

ALPENA MI

Latitude = 45.07 N

Longitude = 83.57 W

Period of Record = 1973 to 1996

WMO No. 726390

Elevation = 692 feet

Average Pressure = 29.21 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	93	74	99	11.9	SW
0.4% Occurrence	88	72	93	11.2	SW
1.0% Occurrence	84	69	86	11.0	S
2.0% Occurrence	81	67	82	10.4	SW
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	5	4	5	7.4	W
99.0% Occurrence	-2	-2	4	5.9	W
99.6% Occurrence	-7	-7	3	4.8	W
Median of Extreme Lows	-18	-18	2	3.7	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	78	89	128	10.9	S
0.4% Occurrence	74	83	113	9.6	S
1.0% Occurrence	72	81	106	9.4	S
2.0% Occurrence	70	78	99	8.9	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	134	82	0.88	9.4	S
0.4% Occurrence	118	79	0.77	9.1	S
1.0% Occurrence	110	77	0.72	8.4	S
2.0% Occurrence	102	75	0.67	7.8	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		8	247	75	447

Other Site Data

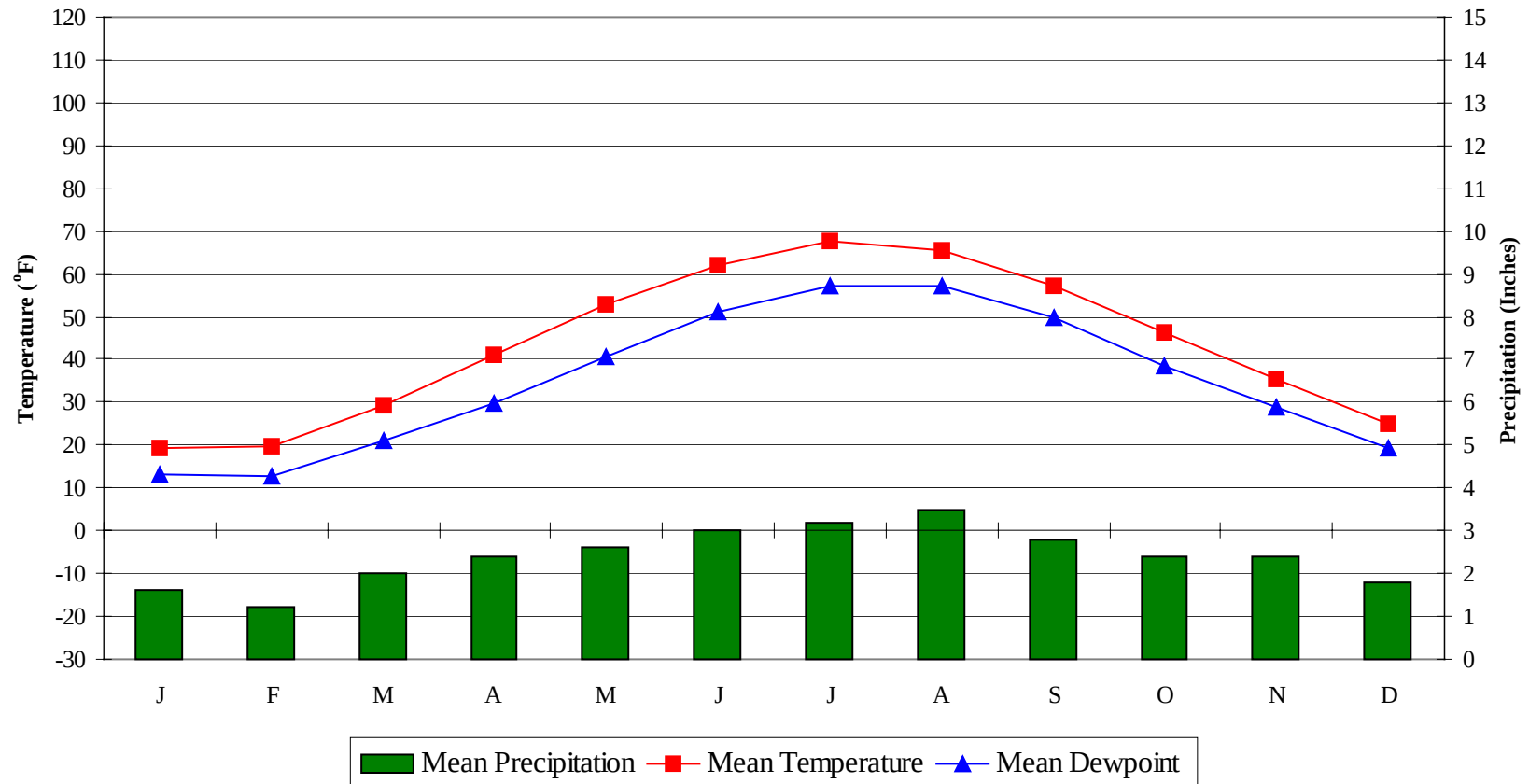
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
5	2.3	90	0.6 + 0.2
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
46.0	N/A	48	74

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

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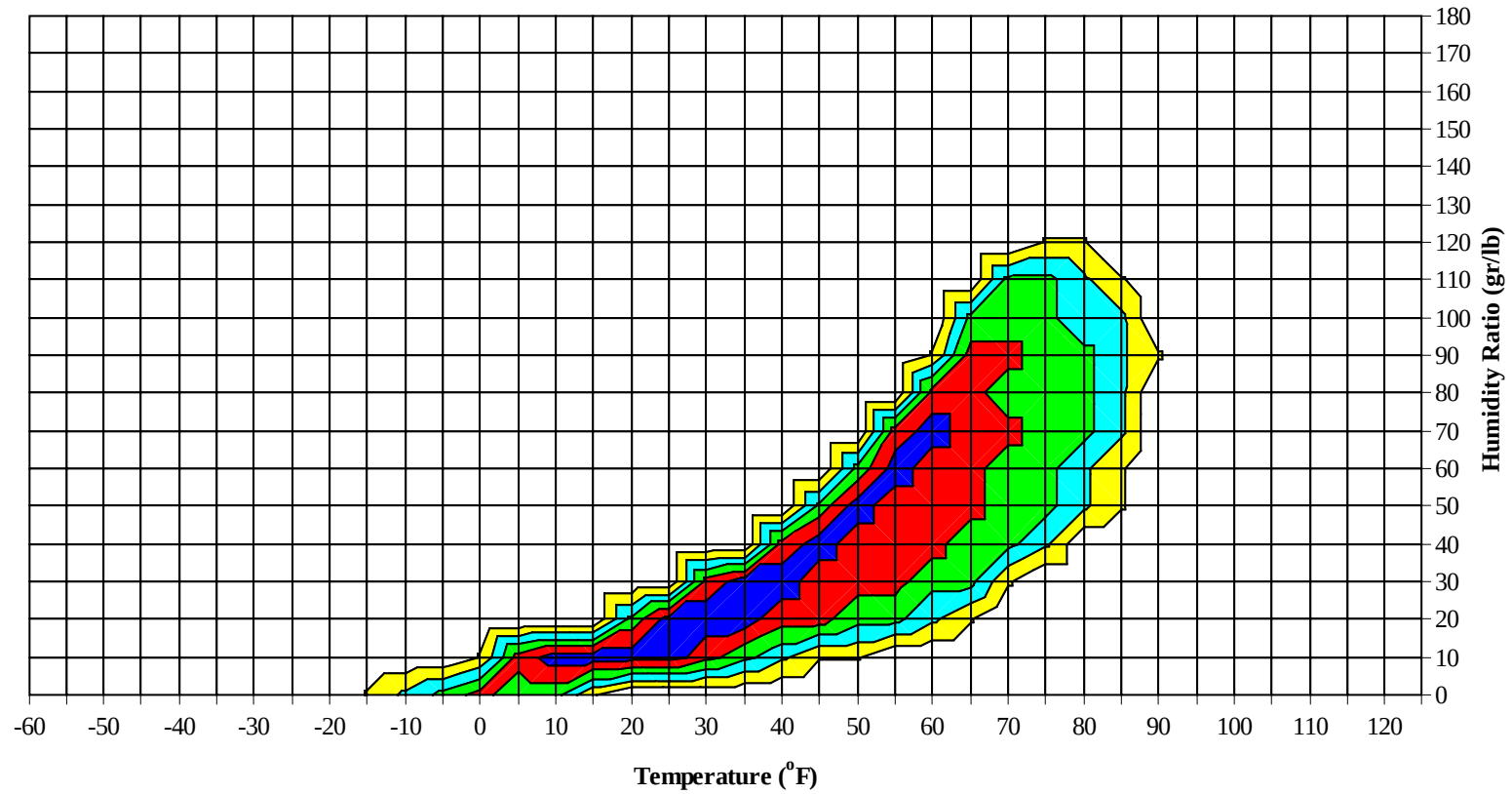
Average Annual Climate



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Long Term Psychrometric Summary

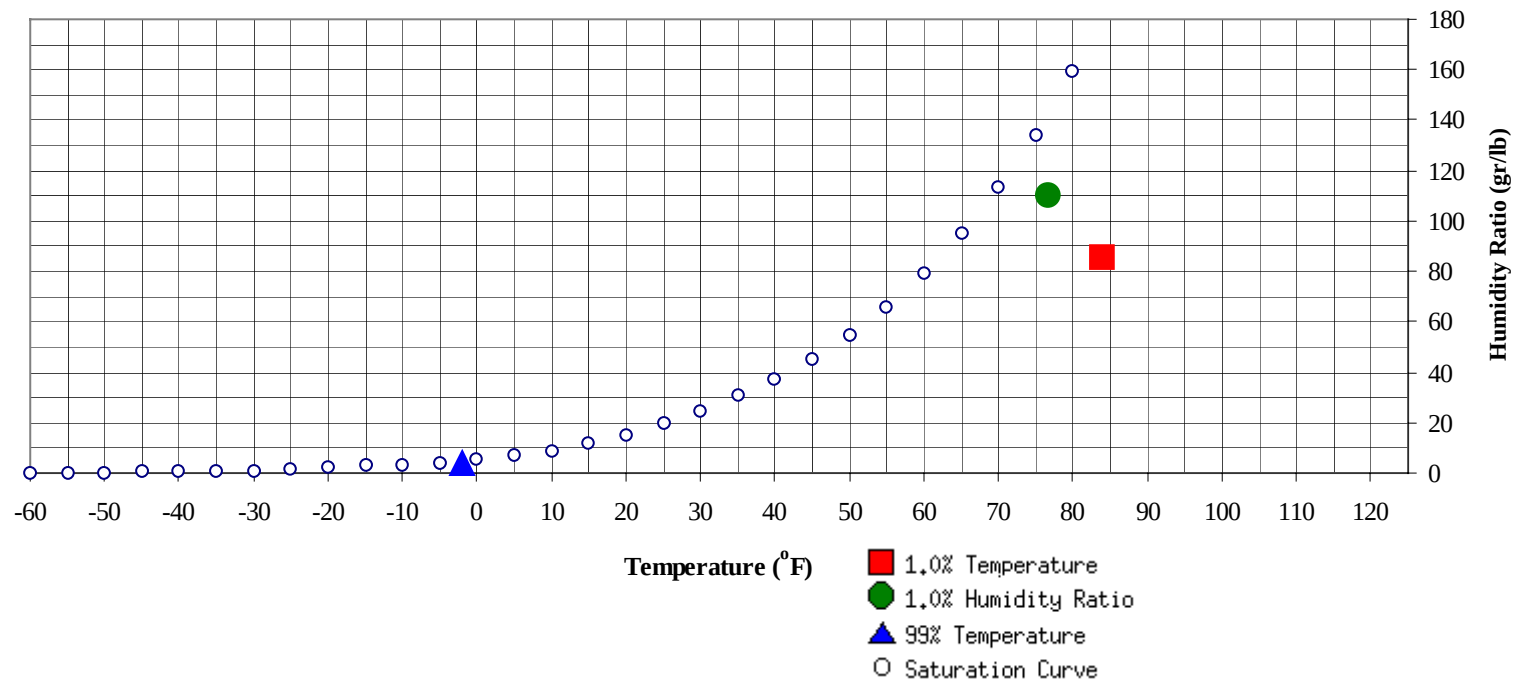


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	-2	3.7	0.1		109.9	76.7	71.3	69.1	35.6

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	84	85.4	69.1	33.6

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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															
80 / 84															
75 / 79												0	0	0	61.5
70 / 74												1	0	1	57.6
65 / 69							0		0	49.0		0	1	1	2 55.2
60 / 64							0	0	0	48.0		0	3	2	5 52.1
55 / 59							0	0	0	45.1		1	5	3	9 49.1
50 / 54		1		1	43.8		1	1	2	43.8		1	8	4	13 44.9
45 / 49	1	2	1	4	43.1	0	3	2	5	40.3		3	15	8	26 40.6
40 / 44	4	5	3	12	38.3	3	9	6	18	36.9		11	32	20	63 37.4
35 / 39	9	19	13	41	34.1	9	20	17	46	33.8		26	47	37	110 33.7
30 / 34	30	37	34	101	30.2	28	34	32	95	30.1		51	52	62	166 29.8
25 / 29	33	38	40	111	25.2	29	36	34	100	24.9		44	32	43	119 24.9
20 / 24	37	45	38	120	20.4	26	40	33	99	20.0		34	25	29	88 20.1
15 / 19	33	40	39	112	15.7	28	30	30	89	15.4		27	15	20	62 15.7
10 / 14	33	28	33	94	10.9	29	25	27	81	10.9		20	8	11	39 10.9
5 / 9	25	17	23	65	6.3	27	14	22	63	6.1		13	3	6	22 6.2
0 / 4	19	8	13	40	1.3	21	7	12	40	1.4		9	1	2	12 1.5
-5 / -1	9	4	6	19	-2.9	9	2	4	15	-2.9		4	0	1	5 -2.7
-10 / -6	8	2	4	14	-7.2	7	1	3	11	-7.2		3			3 -6.9
-15 / -11	5	1	2	8	-11.5	4	0	1	5	-11.8		0			0 -10.8
-20 / -16	2	0	0	2	-16.2	2	0	0	2	-17.1		0			0 -15.0
-25 / -21	0		0	0	-21.6	1	0	0	1	-21.6					
-30 / -26	0			0	-26.2	0	0	0	0	-26.2					
-35 / -31						0	0		0	-31.8					

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.

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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		
100 / 104												0	0	0	74.3
95 / 99												1	0	1	72.7
90 / 94		0		0	65.0		0	0	0	68.3		4	1	5	71.5
85 / 89		1	0	1	63.9		4	0	4	65.8		11	3	14	69.5
80 / 84		2	1	3	63.4		10	3	13	65.1	1	23	8	32	66.8
75 / 79		3	1	4	60.7	0	16	6	22	63.0	3	35	16	54	64.2
70 / 74	0	6	3	9	57.2	2	24	11	37	59.6	10	45	28	83	61.4
65 / 69	2	8	4	14	54.3	7	29	18	54	56.7	22	45	36	103	59.3
60 / 64	3	13	7	23	51.5	14	39	26	79	53.3	34	38	47	119	56.5
55 / 59	7	19	10	36	47.9	24	41	39	104	50.1	52	26	45	123	53.5
50 / 54	8	34	20	62	44.1	39	40	48	127	46.8	50	9	32	91	49.6
45 / 49	17	38	32	87	41.3	46	27	44	117	43.1	36	3	16	55	45.3
40 / 44	34	44	46	123	37.7	50	13	32	95	39.1	25	0	6	31	41.0
35 / 39	49	37	48	133	33.9	36	4	17	57	34.8	8	0	1	9	36.9
30 / 34	54	25	42	121	29.7	25	1	5	31	30.7	1		0	1	32.1
25 / 29	39	9	20	68	25.0	5		1	6	26.7	0			0	29.0
20 / 24	19	2	6	27	20.6	0			0	23.8					
15 / 19	6	1	1	8	15.8										
10 / 14	2	0	0	2	11.6										
5 / 9	0			0	6.0										
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															

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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		0		0	75.7		0		0	76.3					
95 / 99		2	0	2	73.9		0	0	0	77.2					
90 / 94		6	2	8	74.2		3	1	4	74.5		1		1	73.8
85 / 89	0	20	6	26	71.3		11	3	14	72.5		3	1	4	72.1
80 / 84	2	42	18	62	68.3	0	31	9	40	69.5		10	2	12	68.5
75 / 79	6	59	31	96	65.9	2	55	24	81	66.9	0	17	6	23	66.4
70 / 74	19	58	48	125	63.8	17	60	43	120	64.9	4	30	13	47	63.6
65 / 69	41	38	52	131	62.1	42	51	56	149	62.2	15	41	26	82	61.0
60 / 64	63	17	48	128	59.0	59	27	55	141	59.1	30	52	43	125	57.6
55 / 59	56	4	29	89	55.0	50	6	33	89	55.0	41	44	50	135	53.5
50 / 54	40	0	12	52	50.7	44	2	17	63	50.7	51	29	44	124	49.5
45 / 49	17		2	19	46.4	24	0	6	30	46.4	37	11	29	77	45.1
40 / 44	4		0	4	42.5	8		1	9	42.0	34	3	18	55	40.8
35 / 39	0		0	0	37.3	2		0	2	37.7	20	0	6	26	36.5
30 / 34						0			0	31.3	7		2	9	32.0
25 / 29											1		0	1	28.0
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															

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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		
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84		1	0	1	63.4										
75 / 79		2	0	2	62.9		0		0	61.0					
70 / 74	0	7	2	9	60.5		1	0	1	58.9					
65 / 69	2	13	6	21	57.8	0	1	0	1	57.6					
60 / 64	6	25	13	44	54.5	1	5	1	7	54.7	0	0	0	0	58.0
55 / 59	17	34	22	73	51.4	4	8	6	18	52.0	0	1	1	2	52.8
50 / 54	27	51	38	116	47.8	9	15	10	34	47.9	1	2	1	4	47.1
45 / 49	38	52	50	140	43.6	15	27	19	61	43.6	2	4	3	9	43.1
40 / 44	48	38	51	137	39.5	23	41	31	95	38.9	5	10	6	21	38.7
35 / 39	52	18	40	110	35.0	40	48	47	135	34.2	19	35	25	79	34.3
30 / 34	40	5	22	67	30.7	60	51	58	169	29.9	59	59	60	178	30.2
25 / 29	16	0	5	21	26.7	45	29	40	114	25.3	44	43	46	133	25.3
20 / 24	3		1	4	22.4	26	10	17	53	21.0	36	37	36	109	20.5
15 / 19						10	3	7	20	16.5	28	30	28	86	15.8
10 / 14						4	1	2	7	11.6	23	16	22	61	11.3
5 / 9						1	0	1	2	6.9	15	7	11	33	6.4
0 / 4						1	0	0	1	1.4	9	3	6	18	1.7
-5 / -1						0	0	0	0	-2.7	3	1	2	6	-2.8
-10 / -6						0			0	-6.3	3	0	1	4	-7.0
-15 / -11											1	0	0	1	-11.7
-20 / -16											0	0		0	-15.6
-25 / -21															
-30 / -26															
-35 / -31															

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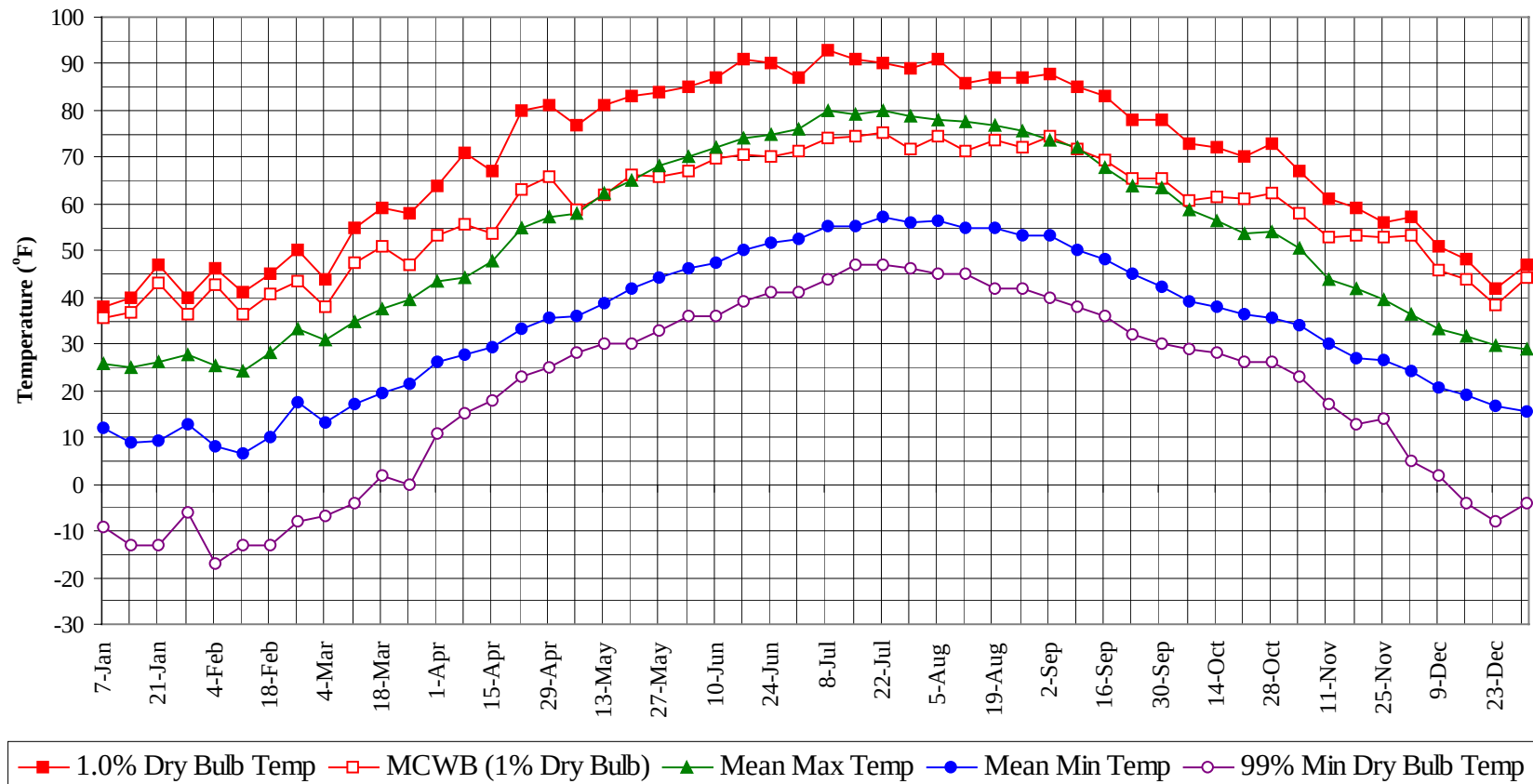
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

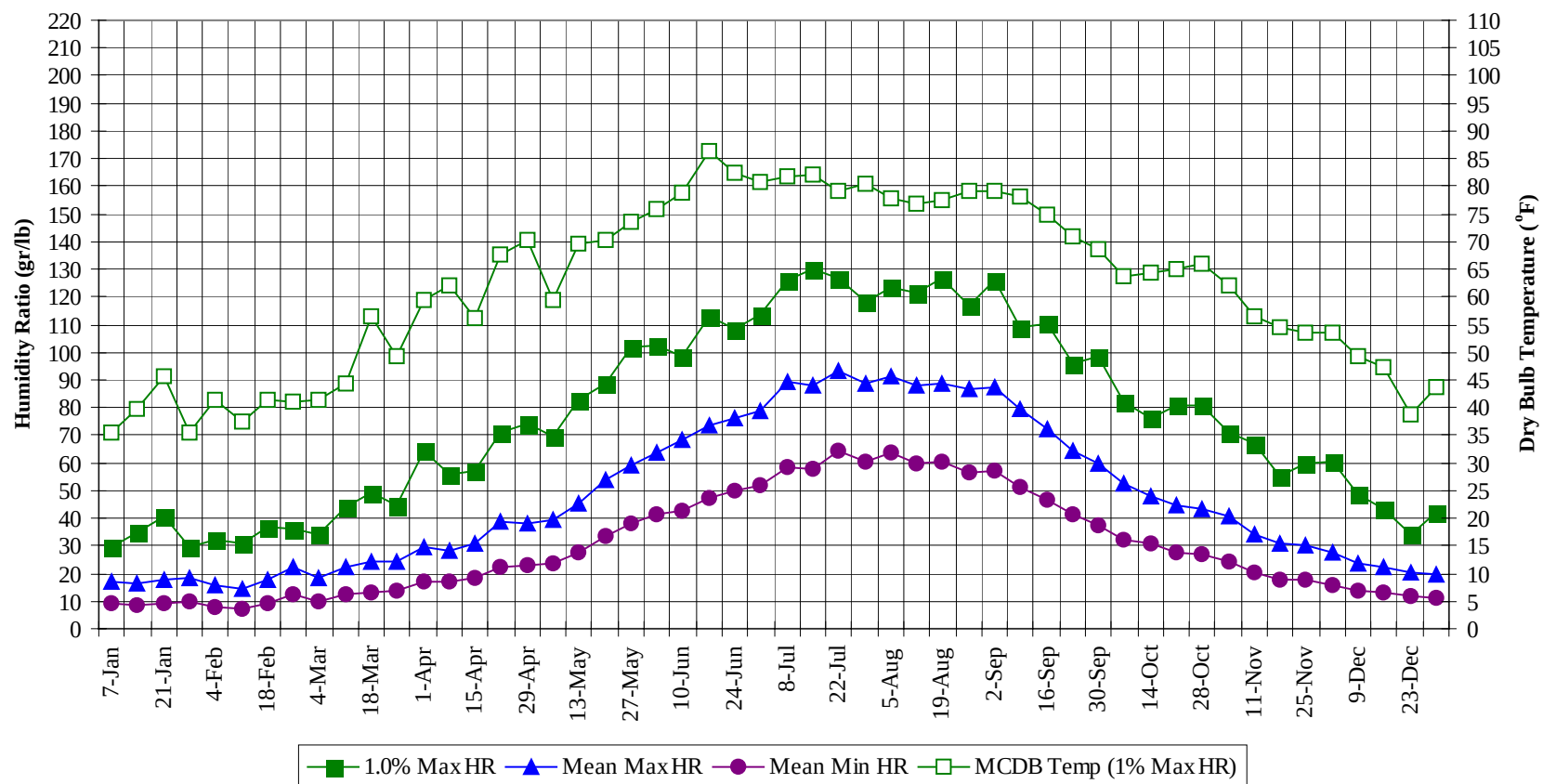
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
100 / 104		0	0	0	75.5
95 / 99		3	1	4	73.8
90 / 94		14	4	18	73.3
85 / 89	0	50	13	63	70.7
80 / 84	3	118	41	162	68.0
75 / 79	12	188	84	284	65.5
70 / 74	52	231	147	430	63.1
65 / 69	131	226	198	555	60.5
60 / 64	209	219	240	668	57.0
55 / 59	250	189	235	674	52.7
50 / 54	268	193	226	687	48.2
45 / 49	236	182	211	629	43.6
40 / 44	247	195	220	662	38.9
35 / 39	270	229	250	749	34.4
30 / 34	357	264	319	940	30.1
25 / 29	258	187	229	674	25.2
20 / 24	182	157	160	499	20.4
15 / 19	132	119	126	377	15.7
10 / 14	111	78	97	286	11.0
5 / 9	82	42	63	187	6.3
0 / 4	59	19	33	111	1.4
-5 / -1	26	7	13	46	-2.9
-10 / -6	21	4	8	33	-7.2
-15 / -11	10	2	3	15	-11.6
-20 / -16	5	1	1	7	-16.6
-25 / -21	2	0	0	2	-21.6
-30 / -26	0	0	0	0	-26.2
-35 / -31	0	0		0	-31.8

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



ALPENA MI

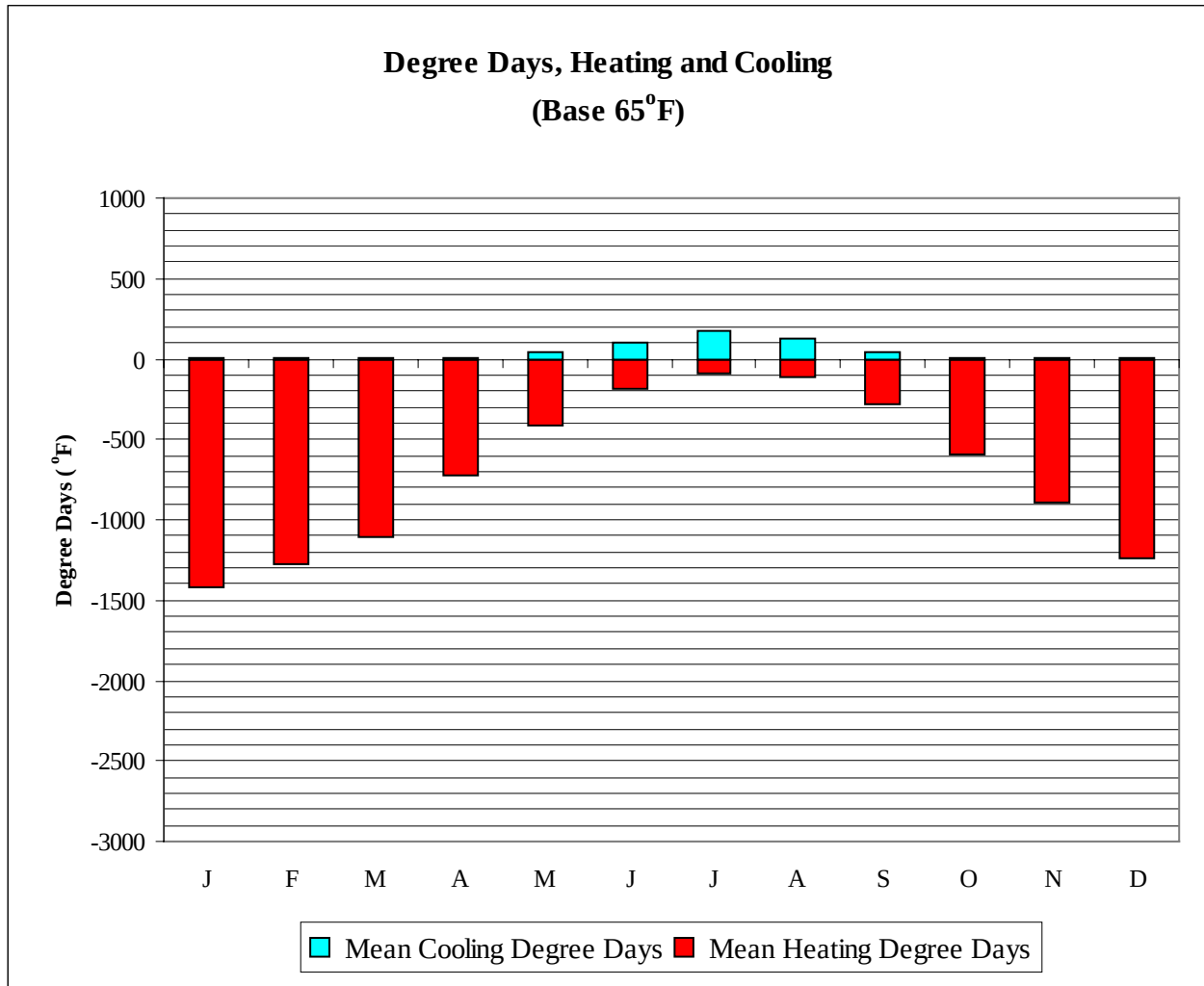
WMO No. 726390

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	38.0	35.5	25.7	12.0	-9.0	29.4	35.4	17.0	9.5
14-Jan	40.0	36.6	24.9	8.9	-13.0	35.0	39.6	16.6	8.3
21-Jan	47.0	43.1	26.3	9.3	-13.0	40.6	45.7	17.7	9.0
28-Jan	40.0	36.2	27.7	13.0	-6.0	29.4	35.3	18.4	9.8
4-Feb	46.0	42.6	25.5	8.1	-17.0	32.2	41.4	16.0	8.1
11-Feb	41.0	36.4	24.3	6.7	-13.0	30.8	37.3	14.5	7.0
18-Feb	45.0	40.9	28.1	10.0	-13.0	37.1	41.5	17.7	9.1
25-Feb	50.0	43.3	33.4	17.5	-8.0	36.4	41.1	22.2	12.5
4-Mar	44.0	38.1	30.8	13.1	-7.0	34.3	41.4	18.5	9.8
11-Mar	55.0	47.3	34.7	17.2	-4.0	44.1	44.4	22.4	12.5
18-Mar	59.0	50.9	37.7	19.6	2.0	49.0	56.6	24.1	13.1
25-Mar	58.0	47.0	39.5	21.4	0.0	44.8	49.3	24.3	13.6
1-Apr	64.0	53.1	43.5	26.3	11.0	64.4	59.4	29.4	17.0
8-Apr	71.0	55.5	44.3	27.6	15.0	56.0	62.0	28.4	17.2
15-Apr	67.0	53.6	47.7	29.4	18.0	57.4	56.3	30.8	18.3
22-Apr	80.0	63.3	54.8	33.4	23.0	70.7	67.7	38.5	22.0
29-Apr	81.0	65.7	57.4	35.6	25.0	74.2	70.1	38.4	23.1
6-May	77.0	58.6	57.9	35.9	28.0	69.3	59.6	39.5	23.5
13-May	81.0	62.0	62.2	38.7	30.0	82.6	69.6	45.2	27.7
20-May	83.0	66.2	65.2	41.8	30.0	88.9	70.4	54.0	33.6
27-May	84.0	65.8	68.1	44.3	33.0	101.5	73.5	58.9	38.4
3-Jun	85.0	67.1	70.3	46.1	36.0	102.2	75.7	63.8	41.1
10-Jun	87.0	69.6	72.0	47.4	36.0	98.7	78.7	68.2	42.8
17-Jun	91.0	70.6	74.2	50.1	39.0	112.7	86.2	73.5	47.4
24-Jun	90.0	70.1	74.7	51.6	41.0	108.5	82.6	76.0	50.1
1-Jul	87.0	71.2	76.0	52.4	41.0	113.4	80.7	78.9	52.2
8-Jul	93.0	74.3	80.1	55.4	44.0	126.0	81.8	89.2	58.6
15-Jul	91.0	74.6	79.1	55.2	47.0	130.2	82.2	88.2	57.5
22-Jul	90.0	75.2	79.9	57.2	47.0	126.7	79.2	93.5	64.3
29-Jul	89.0	71.8	78.7	55.8	46.0	118.3	80.4	88.6	60.1
5-Aug	91.0	74.4	78.0	56.5	45.0	123.2	77.7	91.1	63.6
12-Aug	86.0	71.2	77.4	54.8	45.0	121.8	76.8	88.2	59.7
19-Aug	87.0	73.8	77.0	54.7	42.0	126.7	77.5	88.9	60.2
26-Aug	87.0	72.2	75.7	53.2	42.0	116.9	79.3	86.5	56.4
2-Sep	88.0	74.3	73.9	53.1	40.0	126.0	79.2	87.5	57.1
9-Sep	85.0	71.9	72.1	50.1	38.0	109.2	78.0	79.6	51.3
16-Sep	83.0	69.3	67.9	48.0	36.0	110.6	74.9	72.3	46.5
23-Sep	78.0	65.5	63.9	44.9	32.0	95.9	70.8	64.1	41.5
30-Sep	78.0	65.5	63.3	42.3	30.0	98.7	68.7	59.9	37.7
7-Oct	73.0	60.8	58.8	39.3	29.0	81.9	63.8	52.8	32.0
14-Oct	72.0	61.3	56.3	38.0	28.0	76.3	64.2	47.9	30.6
21-Oct	70.0	61.3	53.5	36.4	26.0	80.5	65.1	44.4	27.8
28-Oct	73.0	62.1	54.1	35.7	26.0	80.5	65.9	43.6	27.0
4-Nov	67.0	58.1	50.4	34.0	23.0	71.1	62.0	40.5	24.4
11-Nov	61.0	53.0	43.7	29.9	17.0	67.2	56.5	34.0	20.1
18-Nov	59.0	53.3	42.0	26.8	13.0	55.3	54.4	30.7	17.7
25-Nov	56.0	52.7	39.7	26.6	14.0	59.5	53.4	30.1	17.6
2-Dec	57.0	53.3	36.4	24.1	5.0	60.2	53.5	27.7	16.1
9-Dec	51.0	45.9	33.3	20.6	2.0	48.3	49.3	23.5	14.0
16-Dec	48.0	43.8	31.7	19.0	-4.0	43.4	47.3	22.6	13.4
23-Dec	42.0	38.2	29.6	16.6	-8.0	34.3	38.6	20.5	12.0
31-Dec	47.0	44.2	28.7	15.4	-4.0	42.0	43.8	19.7	11.2

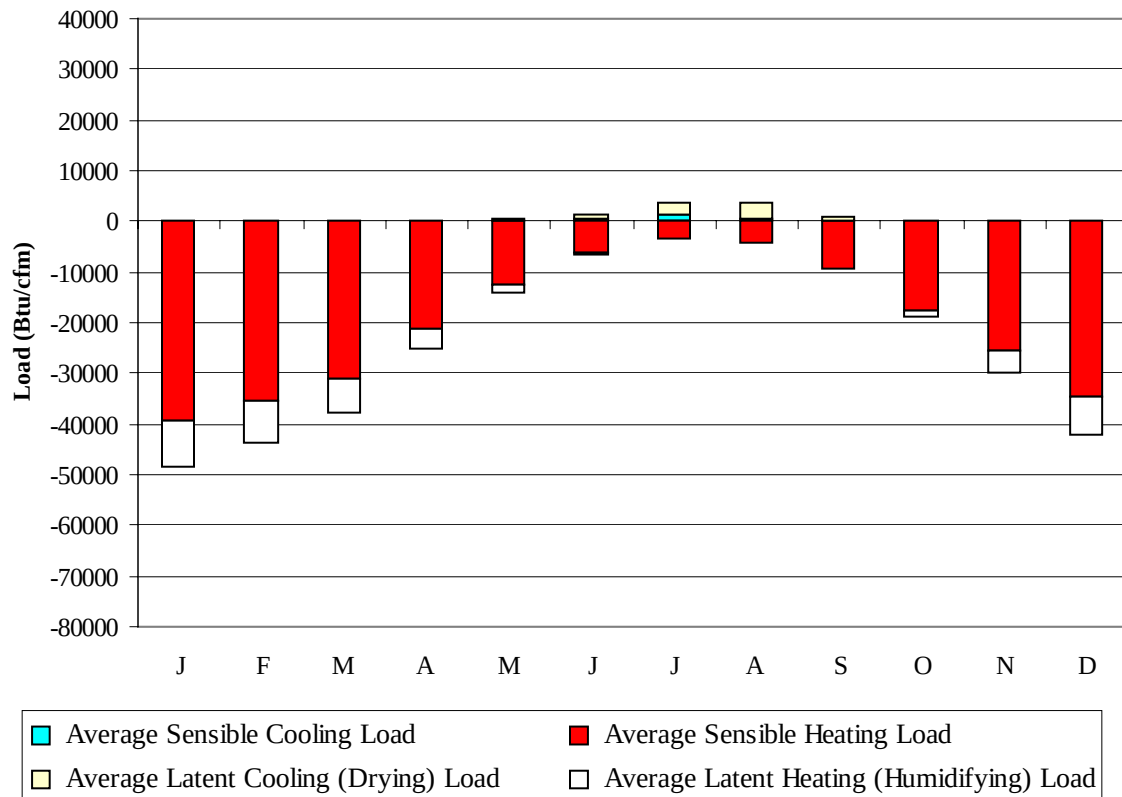
ALPENA MI

WMO No. 726390



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1418
FEB	0	1275
MAR	0	1108
APR	9	727
MAY	38	409
JUN	98	186
JUL	173	91
AUG	131	112
SEP	43	283
OCT	6	589
NOV	0	895
DEC	0	1241
ANN	498	8334

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	-39176	0	-9298
FEB	0	-35235	0	-8483
MAR	0	-31129	0	-6826
APR	49	-21108	2	-3881
MAY	195	-12678	185	-1208
JUN	605	-6347	783	-53
JUL	1170	-3467	2686	-1
AUG	692	-4205	2803	-2
SEP	181	-9239	810	-144
OCT	9	-17598	15	-1322
NOV	0	-25516	0	-4266
DEC	0	-34578	0	-7475
ANN	2901	-240276	7284	-42959

Average Annual Solar Radiation – Nearest Available Site

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

City: ALPENA
 State: MI
 WBAN No: 94849
 Lat(N): 45.07
 Long(W): 83.57
 Elev(ft): 689

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS
 Window: 1
 Overhang: 0.68
 Vert Gap: 0.331

AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Global	510	800	1180	1480	1800	1960	1940	1620	1200	780	470	390	1180
	Std Dev	36	61	96	94	134	138	101	105	102	48	42	37	31
	Minimum	430	690	970	1260	1500	1710	1740	1420	940	690	380	280	1120
	Maximum	570	920	1350	1670	2080	2270	2140	1830	1400	870	580	450	1230
	Diffuse	340	480	610	650	720	780	740	660	550	410	310	290	540
Clear Day	Global	720	1080	1610	2130	2510	2660	2550	2210	1720	1170	750	600	1650
NORTH	Global	190	270	360	420	540	620	580	460	350	250	170	150	360
	Diffuse	190	270	360	410	480	520	500	430	340	250	170	150	340
Clear Day	Global	150	220	300	410	580	700	640	450	320	230	160	130	360
EAST	Global	350	530	750	900	1050	1120	1130	970	740	510	300	250	720
	Diffuse	240	340	440	500	570	610	600	520	420	300	210	190	410
Clear Day	Global	610	840	1140	1370	1510	1560	1520	1390	1160	880	620	520	1090
SOUTH	Global	810	1040	1160	1030	940	880	930	1000	1020	920	650	590	910
	Diffuse	370	470	530	520	550	570	570	530	480	380	290	300	460
Clear Day	Global	1860	2020	1950	1580	1250	1100	1150	1400	1730	1890	1800	1740	1620
WEST	Global	350	540	770	890	1050	1130	1130	990	760	520	310	260	730
	Diffuse	240	340	450	500	570	610	600	530	430	300	210	190	410
Clear Day	Global	610	840	1140	1370	1510	1560	1520	1390	1160	880	620	520	1090

Average Annual Solar Heat and Illumination – Nearest Available Site

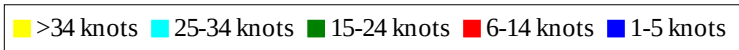
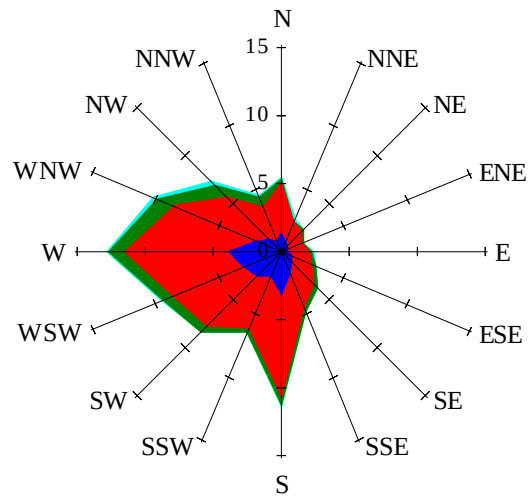
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Unshaded	330	530	820	1060	1300	1420	1410	1160	840	530	310	250	830
NORTH	Unshaded	130	190	250	290	350	400	380	310	240	170	120	110	240
	Shaded	100	150	210	240	300	340	330	260	200	140	97	84	210
EAST	Unshaded	240	370	530	640	750	800	810	700	530	360	210	170	510
	Shaded	200	310	440	530	600	640	650	570	440	300	180	140	420
SOUTH	Unshaded	610	770	820	690	590	540	580	650	710	670	490	450	630
	Shaded	570	690	610	390	320	340	340	350	470	570	450	420	460
WEST	Unshaded	240	380	540	640	750	810	810	710	540	370	220	180	520
	Shaded	200	320	450	520	600	640	650	580	450	310	180	150	420

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9		March					June				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	25	60	75	66	34	39	75	95	95	76
	M.Cloudy	17	39	49	44	23	24	47	64	66	49
NORTH	M.Clear	8	13	14	13	9	19	14	16	16	15
	M.Cloudy	7	14	17	16	9	12	15	18	18	16
EAST	M.Clear	65	64	20	13	9	75	78	42	16	15
	M.Cloudy	22	31	19	16	9	31	41	32	18	16
SOUTH	M.Clear	29	71	89	77	40	10	31	52	53	33
	M.Cloudy	13	33	43	39	19	9	22	37	38	24
WEST	M.Clear	8	13	14	57	72	10	14	16	39	75
	M.Cloudy	7	14	17	32	29	9	15	18	30	43
M.Clear	(% hrs)	31	29	29	29	29	39	40	35	33	37
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	17	53	73	73	52	3	26	36	25	3
	M.Cloudy	9	30	46	47	31	3	16	23	17	3
NORTH	M.Clear	6	12	14	14	12	2	8	9	8	2
	M.Cloudy	4	11	16	16	12	1	7	10	7	1
EAST	M.Clear	51	72	38	14	12	12	38	10	8	2
	M.Cloudy	13	28	25	16	12	3	14	10	7	1
SOUTH	M.Clear	12	51	74	75	50	10	62	81	60	10
	M.Cloudy	6	22	40	40	25	3	19	26	20	3
WEST	M.Clear	6	12	14	39	71	2	8	10	37	12
	M.Cloudy	4	11	16	26	32	1	7	10	14	3
M.Clear	(% hrs)	33	32	30	28	30	12	15	12	14	19

Wind Summary - December, January, and February

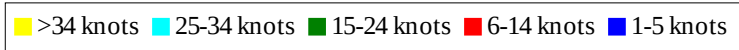
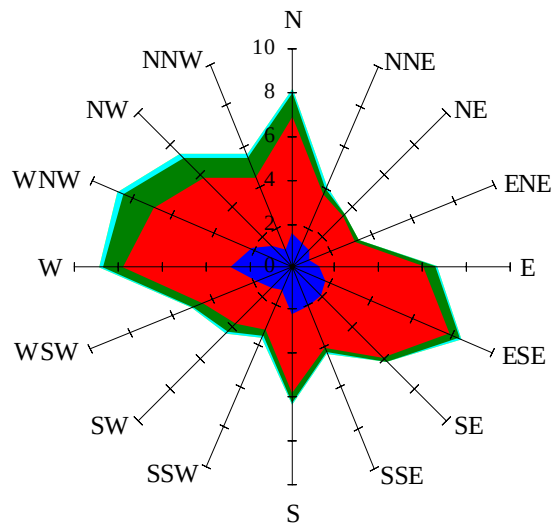
Labels of Percent Frequency on North Axis



Percent Calm = 5.43

Wind Summary - March, April, and May

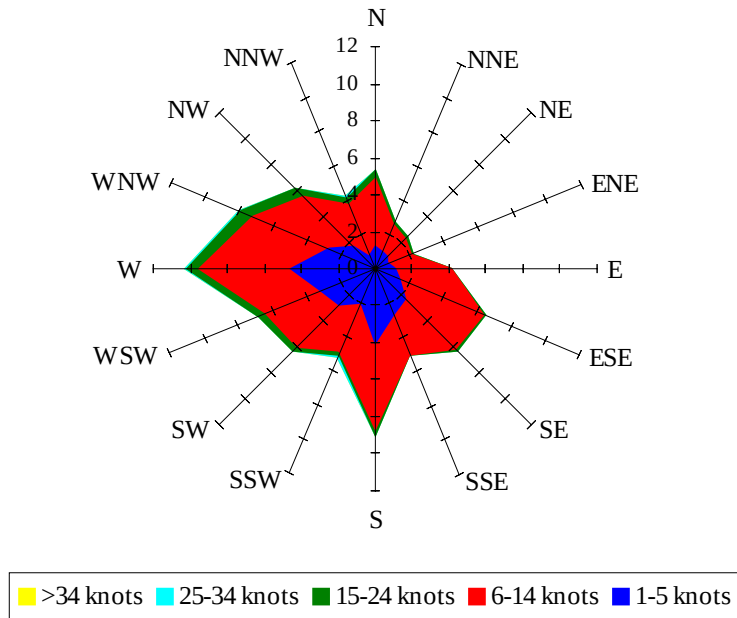
Labels of Percent Frequency on North Axis



Percent Calm = 6.90

Wind Summary - June, July, and August

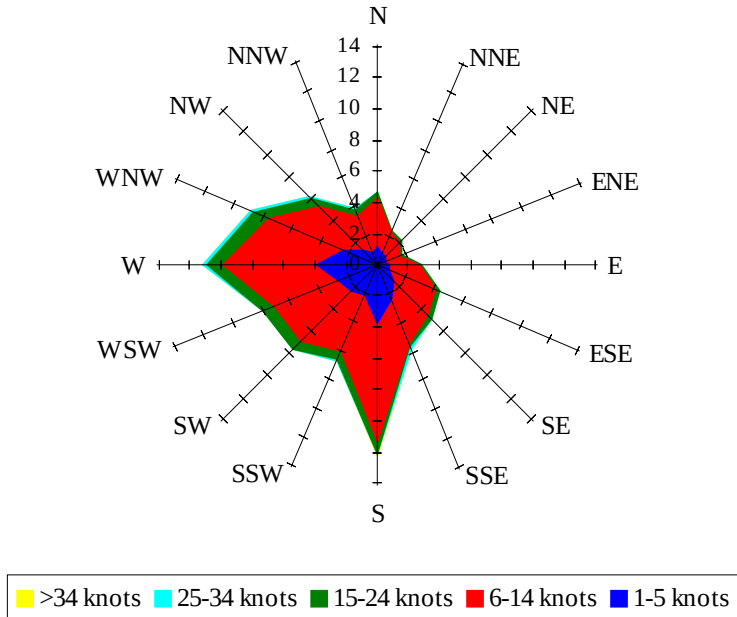
Labels of Percent Frequency on North Axis



Percent Calm = 9.76

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 7.85