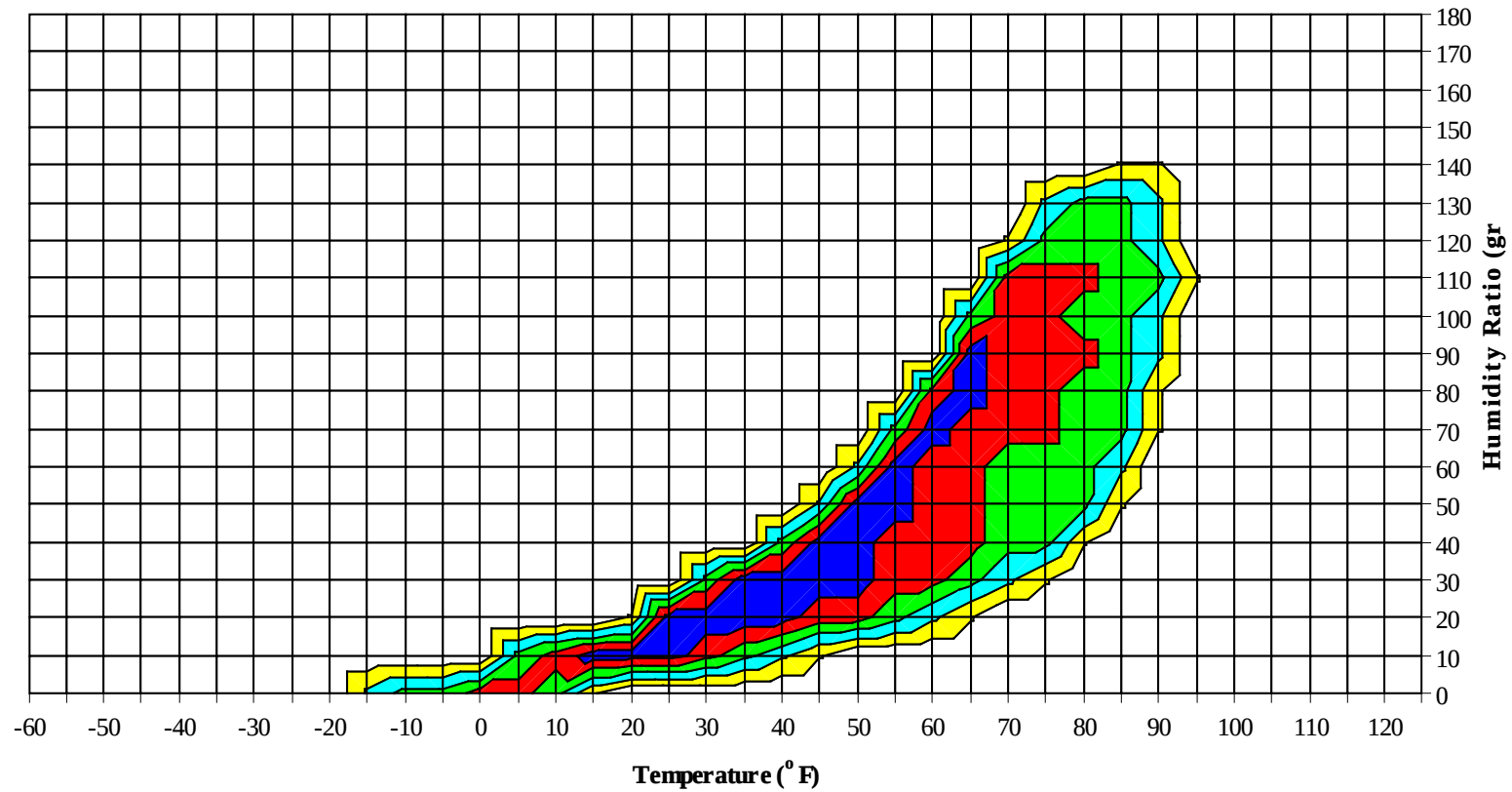
Average Annual Climate



MOLINE/QUAD CITY IL

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Long Term Psychrometric Summary

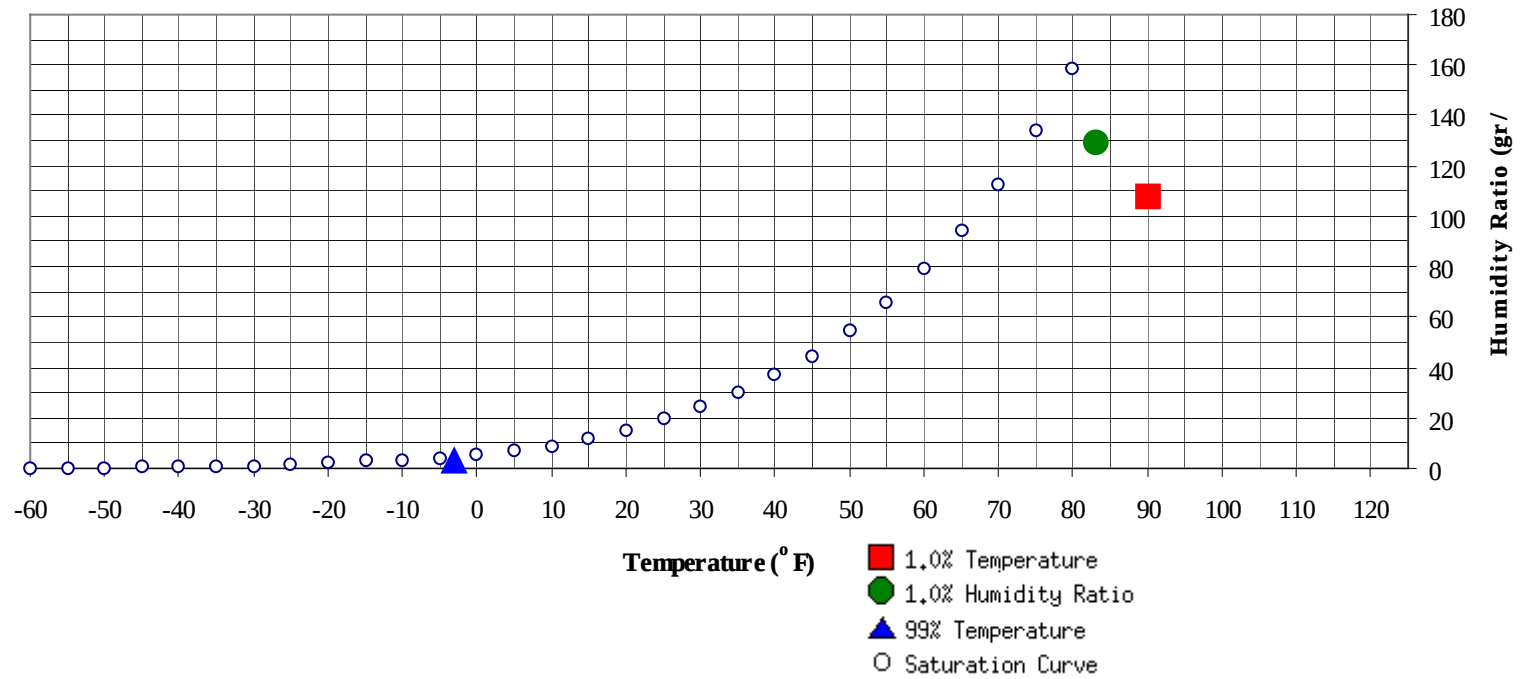


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	-3	2.9	-0.3		129.5	83.1	76.5	74	40.3

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	90	107.9	74.7	38.6

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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		
100 / 104															
95 / 99															
90 / 94															
85 / 89												0	0	0	63.3
80 / 84												1	0	1	62.3
75 / 79												2	1	3	60.6
70 / 74												0	6	2	57.9
65 / 69		0	0	0	55.8		0	0	0	51.1		1	7	4	56.2
60 / 64		0	0	0	48.3		3	0	3	50.1		4	12	8	53.2
55 / 59	0	1	1	2	50.6	1	5	2	7	48.3	7	16	13	36	49.9
50 / 54	1	3	2	6	47.6	1	7	4	12	44.7	9	27	18	53	45.3
45 / 49	1	6	3	10	41.6	4	15	9	27	41.2	13	31	27	71	41.4
40 / 44	3	14	10	26	37.7	9	22	18	49	37.6	29	42	40	111	37.8
35 / 39	18	28	24	71	33.9	21	31	33	85	33.8	50	41	46	137	33.6
30 / 34	40	43	44	127	30.0	47	40	42	129	29.8	51	31	41	123	29.4
25 / 29	38	39	40	117	24.9	32	28	31	91	24.7	34	16	23	73	24.6
20 / 24	31	28	32	92	20.2	30	23	25	79	20.2	25	9	14	47	20.1
15 / 19	27	24	21	72	15.2	20	19	19	58	15.2	13	5	7	24	15.4
10 / 14	22	23	25	70	10.5	16	13	14	43	10.5	7	2	3	12	10.6
5 / 9	20	14	19	52	5.8	15	9	12	35	5.8	4	1	1	6	6.2
0 / 4	20	12	14	45	1.0	11	5	9	25	1.0	1	0	0	2	1.3
-5 / -1	11	4	7	22	-3.3	7	2	3	13	-3.1	1		0	1	-2.9
-10 / -6	10	4	4	18	-7.6	6	1	2	8	-7.2	0			0	-6.7
-15 / -11	5	2	3	10	-12.5	3	0	1	4	-12.1					
-20 / -16	3	1	2	5	-17.2	2	0	0	2	-17.0					
-25 / -21	1	0	0	1	-20.8	1	0	0	1	-21.4					
-30 / -26						0			0	-26.3					

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.

MOLINE/QUAD CITY IL

WMO No. 725440

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												1	0	1	74.6
95 / 99												2	0	2	74.7
90 / 94		0	0	0	66.9		2	0	2	71.7		15	4	19	73.6
85 / 89		3	0	3	65.6		13	3	16	69.0	0	36	13	49	71.4
80 / 84		7	3	10	64.4	0	25	10	35	66.3	4	57	29	89	68.4
75 / 79		11	5	16	62.1	3	34	17	54	63.1	17	53	44	115	66.5
70 / 74	2	16	11	28	58.9	12	37	31	80	61.3	46	38	52	136	64.5
65 / 69	8	23	15	46	56.0	27	46	43	117	58.6	59	23	47	129	61.6
60 / 64	14	34	26	73	53.0	43	40	47	129	55.8	52	10	32	94	57.7
55 / 59	16	35	32	82	49.1	43	28	40	111	51.5	35	3	14	52	53.5
50 / 54	33	36	41	110	45.7	48	13	32	94	47.6	23	1	5	28	49.5
45 / 49	43	32	38	113	42.1	38	7	17	62	43.6	5		1	6	45.5
40 / 44	45	23	31	99	38.0	21	1	7	29	39.4	1		0	1	42.7
35 / 39	37	14	22	73	33.9	11	1	2	14	35.2					
30 / 34	26	4	10	41	29.5	2		0	3	30.7					
25 / 29	12	2	4	18	25.1										
20 / 24	4	0	1	5	20.4										
15 / 19	1	0	0	1	15.8										
10 / 14	0		0	1	10.3										
5 / 9	0		0	0	8.0										
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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MOLINE/QUAD CITY IL

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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		
100 / 104		1	0	1	78.9		1	0	1	78.7					
95 / 99		9	2	10	77.4		5	1	6	78.0		1	0	1	75.8
90 / 94	0	28	9	37	75.9		18	5	22	77.0		5	1	6	74.1
85 / 89	1	53	23	77	73.5	0	38	14	53	74.2		15	3	17	72.1
80 / 84	11	69	45	125	71.1	5	59	32	96	71.6	0	31	10	41	69.1
75 / 79	37	49	55	141	69.5	25	60	48	134	69.4	6	38	21	65	67.0
70 / 74	70	27	59	155	67.4	57	42	62	161	67.3	20	44	34	98	64.6
65 / 69	62	10	36	107	63.8	64	17	43	125	63.7	35	46	40	120	61.0
60 / 64	45	2	17	65	59.7	52	5	27	85	59.7	43	32	45	120	57.3
55 / 59	17	0	3	21	55.5	28	0	12	41	55.4	42	17	39	99	53.3
50 / 54	4		0	5	51.5	13	0	3	16	51.0	44	9	28	81	49.0
45 / 49	0			0	46.4	3		0	4	47.6	27	2	14	43	44.8
40 / 44						0			0	42.3	13	0	5	18	40.6
35 / 39											7	0	2	8	36.1
30 / 34											2		0	3	32.0
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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MOLINE/QUAD CITY IL

WMO No. 725440

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															
85 / 89		1	0	1	65.9										
80 / 84		6	1	6	66.2										
75 / 79		13	2	15	62.7		0		0	62.7					
70 / 74	1	26	8	34	60.2		3	0	3	59.5					
65 / 69	9	32	18	60	58.1	1	6	3	9	58.8	0	0	0	1	61.2
60 / 64	17	38	31	86	54.8	4	12	7	24	56.1	0	1	1	3	57.5
55 / 59	28	40	36	105	50.8	11	21	13	45	51.8	2	4	2	8	51.6
50 / 54	39	43	43	125	46.6	16	26	18	61	46.5	4	5	4	13	46.9
45 / 49	46	26	44	116	42.7	17	29	25	72	42.2	3	10	5	18	42.3
40 / 44	40	15	34	89	38.6	27	37	35	100	38.2	8	19	12	38	38.2
35 / 39	36	6	21	63	34.5	44	43	45	132	33.9	23	45	35	104	33.9
30 / 34	23	1	8	32	30.4	46	33	42	121	29.3	54	52	60	167	29.9
25 / 29	7	0	2	9	26.0	38	16	28	81	24.7	44	36	42	122	25.0
20 / 24	2		0	2	21.3	19	8	12	39	20.4	33	24	26	83	20.2
15 / 19	0			0	17.7	9	3	7	19	15.6	24	16	21	61	15.3
10 / 14						6	1	2	9	11.1	17	14	14	45	10.4
5 / 9						2	0	1	3	6.3	11	10	11	32	6.0
0 / 4						0	0	0	1	0.6	10	5	8	24	1.1
-5 / -1						0	0	0	1	-3.6	5	2	3	10	-3.3
-10 / -6						0			0	-7.3	5	2	2	9	-7.4
-15 / -11											3	1	1	5	-12.1
-20 / -16											2	0	0	2	-16.4
-25 / -21											0			0	-21.3
-30 / -26															

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MOLINE/QUAD CITY IL

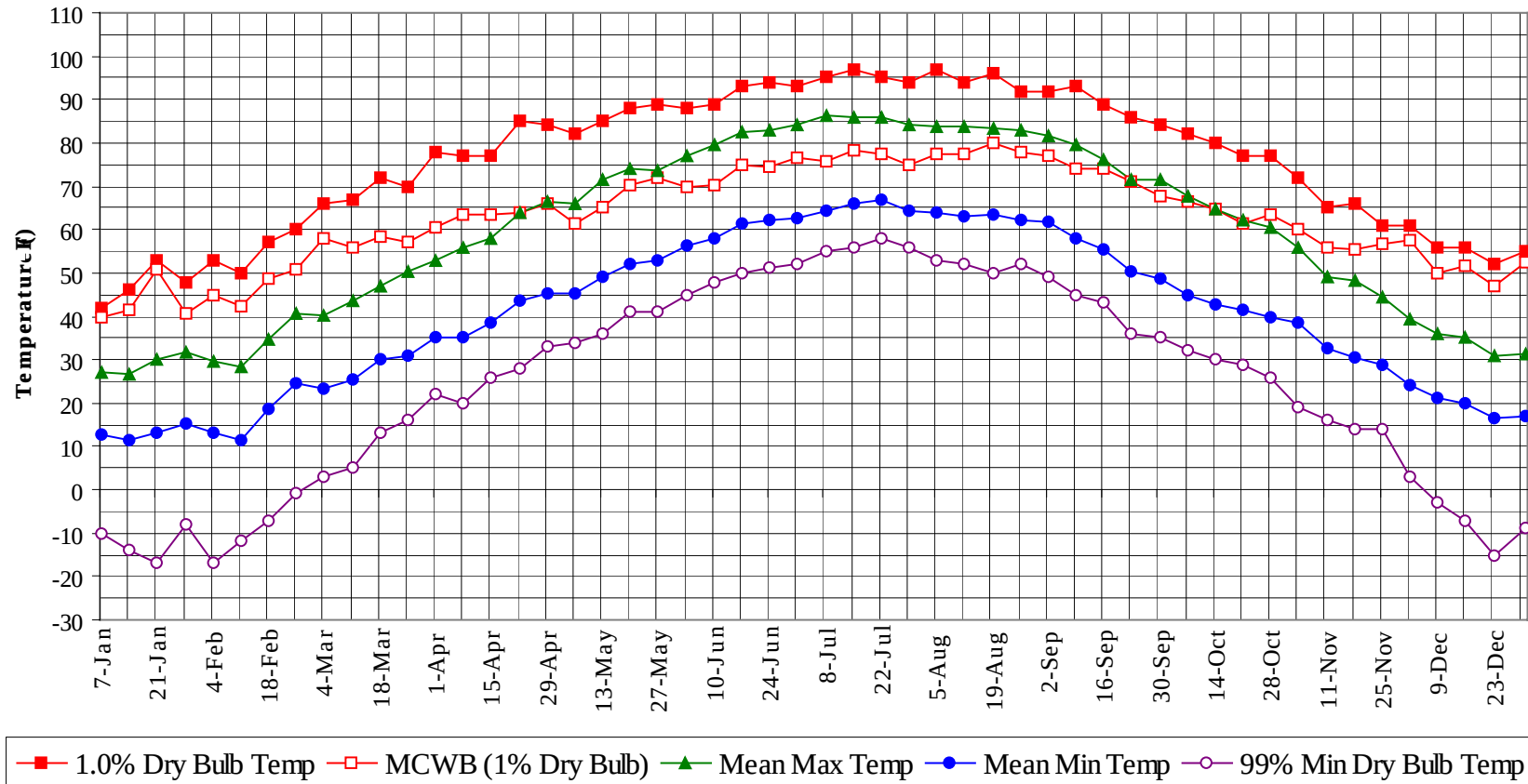
WMO No. 725440

Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)**Period of Record = 1973 to 1996**

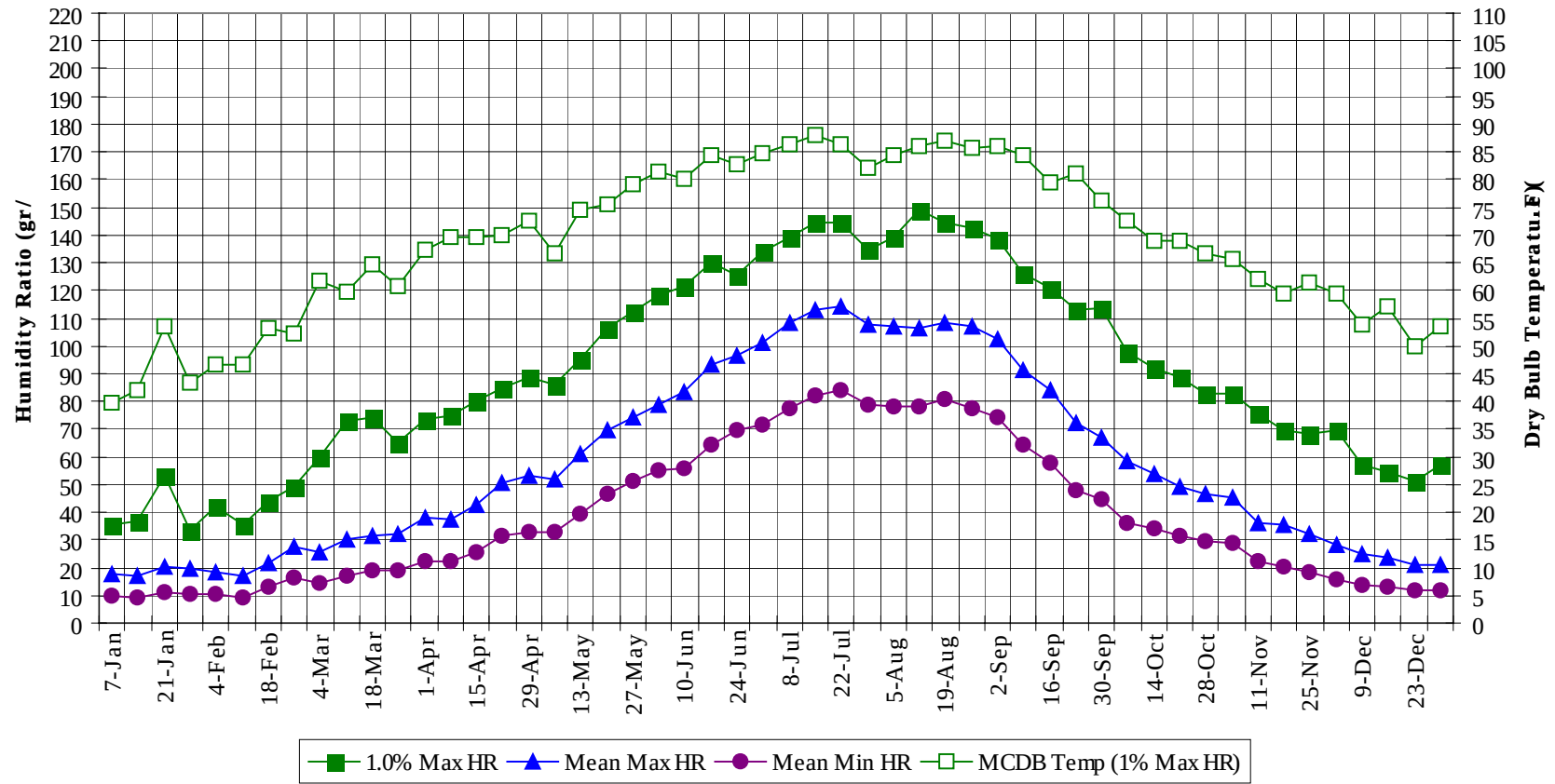
Temperature Range (°F)	Annual Totals				
	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
100 / 104		3	0	3	77.8
95 / 99		16	3	19	77.2
90 / 94	0	67	18	85	75.5
85 / 89	2	157	56	216	72.6
80 / 84	21	252	128	402	69.8
75 / 79	88	258	193	539	67.5
70 / 74	208	236	257	701	64.9
65 / 69	263	211	248	722	60.9
60 / 64	274	189	239	702	56.6
55 / 59	228	171	207	605	51.8
50 / 54	234	170	197	601	47.1
45 / 49	200	159	182	541	42.6
40 / 44	196	174	192	562	38.2
35 / 39	248	209	233	690	33.9
30 / 34	293	206	250	750	29.7
25 / 29	207	136	170	514	24.8
20 / 24	144	94	112	351	20.2
15 / 19	94	67	75	237	15.3
10 / 14	70	52	59	181	10.5
5 / 9	52	33	44	129	5.9
0 / 4	44	23	31	98	1.0
-5 / -1	24	9	13	46	-3.3
-10 / -6	21	7	8	36	-7.4
-15 / -11	11	4	5	19	-12.3
-20 / -16	6	1	2	10	-17.0
-25 / -21	1	0	0	2	-21.1
-30 / -26	0			0	-26.3

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



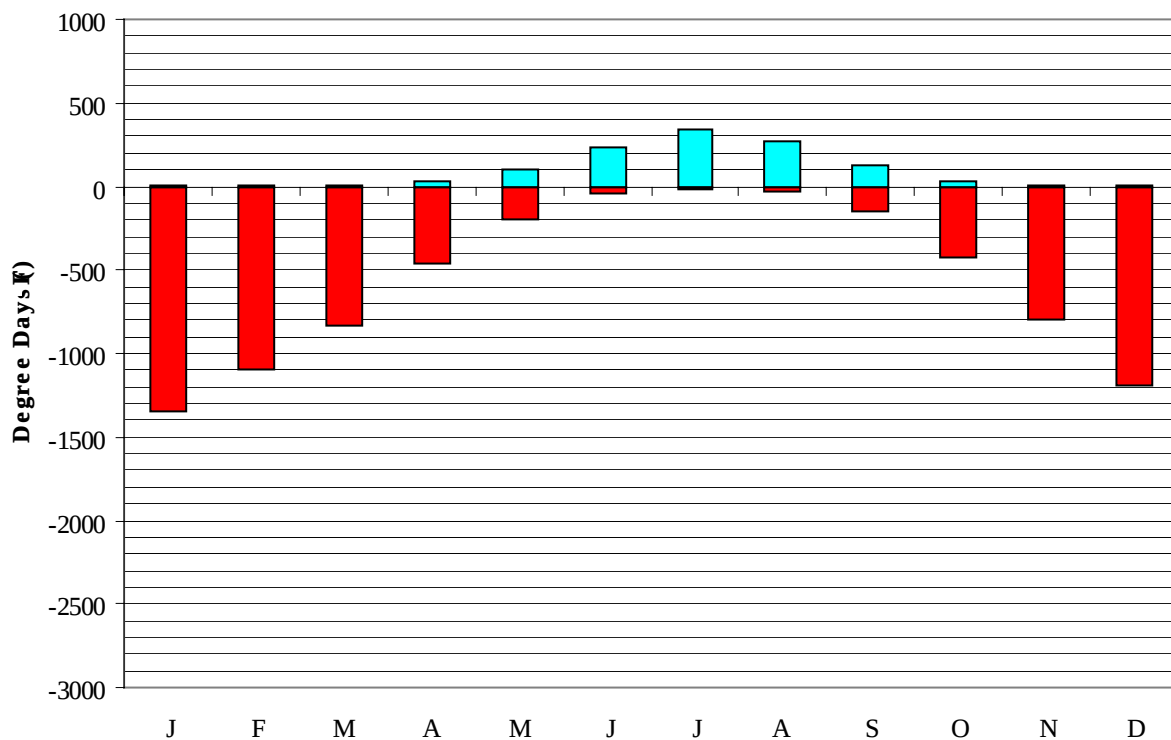
MOLINE/QUAD CITY IL
WMO No. 725440
Long Term Dry Bulb Temperature and Humidity Summary

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	42.0	39.7	27.2	12.7	-10.0	35.7	39.8	17.8	9.8
14-Jan	46.0	41.4	26.7	11.3	-14.0	37.1	42.1	17.3	9.2
21-Jan	53.0	50.7	30.1	13.0	-17.0	53.2	53.4	20.2	10.9
28-Jan	48.0	40.8	31.7	15.1	-8.0	33.6	43.3	19.9	10.5
4-Feb	53.0	44.9	29.5	13.2	-17.0	42.0	46.5	18.7	10.4
11-Feb	50.0	42.5	28.3	11.6	-12.0	35.7	46.5	16.8	9.3
18-Feb	57.0	48.5	34.7	18.6	-7.0	44.1	53.1	22.0	12.8
25-Feb	60.0	50.9	40.6	24.5	-1.0	49.0	52.3	27.5	16.2
4-Mar	66.0	57.8	40.1	23.3	3.0	59.5	61.7	25.4	14.6
11-Mar	67.0	55.8	43.5	25.6	5.0	72.8	59.8	30.2	17.1
18-Mar	72.0	58.4	47.2	30.1	13.0	74.2	64.6	31.7	19.3
25-Mar	70.0	56.9	50.2	30.9	16.0	65.1	60.7	32.2	19.2
1-Apr	78.0	60.7	53.1	35.1	22.0	73.5	67.2	38.2	22.6
8-Apr	77.0	63.4	55.8	35.0	20.0	74.9	69.7	37.3	22.3
15-Apr	77.0	63.3	58.1	38.4	26.0	79.8	69.5	42.9	25.3
22-Apr	85.0	63.8	63.9	43.6	28.0	84.7	70.1	50.3	31.7
29-Apr	84.0	65.8	66.5	45.2	33.0	88.9	72.4	53.5	32.6
6-May	82.0	61.4	66.0	45.2	34.0	86.1	66.5	51.8	33.1
13-May	85.0	65.1	71.3	49.0	36.0	95.2	74.5	61.3	39.4
20-May	88.0	70.2	73.9	52.2	41.0	106.4	75.6	69.8	46.6
27-May	89.0	71.8	73.5	53.1	41.0	112.0	79.0	74.2	51.4
3-Jun	88.0	69.9	77.2	56.4	45.0	118.3	81.4	79.1	55.4
10-Jun	89.0	70.2	79.6	57.8	48.0	121.8	80.1	83.4	55.9
17-Jun	93.0	74.9	82.4	61.3	50.0	130.2	84.4	93.0	64.3
24-Jun	94.0	74.5	83.1	62.4	51.0	125.7	82.6	96.7	69.4
1-Jul	93.0	76.5	84.3	62.8	52.0	133.7	84.7	101.1	71.7
8-Jul	95.0	75.9	86.1	64.5	55.0	139.3	86.2	108.6	77.3
15-Jul	97.0	78.3	85.9	66.2	56.0	144.2	88.0	113.2	82.0
22-Jul	95.0	77.6	85.9	66.8	58.0	144.2	86.4	114.0	83.7
29-Jul	94.0	75.1	84.3	64.5	56.0	134.4	82.0	107.9	79.1
5-Aug	97.0	77.5	83.8	63.7	53.0	139.3	84.4	106.8	78.4
12-Aug	94.0	77.5	83.7	63.0	52.0	149.1	86.2	106.7	77.9
19-Aug	96.0	79.8	83.2	63.6	50.0	144.2	87.1	108.7	80.9
26-Aug	92.0	77.7	82.7	62.4	52.0	142.8	85.8	106.9	77.5
2-Sep	92.0	76.9	81.6	61.7	49.0	138.6	86.1	102.6	74.4
9-Sep	93.0	74.1	79.7	58.1	45.0	126.0	84.4	91.3	64.2
16-Sep	89.0	73.9	76.4	55.5	43.0	121.1	79.6	84.2	57.9
23-Sep	86.0	71.2	71.4	50.4	36.0	112.7	81.3	72.5	48.1
30-Sep	84.0	67.9	71.4	48.5	35.0	113.4	76.1	66.8	44.7
7-Oct	82.0	66.2	67.7	44.7	32.0	98.0	72.6	58.4	36.4
14-Oct	80.0	64.6	64.6	42.8	30.0	91.7	68.8	53.9	34.4
21-Oct	77.0	61.5	62.0	41.4	29.0	88.9	69.1	49.0	31.2
28-Oct	77.0	63.3	60.4	39.7	26.0	82.6	66.8	46.3	29.7
4-Nov	72.0	60.2	56.0	38.6	19.0	82.6	65.8	45.3	28.7
11-Nov	65.0	55.7	49.1	32.6	16.0	75.6	62.0	36.2	22.3
18-Nov	66.0	55.6	48.2	30.5	14.0	69.3	59.3	35.4	20.4
25-Nov	61.0	56.7	44.6	28.7	14.0	68.6	61.2	32.2	18.2
2-Dec	61.0	57.5	39.3	24.2	3.0	69.3	59.5	28.6	15.5
9-Dec	56.0	49.9	36.0	21.0	-3.0	57.4	54.0	25.1	13.9
16-Dec	56.0	51.8	35.0	19.8	-7.0	54.6	57.3	23.8	13.3
23-Dec	52.0	47.0	31.1	16.6	-15.0	51.1	49.9	20.9	11.9
31-Dec	55.0	52.6	31.3	17.1	-9.0	57.4	53.5	21.1	12.1

MOLINE/QUAD CITY IL

WMO No. 725440

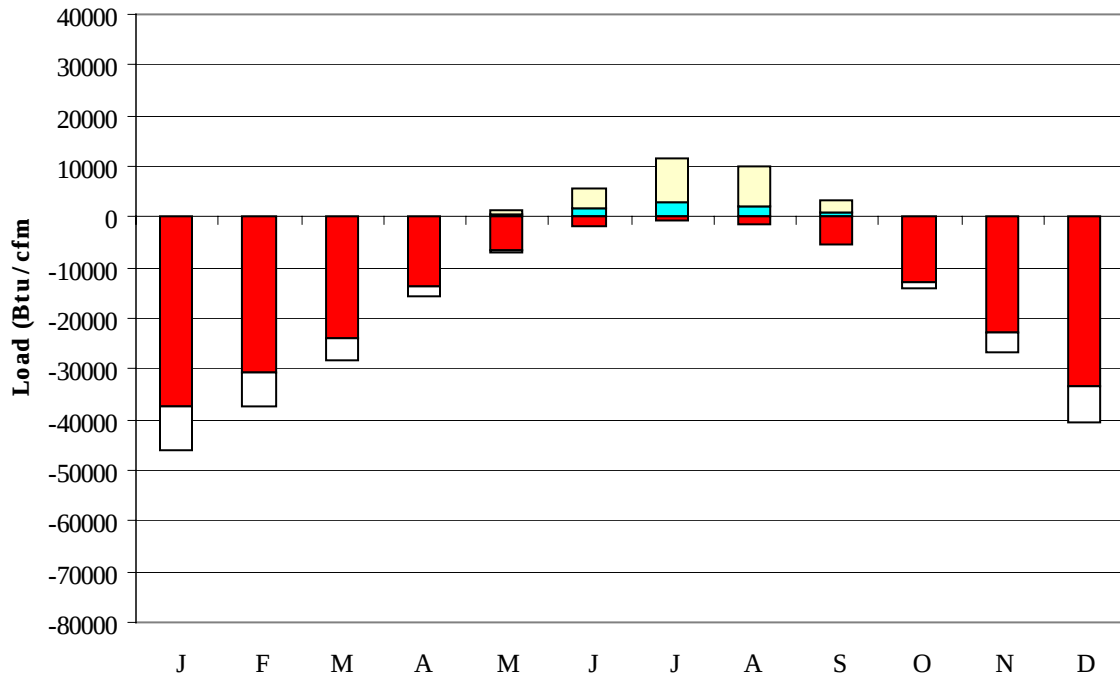
**Degree Days, Heating and Cooling
(Base 65°F)**



■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1353
FEB	0	1096
MAR	5	828
APR	28	456
MAY	98	196
JUN	237	47
JUL	338	16
AUG	274	33
SEP	121	151
OCT	26	422
NOV	1	791
DEC	0	1194
ANN	1129	6583

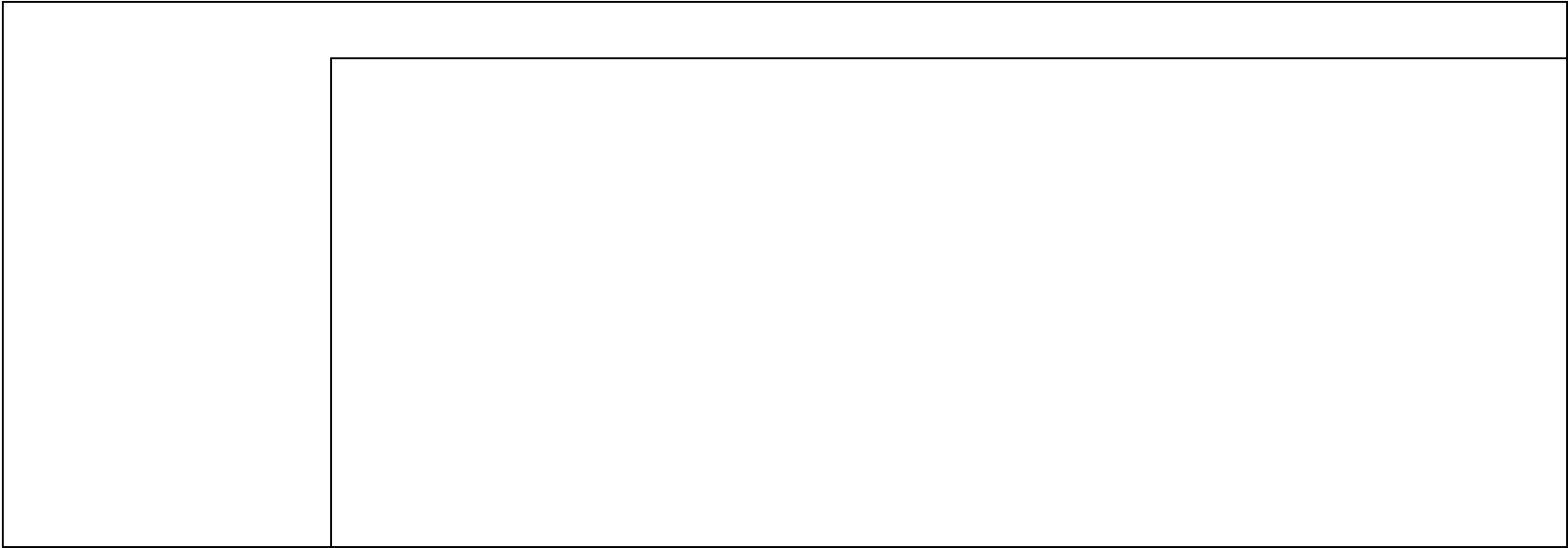
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



■ Average Sensible Cooling Load	■ Average Sensible Heating Load
■ Average Latent Cooling (Drying) Load	■ Average Latent Heating (Humidifying) Load

	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	0	-37471	0	-8502
FEB	0	-30605	0	-6742
MAR	13	-23816	3	-4468
APR	136	-13881	39	-1867
MAY	584	-6679	832	-329
JUN	1871	-1950	3596	-3
JUL	3089	-808	8505	0
AUG	2198	-1459	7759	0
SEP	754	-5282	2378	-90
OCT	81	-13066	132	-1162
NOV	0	-22821	4	-3895
DEC	0	-33350	0	-7067
ANN	8726	-191188	23248	-34125

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

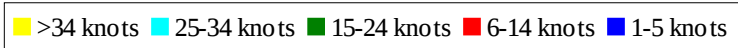
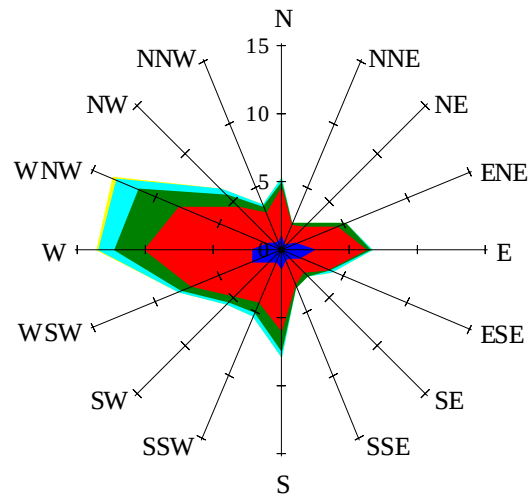


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

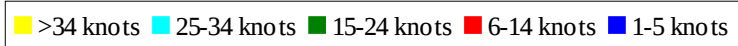
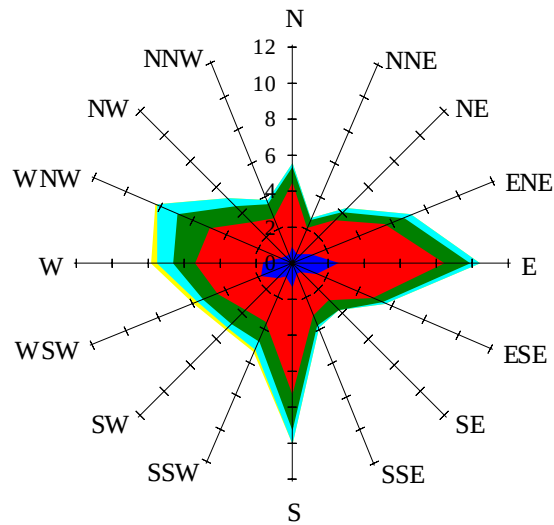
Labels of Percent Frequency on North Axis



Percent Calm = 5.94

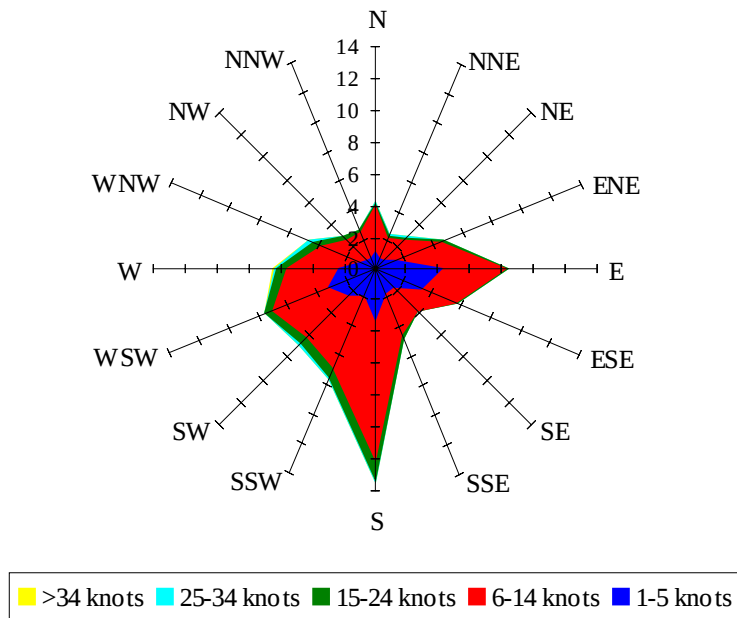
Wind Summary - March, April, and May

Labels of Percent Frequency on North Axis



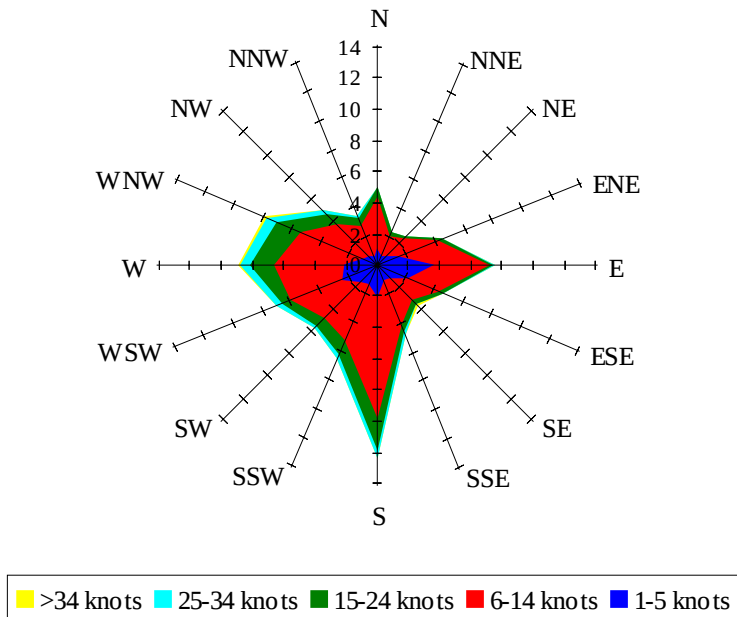
Percent Calm = 7.16

Wind Summary - June, July, and August **Labels of Percent Frequency on North Axis**



Percent Calm = 12.01

Wind Summary - September, October, and November **Labels of Percent Frequency on North Axis**



Percent Calm = 10.48